

Sample handling



## Customized chromatography solutions for sample handling

Your partner for chromatography consumables

MIKROLAB   
FRISENETTE

thermo scientific

# Table of contents

|  |    |  |
|--|----|--|
| <b>Preface</b>   | 4  |  |
| How to use this catalog  |    |  |
| Article number system  |    |  |
| <b>Company profile</b>   | 6  |  |
| Quality  |    |  |
| Service  |    |  |
| Production   |    |  |
| Innovation   |    |  |
| <b>Technical information</b>   | 10 |  |
| Vials  |    |  |
| Seals  |    |  |
| Septa  |    |  |
| <b>Environmental selection card</b>  | 14 |  |
| <b>1. Crimp neck ND8</b>   | 16 |  |
| 1.1 Crimp neck vials and micro-vials ND8   |    |  |
| 1.2 Aluminum crimp seals ND8   |    |  |
| 1.2.1 Natural rubber/TEF and RedRubber/PTFE seals  |    |  |
| 1.2.2 Silicone/PTFE seals  |    |  |
| 1.2.3 Other crimp seals  |    |  |
| 1.3 Other combination seals for crimp neck ND8   |    |  |
| <b>2. Screw neck ND8</b>   | 18 |  |
| 2.1 Screw neck vials ND8, small opening, 8-425 thread and micro-vials ND8  |    |  |
| 2.2 Micro-inserts for vials with small opening   |    |  |
| 2.3 PP screw seals ND8   |    |  |
| 2.3.1 Natural rubber/TEF, RedRubber/PTFE and butyl/PTFE seals  |    |  |
| 2.3.2 Silicone/PTFE seals  |    |  |
| 2.3.3 Natural rubber/TEF, RedRubber/PTFE, butyl/PTFE and silicone/PTFE seals, closed top   |    |  |
| 2.4 Septa 8 mm   |    |  |
| 2.5 PP screw caps ND8  |    |  |
| 2.6 Screw neck vials ND8, small opening, 8-425 thread with pre-screwed PP  |    |  |
| Screw seals ND8 and/or pre-assembled micro-inserts for vials with small opening  |    |  |
| 2.7 Special 2in1 and 3in1 kits   |    |  |
| <b>Food selection card</b>   | 22 |  |
| <b>3. Short thread ND9</b>   | 24 |  |
| 3.1 Short thread vials ND9, wide opening and micro-vials with short thread ND9   |    |  |
| 3.2 Short thread SureStop vials ND9  |    |  |
| 3.3 Micro-inserts for short thread vials ND9 with wide opening   |    |  |
| 3.4 Plastic vials ND9 and plastic micro-vials ND9  |    |  |
| 3.5 PP short thread seals ND9  |    |  |
| 3.5.1 PP short thread cap transparent, 6 mm centre hole  |    |  |
| 3.5.2. PP short thread cap blue  |    |  |
| 3.5.2.1 PP short thread cap blue, 6 mm centre hole   |    |  |
| 3.5.2.2 PP short thread cap blue, closed top   |    |  |
| 3.5.3 PP short thread cap red, 6 mm centre hole  |    |  |
| 3.5.4 PP short thread cap black, 6 mm centre hole  |    |  |
| 3.5.5 PP short thread cap green, 6 mm centre hole  |    |  |
| 3.5.6 PP short thread cap yellow, 6 mm centre hole   |    |  |
| 3.5.7 Magnetic short thread cap, 6 mm centre hole<br>(for CTC GC PAL + Thermo Scientific TriPlus autosampler)  |    |  |
| 3.5.8 9 mm short thread MS cap transparent   |    |  |
| 3.5.9 9 mm short thread PP cap with thinned penetration area   |    |  |
| 3.5.10 UltraBond seals ND9<br>(cap + liner form an inseparable unit, so that the liner cannot be pushed into the vial even with a blunt needle)                                  |    |  |
| 3.5.11 HPLC and GC certified vial kits<br>(short thread vials and short thread seals ND9)  |    |  |
| 3.5.12 LC/MS and GC/MS certified vial kits<br>(short thread vials and short thread seals ND9)  |    |  |
| 3.6 Short thread vials ND9, wide opening with pre-screwed PP short thread seals ND9 and/or pre-assembled micro-inserts with wide opening   |    |  |
| 3.7 Special 2in1 kits  |    |  |
| <b>4. Screw neck ND10</b>  | 31 |  |
| 4.1 Screw neck vials ND10, wide opening, 10-425 thread and appropriate micro-inserts   |    |  |
| 4.2 PP screw seals ND10  |    |  |
| 4.3 PP screw caps ND10   |    |  |
| <b>Academia selection card</b>   | 32 |  |
| <b>5. Crimp neck ND11</b>  | 34 |  |
| 5.1 Crimp neck vials ND11, wide opening and micro-vials with crimp neck ND11   |    |  |
| 5.2 Micro-inserts for crimp neck vials ND11 with wide opening  |    |  |
| 5.3 Aluminum crimp seals ND11  |    |  |
| 5.3.1 Natural rubber/TEF seals   |    |  |
| 5.3.2 RedRubber/PTFE seals   |    |  |
| 5.3.3 Silicone/PTFE seals  |    |  |
| 5.3.4 Other aluminum crimp seals   |    |  |
| 5.4 Magnetic crimp seals ND11<br>(for CTC PAL + Thermo Scientific TriPlus Autosampler)   |    |  |
| 5.5 Other combination seals for crimp neck ND11  |    |  |
| 5.6 Crimp neck vials ND11, wide opening, with pre-crimped aluminum seals ND11 and/or pre-assembled micro-inserts for vials with wide opening                                     |    |  |
| 5.7 Special 2in1 kits  |    |  |
| <b>6. Snap ring ND11</b>   | 38 |  |
| 6.1 Snap ring vials ND11, wide opening   |    |  |
| 6.2 Plastic snap ring micro-vials ND11   |    |  |
| 6.2.1 With PE snap ring cap transparent, 6 mm centre hole, hard or soft version  |    |  |
| 6.2.2 With PE snap ring cap blue, 6 mm centre hole, hard or soft version   |    |  |
| 6.2.3 With PE snap ring cap red, 6 mm centre hole, only hard version   |    |  |
| 6.2.4 With PE snap ring cap green, 6 mm centre hole, only hard version   |    |  |
| 6.2.5 With PE snap ring cap yellow, 6 mm centre hole, only hard version  |    |  |
| 6.2.6 PE Snap cap for snap ring vials ND11 with thinned penetration area   |    |  |
| <b>7. Screw neck ND13</b>  | 40 |  |
| 7.1 Screw neck vials ND13 and appropriate micro-inserts  |    |  |
| 7.2 PP screw seals ND13  |    |  |
| 7.3 Septa 12 mm  |    |  |
| 7.4 PP screw caps ND13   |    |  |
| 7.5 Special 2in1 kits  |    |  |
| <b>8. Shell vials</b>  | 42 |  |
| 8.1 Shell vials 1 mL and 4 mL and appropriate micro-inserts  |    |  |
| 8.2 Shell vials 2 mL and appropriate micro-inserts   |    |  |
| 8.3 PP shell vials 1 mL, 3 mL and 4 mL   |    |  |
| <b>Industrial selection card</b>   | 44 |  |
| <b>9. Headspace ND20 (ND18)</b>  | 46 |  |
| 9.1 Headspace-vials ND20 + ND18  |    |  |
| 9.2 Headspace vials + closures ND20 + ND18<br>(headspace compatibility chart)  |    |  |
| 9.3 Other crimp neck vials ND20 and crew neck vial ND18  |    |  |
| 9.4 Aluminum crimp seals ND20  |    |  |
| 9.4.1 Butyl seals  |    |  |
| 9.4.2 Butyl/PTFE seals (completely PTFE laminated)   |    |  |
| 9.4.3 Pharma-Fix seals (butyl/PTFE)  |    |  |
| 9.4.4 Silicone/PTFE seals (completely PTFE laminated)  |    |  |
| 9.4.5 Silicone/aluminum foil seals   |    |  |
| 9.4.6 Ultra high temperature (UHT) seal (silicone/PTFE)  |    |  |
| 9.4.7 Magnetic seals for SPME-Vial 20 09 1222 for CTC  |    |  |
| 9.4.8 Magnetic SPME seals for standard headspace-vials   |    |  |
| 9.5 Septa/stoppers 20 mm   |    |  |
| 9.6 Other combination seals for HS-neck/crimp neck ND20  |    |  |
| 9.6.1 Septa 19.5 mm  |    |  |
| 9.6.2 Headspace Wash kit   |    |  |
| 9.7 Magnetic universal screw seals ND18 precision thread vials 18 09 1306, 18 09 1310, 18 09 1307, 18 09 1311<br>(for CTC, Agilent, Shimadzu, Varian, Gerstel, PerkinElmer etc.) |    |  |
| 9.7.1 Septa 17.5 mm for magnetic universal screw seals ND18  |    |  |
| 9.7.2 Magnetic Universal screw seals for SPME application  |    |  |
| 9.8 PP screw seals ND18 for 18 09 0864   |    |  |
| 9.8.1 Septa 16 mm  |    |  |

|  |           |           |
|--|-----------|-----------|
| <b>10. Snap cap vials ND18 + ND22</b>  | <b>55</b> |           |
| 10.1 Snap cap vials ND18/ND22 and appropriate snap caps  |           |           |
| 10.2 PP micro centrifuge tubes   |           |           |
| <b>11. Screw neck ND24 (EPA)</b>   | <b>56</b> |           |
| 11.1 Screw neck vials ND24 (EPA)   |           |           |
| 11.2 PP screw seals ND24   |           |           |
| 11.2.1 PP screw seals ND24 (assembled)   |           |           |
| 11.2.2 UltraBond seals ND24  |           |           |
| 11.3 Septa 22 mm   |           |           |
| 11.4 PP screw caps ND24  |           |           |
| 11.5 Specially assembled EPA vials with screw seals ND24   |           |           |
| <b>Pharma/Biopharma selection card</b>   | <b>58</b> |           |
| <b>12. Standard, certified and high performance 96 and 384 positionblock systems</b>   | <b>60</b> |           |
| 12.1 Standard 96 block systems<br>( <i>standard well plates, plastic, non coated, non sterile, chromatography tested</i> )                                       |           |           |
| 12.1.1 Sealmats (WebSeals) block cover, non sterile<br>( <i>for 08 05 2898, 08 05 2899, 08 05 2900 and 08 05 2901, 08 05 2902</i> )                              |           |           |
| 12.2 Standard 384 block systems, square well<br>( <i>standard well plates, plastic, non coated, non sterile, chromatography tested</i> )                         |           |           |
| 12.2.1 Sealmats (WebSeals) block cover, non sterile<br>( <i>for 08 05 2904, 08 05 2905, 08 05 2906, 08 05 2903</i> )   |           |           |
| 12.3 Standard 96 block systems, well-plate, PP, certified<br>( <i>Standard well plates, plastic, non coated, non sterile</i> )                                   |           |           |
| 12.3.1 Sealmats (WebSeals) block cover, silicone, non sterile<br>( <i>for 08 05 2924, 08 05 2925, 08 05 2926, 08 05 2920 and 08 05 2921</i> )                    |           |           |
| 12.4. Standard 384 block systems, microplate, PP, square opening, certified<br>( <i>standard well plates, plastic, non coated, non sterile</i> )                 |           |           |
| 12.4.1 Sealmats (WebSeals) block cover, non sterile<br>( <i>for 08 05 2922 and 08 05 2923</i> )  |           |           |
| 12.5. Standard 96 block systems, micro-well-Plate, deep well microplate, glass coated round and square opening,<br>( <i>chromatography tested, non sterile</i> ) |           |           |
| 12.5.1 Sealmats (WebSeals) block cover, silicone/PTFE, non sterile<br>( <i>for 08 05 2927, 08 05 2914, 08 05 2915, 08 05 2917 and 08 05 2916</i> )               |           |           |
| 12.6. Standard 384 block systems, microplate, glass coated, square opening<br>( <i>chromatography tested, non sterile</i> )                                      |           |           |
| 12.6.1 Sealmats (WebSeals) block cover, non sterile<br>( <i>for 08 05 2918 and 08 05 2919</i> )  |           |           |
| 12.7 96 position block systems with glass Inserts, sealed individually   |           |           |
| 12.7.1 96 position block systems with glass Inserts, sealed individually<br>( <i>chromatography tested, non sterile</i> )  |           |           |
| 12.8 96 position block systems with glass Inserts, sealed with a sealmat block cover   |           |           |
| <b>13. Syringe filters</b>   | <b>64</b> |           |
| 13.1 ProFill white line syringe filters  |           |           |
| 13.1.1 13 mm syringe filters   |           |           |
| 13.1.2 25 mm syringe filters   |           |           |
| 13.2 Syringe filters with color code   |           |           |
| 13.2.1 17 mm syringe filters   |           |           |
| 13.2.2 25 mm ProFill syringe filters   |           |           |
| 13.2.3 30 mm syringe filters   |           |           |
| <b>14. HPLC certified plastic disposable syringes with Luer Lock and Luer Slip</b>   | <b>66</b> |           |
| 14.1 Plastic disposable syringes with <i>Luer Lock</i>   |           |           |
| 14.2 Plastic disposable syringes with <i>Luer Slip</i>   |           |           |
| <b>15. GC injection port septa</b>   | <b>67</b> |           |
| 15.1 High performance, low bleed septa   |           |           |
| 15.2 Universal, long-life GC-septa   |           |           |
| <b>16. GC capillary connectors</b>   | <b>68</b> |           |
| <b>17. Crimping tools</b>  | <b>72</b> |           |
| 17.1 Manual crimping tools   |           |           |
| 17.2 Manual decapping tools  |           |           |
| 17.3 Stainless steel cleanroom crimping tools  |           |           |
| 17.3.1 Manual crimping tools   |           |           |
| 17.3.2 Manual decapping tools  |           |           |
| 17.4 Pneumatic Airgo crimpler  |           |           |
| 17.5 Pneumatic hand-held crimping tool   |           |           |
| 17.5.1 Crimping heads for pneumatic hand-held crimping tool  |           |           |
| 17.5.2 Decapping heads for pneumatic hand-held crimping tool   |           |           |
| 17.6 Electronic crimpers and decappers   |           |           |
| 17.6.1 Electronic crimping tools   |           |           |
| 17.6.2 Electronic decapping tools  |           |           |
| 17.6.3 Replacement battery for electronic crimpers and decappers   |           |           |
| 17.7 Electronic high power crimp station   |           |           |
| 17.7.1 Programmable electronic high power crimp station ( <i>basic tool</i> )  |           |           |
| 17.7.2 11 mm and 20 mm programmable electronic high power crimp station  |           |           |
| 17.7.3 Crimping heads for programmable electronic high power crimp station   |           |           |
| 17.7.4 Decapping heads for programmable electronic high power crimp station  |           |           |
| <b>18. Vial racks and storage boxes</b>  | <b>74</b> |           |
| 18.1 Vial racks  |           |           |
| 18.2 PP storage boxes  |           |           |
| 18.2.1 PP storage boxes for 1.5 mL sample vials  |           |           |
| 18.2.2 PP storage boxes for 4 mL sample vials  |           |           |
| 18.2.3 PP storage boxes for 5 mL, 10 mL and 20 mL headspace vials  |           |           |
| 18.2.4 PP storage boxes for 20 mL, 30 mL and 40 mL EPA-vials with cover  |           |           |
| <b>19. Screw neck vials for storage purposes</b>   | <b>76</b> |           |
| 19.1 Screw neck vials for storage purposes   |           |           |
| 19.2 PP screw seals for Storage vials  |           |           |
| 19.2.1 PP screw seals ND8 ( <i>for 11 09 0210 and 11 09 0259</i> )   |           |           |
| 19.2.2 PP screw seals ND13 ( <i>for 13 09 0222 and 13 09 0280</i> )  |           |           |
| 19.2.3 PP screw seals ND15<br>( <i>for 15 09 1703, 15 09 1774, 15 09 1657, 15 09 1800</i> )  |           |           |
| 19.2.4 PP screw seals ND18 ( <i>for 18 09 1704</i> )   |           |           |
| 19.2.5 PP screw seals ND20 ( <i>for 20 09 1705</i> )   |           |           |
| 19.2.6 PP screw seals ND24 ( <i>for 24 09 0589, 24 09 0927, 24 09 0839, 24 09 0923, 24 09 0402, 24 09 0928, 24 09 1089, 24 09 1090</i> )                         |           |           |
| <b>20. Special products</b>  | <b>78</b> |           |
| 20.1 Special vials   |           |           |
| 20.2 Centrifuge tubes  |           |           |
| 20.3 Special seals   |           |           |
| 20.4 Special septa   |           |           |
| 20.4.1 Septa for Schott screw caps   |           |           |
| 20.4.2 Septa 13 mm   |           |           |
| <b>21. Special services</b>  | <b>80</b> |           |
| <b>Product names, abbreviations, explanations, structure article description</b>   |           | <b>81</b> |
| <b>Alphabetical index</b>  |           | <b>82</b> |
| <b>Numerical index</b>   |           | <b>84</b> |
| <b>Autosampler compatibility chart</b>   |           | <b>85</b> |
| <b>Chemical resistance reference chart</b>   |           | <b>92</b> |
| <b>Chemical compatibility chart for ProFill filter</b>   |           | <b>94</b> |
| <b>Overview on 1:1 drawings of all standard sample vials/drawings of caps</b>  |           | <b>96</b> |

# Preface

Dear customer,

This catalogue provides an overview to a wide range of customized chromatography vials, caps, tools, well plates and mats offered by Thermo Fisher Scientific. These are available to channel partners who wish to develop and position their own branded portfolio offering to end point customers.

Products can be customized in several ways, including:

- Packaging
- Label customization
- Vial and cap kit combinations
- Cap and septa combinations
- Certification

Your Thermo Fisher Scientific team



## How to use this catalog

### You know the manufacturer/model of your customer's instrument/autosampler

Go to the *autosampler compatibility chart* on the catalogue and look for suitable vials. The chapter and page indications will lead you to the appropriate vials. Suitable micro-inserts, seals, septa and caps for these vials will follow in the subsequent chapters. In case you don't find the model in the *autosampler compatibility chart*, please contact us. In our library we have even more information on vial suitability for the various instruments on the market.

As in headspace the correct identification of vial and closure types is extremely difficult due to the various technical designs, a special headspace compatibility chart has been created for this application in *chapter 9*. While you can take the suitable vial type for the different instrument manufacturers from the upper part of the chart, you'll find the appropriate recommended closures in the middle section. The various cap types that have to be considered are color-coded.

At the bottom of the page a break-down of the indicated part numbers according to the color-coded cap types and the different septa materials is listed. For better illustration of the septa type you'll find 20 mm septa for crimp caps- and 17.5 mm septa for magnetic precision thread caps- photographs and article descriptions.

### You have a sample from your customer of the vial requested

Go to the actual size drawings at the end of the catalogue and look for identical vials. The chapter indication will lead you to the appropriate vials. Suitable micro-inserts, seals, septa and caps for these vials will follow in the subsequent chapters.

### You know the diameter of your customer's septa, vial, seal, etc.

The first two digits of our article numbers are indications of the diameter. Go to the *numerical index* and look for articles starting with the digits of your diameter. The 3<sup>rd</sup> and 4<sup>th</sup> digits are indications of the article group, e.g. 09 for vials, 02 for septa, etc. (List of our article groups can be taken from the annex of the *numerical index*).

### You know a key description of your customer's requested product

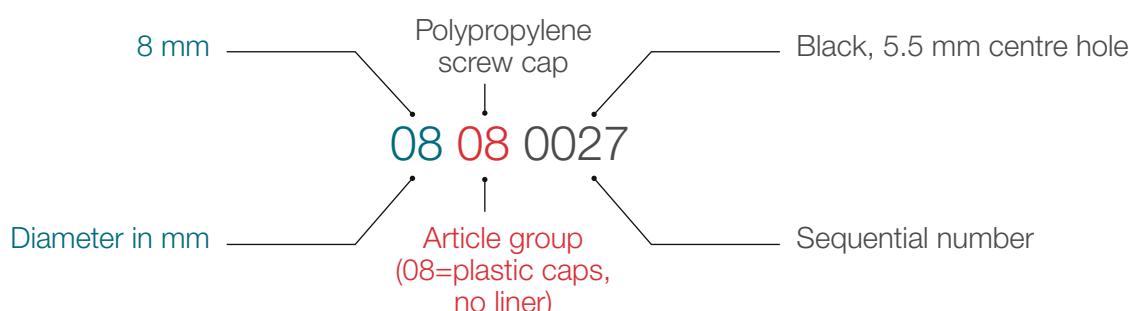
Go to the *alphabetical index* and look, if the key description is included there.

### Handling of the catalogue

- Each chapter includes all products that belong together, i.e. vials (e.g. all types of short thread vials or micro-vials), suitable micro-inserts for these vials, appropriate seals for these vials (e.g. all types of short thread seals) and – if available – individual septa/caps.
- The catalogue starts with the vials that have the smallest nominal diameter, continuing with increasing nominal diameter. Other accessories like vial racks, syringe filters, GC-septa and crimpers can be found more towards the end of the catalogue.
- All kinds of listings (product names, alphabetical index, numerical index, annex of numerical index, autosampler compatibilities, actual size drawings of all standard glass articles, drawings of caps etc.) can be found at the very end of the catalogue. The only exception is the headspace compatibility chart which you can take from *chapter 9*.

## Article number system

Our 8 digital article number comprises the following indications:



# Company profile

Thermo Fisher Scientific offers a complete range of consumables for GC, HPLC and headspace analysis. This comprises vials, septa, seals, filters, crimpers, and other accessories. In addition to all standard items for standard instruments in the chromatography market of vials, septa and combination seals according to customer's specifications. As a DIN EN ISO 9001:2015 certified company we devote ourselves to complete customer satisfaction which we define in our business policy as follows:

- to supply continuously high quality products
- to offer cost effectiveness
- to grant consequent adherence to delivery dates.
- to develop innovative and market-orientated products
- to support promptly and efficiently our customers in all respects they may require

## Quality



## Service



- DIN EN ISO 9001:2015 certified company.
- Raw materials for production of all products.
- Very strict requirements on the hygienic conditions under which the products are being manufactured.
- Opto-electronic quality controls during manufacturing process, in-process controls and final QC inspections.
- For quality control of goods received and for final QC inspection of all manufactured products state-of-the-art test control units, like profile projector and a measuring device for penetration forces for septa, are being used.
- Measuring device to determine penetration forces for septa.
- All quality controls are documented and reports can be requested in German or English.
- Batch numbers guarantee a 100% traceability.
- Upon request customer specific labeling or direct deliveries.
- Cost-free samples for testing purposes.
- Annual call-off orders can be stocked for our customers.
- Pre-sealed and pre-installed combinations available.

## Production



### Glass production

- Vials are almost all made out of 1<sup>st</sup> hydrolytic class glass.
- Opto-electronic devices on the glass machines measure within parts of a second, whether the manufactured vial meets the specifications.
- Besides this 100% control, manual in-process controls and a final inspection according to DIN/ISO standards assure further product safety.
- Packaging of the vials in a cleanroom provides a high standard of cleanliness for chromatography which ensures a correct and reliable analysis.

### High performance punching presses

- Contamination-free septa production due to precision dies working without any punching agents or lubricants and complete coverage of the punching area.
- Sensor system for detecting and isolating defects in the roll.
- Closed tunnel system ensures maximum hygiene for the ready punched septa.
- Besides high productivity and excellent raw material usage the high performance automatic punching presses offer outstanding dimensional stability as well as a continuous high quality.

### High performance slitting automate

- Fully automatic slitting process with high productivity
- High performance slitting automate guarantees excellent and continuous quality of positioning the slit as well as size accuracy
- Gentle slitting process for the liner
- Opto-electronic monitoring of the complete process, automatic selection of defective parts
- Variability of the slitting geometry – different forms of slitting and diameter possible



### Lining/assembling automates

- Fully automatic assembling of liners and caps.
- Various color sensors check the correct side-orientation of the liner at various stations of the assembling process, to guarantee that the PTFE lamination turns towards the sample.
- Automatic assembly prevents any contamination of the closure by skin fat or sweat, as it could happen in case of manual assembly.
- Special productions of liners and closures according to customer specifications can be carried out, as well as special packaging (e.g. other packaging quantity, further printed labels etc.).

### Video inspection system

- Fully automatic inspection unit to control the assembled closures.
- 100% control of caps and liners through a highly developed high-speed-color-camera-system, defective parts are automatically separated.
- More than 1.200 closures per minute are controlled by the inspection unit according to the given article specification.
- All components of the inspection unit are made of stainless steel and guarantee a contamination-free process run.

### Packaging automates

- Packaging process is done according internal defined room conditions, this means there are no wooden pallets or cardboards allowed, all employees wear specific clothing, nearly all parts of machines are under glass cover etc.
- Closures are automatically counted and packed. Counting process is done by an opto-electronic counting unit, which guarantees a 100% quantity accuracy.
- Furthermore, in process controls are done by the employees as well as quality people for further product safety. All controls are documented on the assembly forms, as well as all important dates of the production process.

## Innovation

Thermo Fisher Scientific develops products that meet today's requirements of the chromatography market with regard to instrument/application suitability, convenience and price-performance ratio.

Additionally, we closely collaborate with leading instrument manufacturers to innovate our product portfolio. The below sections offer a summary of our latest catalogue additions:



### 1.1 mL microliter vials, conical, with round glass foot, 32 x 12 mm, clear and amber

"Vase" vials are designed as alternative to fused insert and/or total recovery vials. This design offers on one hand a total max. Volume of 1.1 mL by parallel offering a very small residual volume of only 4  $\mu$ L. A wide range of common sample volumes can be used without changing the vial.

- Cost efficient alternative to a total recovery vial
- Self standing conical microsampling vial
- Designed for use with nearly every autosampler on the market



### Plastic vials, glass vials and Inserts with spring

1.5 mL PE and 0.6 mL micro sampling PE vials; 2.5 mL PP vials; glass insert with spring for 4 mL vials; 1.1 mL Total microliter short thread vial ND9 with patch.

- Plastic vials offer low binding for proteins and peptides and are the best choice for ion chromatography. Specially made for customers concerned about broken glass.
- New ultra low bleed PE basic resin for trouble free work, even with higher buffer concentrations or a higher polar organic solvent content
- Reduced volume 4 mL PE vial for better recovery
- Micro insert for 4 mL vials with spring for more convenience
- Total microliter vials with patch and slightly different funnel geometry for better guidance of liquid into the funnel



### Well plates for low volume applications in HPLC and UHPLC and new mid height plates and mats

The first chromatography tested and certified low volume 96 well plate for low volume high resolution chromatographic applications.

- Total volume of only 100  $\mu$ L, working volume from 5-80  $\mu$ L, for valuable samples
- Made from ultra-low bleed PP, the plate with nearly no extractables
- new mid height plates for optimized quotient of space, height and volume
- new cost efficient mats in big packs



### Caps, closures and plugs for specific applications and with outstanding features

- PP ND9 and PE 11 mm snap closures without septum but thinned penetration area, very cost efficient and tight for 100% water samples or with low organic solvent concentrations of MeOH or ACN
- Lamella plugs for 1 mL shell vials. Lamellas guarantee a perfect and tight fit for all types of 1 mL shell vials and provide a two times higher tightness due to the two sealing "rings"



### Headspace septa with thinned penetration area for SPME and 20 mm bromo butyl and freeze drying rubber stopper

- Low bleed silicone/PTFE septum with thinned penetration area, where the thinned area still contains a silicone layer for resealing after needle extraction; optimized for thin needles and SPME fibres
- 20 mm bromo butyl rubber stopper with excellent resistance to permeation by water and oxygen
- 20 mm freeze drying stopper with improved geometry for reversion resistance



### Wash kit for RSH or other PAL/CTC GC autosampler and new PP storage boxes for 2 mL vials for 100 vials/box in different colors; ProFill white line syringe filters in 13 and 25 mm diameter

For small sample volume filtration the new 13 mm White Line filter are ideal. They all offer a clear readable indication of the membrane and pore size and provide a high pressure stability, tested for 12 bar. Wash vials on GC autosamplers are commonly left open or have caps that are difficult to apply. Without the caps there is a risk of the solvent being lost and contamination.

- Improved sealing, less evaporation, no contamination
- Convenient “all in one” solution
- The new PP storage boxes offer for the first time a freezer friendly and stable solution for 100 1.5 mL autosampler vials, with lid and shed



### PP micro and 15/50 mL centrifuge tubes

Normal centrifuge tubes are for bio samples and analytes in water only. These tubes here are chromatography certified and can be used for LC applications with ACN and MeOH without any risk for extractables.

- 0.5 mL, 1.5 mL and 2 mL with safe click close function, chromatography certified, number scale and writing patch
- 15 mL and 50 mL PP centrifuge tubes with screw cap, chromatography certified, cap centering function, number scale and writing patch



### 5 selection cards for 5 different fields of business

Not every chromatographer has need for the same vial and closure or the same sample handling container. The here shown selection represents the most used and helpful autosampler products for this segment of the business. The selection has been made by experts, in order to meet the special requirements of this segment and the connected challenges of the “to be analyzed” samples and molecules. It might not be complete, but represents 90% of the core products.

# Technical information

## Vials

In chromatography a broad variety of glass or plastic vials are used as sample containers for analysis usage. As they are mainly used within autosamplers or any other automatic instrument, strict obedience of all dimensions is crucial for a trouble-free run. Besides these physical properties the vials also have to fulfill requirements regarding inertness and cleanliness, as otherwise analysis results may be incorrect. Thermo Fisher Scientific consider the physical and chemical demands in their production process by various implementations:

The majority of our all vials are made out of 1<sup>st</sup> hydrolytic class glass. First hydrolytic class glass is very hard and has a low expansion coefficient even at high temperature variations. It shows an excellent chemical resistance to acidic and neutral solutions, and even to alkaline solutions due to its relatively low Alkali content. higher density of the glass surface offers a higher hydrolytic resistance. clear glass of 1<sup>st</sup> hydrolytic class is differentiated by 33 expansion (type 1, class A) and 51 expansion glass (Type 1, Class B), whereas amber is generally worldwide only available as 51 expansion glass. The indicated lower expansion coefficient of 33 implies that this harder clear glass has to be processed at higher temperatures. These amount to approx. 1,200°C for 33 expansion glass in comparison to only approx. 1,000°C for glass of 51 expansion. In the USA typically clear glass in 33 expansion and amber glass in 51 expansion is used, whereas in Europe solely 51 expansion glass is processed. From a quality point of view both types of glass are equally suitable for usage in chromatography, as they both are glasses of 1<sup>st</sup> hydrolytic class.

All vials that carry a CleanPack label on the front side of the PP-box have been packed in a certified cleanroom after having passed the annealing oven at approx. 600°C.

### Certified vials and closures

To ensure we can offer the best possible customer experience, we have set high internal quality standards at our manufacturing site.

The below representation is design to help our customers choosing the product that best fits their needs, whilst offering an overview of our quality requirements:



### Specification certified

This is obtained by the following measures:

- During the manufacturing process opto-electronic devices at the machines check within fractions of a second, if the processed vials meet the physical specifications (dimensions, etc.). In case of mismatch the vial is automatically rejected.
- 100% automatic control, manual in-process controls as well as a final inspection according to DIN/ISO standards further ensure functionality and perfect fit in the instrument.
- Regular functional tests further ensure that the vial not only fits in the instrument, but also all components that might be connected to it, such as micro-inserts, seals, etc. A correct and reproducible analysis can only be carried out, if the whole unit of the vial (micro-insert) and closure correctly match with each other and achieve a tight seal.

### HPLC and GC certified kits

HPLC and GC certified kits are tested on 15 parameters. Here a HPLC/UV and GC/MS-test of the vial/closure combination on blank values and contaminations is done in a reality-near procedure.

- The batch-specific test certificate with the HPLC and GC-Chromatograms can be attached upon request.
- The HPLC and GC certified kits are delivered completely shrink-wrapped for reasons of originality, purity and transport safety. This means an additional safety for the end user.
- Available as 9 mm short thread vial in clear and amber with suitable closure.
- Upon request further HPLC and GC certified vial kits are available.

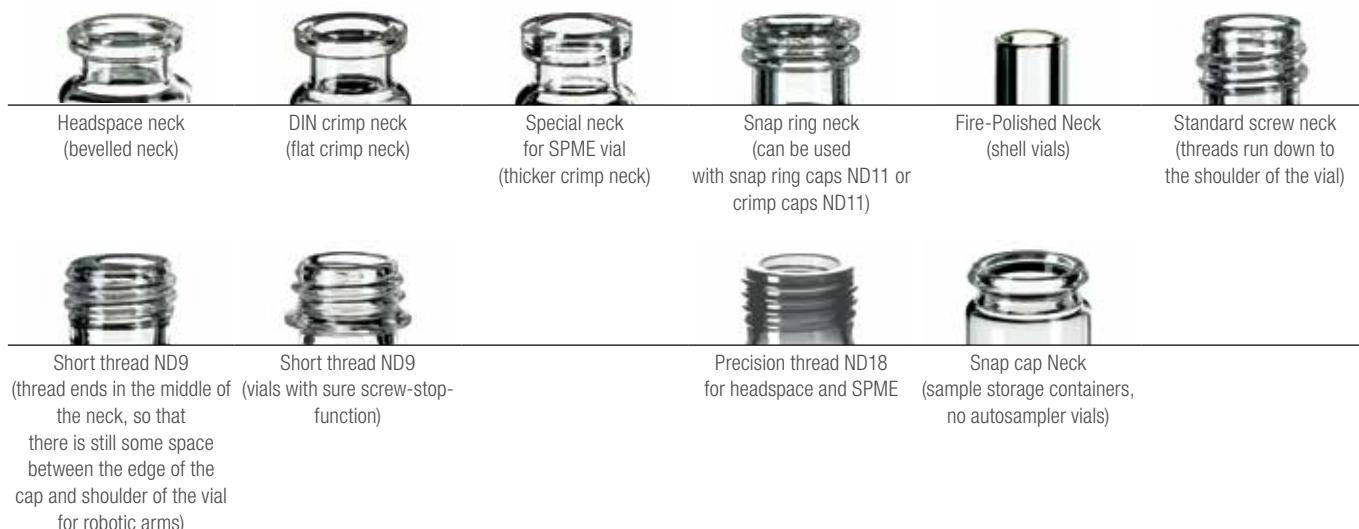
### LC/MS and GC/MS certified kits

The LC/MS and GC/MS certified kits represent our premium range of certified products. Each lot of the vial/closure combination has been tested by LC/MS and GC/MS on traces of blank values and contaminations.

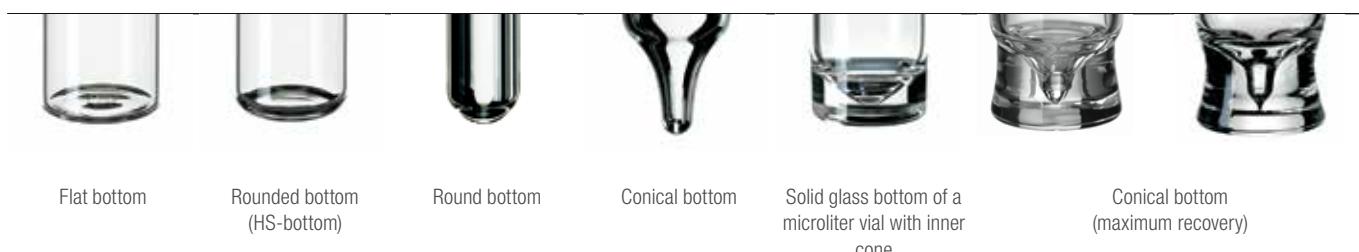
- Available as clear and amber 9 mm short thread vial in the SureStop version with the sure-stop function for the lowest evaporation rate of all autosampler vials.
- Additionally the glass surface of these specific SureStop vials provides very low adsorption tendencies for all types of polar compounds; in fact a lot lower as for all other vials of 1st hydrolytic class glass (without surface treatment).
- The closure contains soft ultra low bleed (Ultra high performance) silicone septum with PTFE layer, optimized for ultra trace analysis.
- The batch-specific test certificate with the MS-Chromatograms can be handed out on request.
- The LC/MS and GC/MS certified kits are delivered completely shrink wrapped in order to assure originality, purity and transport safety.
- Upon request further LC/MS and GC/MS certified vial kits are available.

In order to visualize the most important characteristics that differentiate the different types of vials, we show below some drawings helping you to identify a vial:

### Design of the neck



### Design of the bottom



Besides standard glass vials Thermo Fisher Scientific also supply some silanized glass products. Silanized glass products are used to reduce the adsorption of polar compounds onto the surface of the glass container (e.g. protein analysis). Some compounds like amino-acids, proteins or phenols tend to react with the glass, and the silanization process prevents this by deactivating the glass surface.

In some specific applications like atomic absorption, water and protein analysis, capillary electrophoresis, etc., even plastic vials have to be used. Thermo Fisher Scientific also offer a broad range of plastic vials and plastic micro-vials of different materials (PP, TPX).

In case the application requires pre-sealed vials (e.g. vials that are either already crimped or screwed), as for example in the tobacco industry, we can also supply you with any type of vial and closure already assembled.

However, please note that the vials have to be taken out of the CleanPack packaging for the sealing process and thus cannot be called "cleanroom" packed anymore.

EPA vials can be supplied with or without certificate of cleanliness depending on the consumer's requirements. Furthermore EPA vials can also be supplied pre-assembled with their seals.

## Seals

Seals are the assembled combination of a cap and a septa. To carry out a correct analysis, it is important that besides the vial the seal is also inert and uncontaminated. Thermo Fisher Scientific assemble and pack their seals fully automated according to internally defined room conditions. Thus it is guaranteed that they are not contaminated by human contact as it would be in case of manual assembly. Photocells check the side-orientation of the liner, so that it is ensured that the PTFE lamination is always directed towards the sample to build an inert barrier between sample and carrier material of the septa. A gauge control ensures that not more or less than one septa is installed. The final seals are automatically counted – and not weighed – by automates to guarantee quantity obedience. They are packed in tamper-proof evident zip-lock bags that allow easy identification of the content due to the transparent PE material. The zip-lock enables resealing of the bag to avoid any contamination of the closures during consumption. The batch number of the manufactured seal is printed on each PE-bag for traceability.

UltraBond seals are closures where the cap and the septa form an inseparable unit without the use of any glue or adhesive which are not allowed in chromatography products. This firm connection is achieved by a patented process changing the molecular structure of the cap and the septa surface, so that they form a unit. This process ensures that the septa is not pushed into the vial during penetration, even if the needle is very thick and blunt. Examples for such UltraBond seals are 24 mm screw seals for EPA vials or 9 mm short thread UltraBond seals for short thread vials.

Different closure techniques and/or application requirements necessitate certain caps. In order to visualize the different types of caps, please see the photos below:



## Septa

The right choice of septa depends on the application. Almost all septa are laminated on one side with PTFE, which has a high chemical resistance and forms an inert barrier between sample and carrier material of the septa. The carrier materials have different physical and chemical properties, such as temperature resistance, resealability properties, cleanliness, hardness, thickness, etc.

The individual conditions of the customer's application aim at the specific characteristics of the carrier material, e.g.:

| Multiple injection?                     | Temperature?                   | Thin, fragile needle? | Blunt, thick needle? | Critical analysis?                                 | Low coring?   |
|---|--------------------------------|-----------------------|----------------------|--|---|
| Good resealability properties necessary | -40°C up to 120°C              | -40°C up to 110°C     | -60°C up to 200°C    | Soft and thin septa required<br>e.g. silicone/PTFE | Very clean liner required<br>Silicone/PTFE septa                                    |
| Natural rubber/TEF                      | Natural rubber/TEF; butyl/PTFE | RedRubber/PTFE        | Silicone/PTFE        | Slit/pre-cut liner as penetration aid (HPLC)       | Both sided PTFE laminated liners required<br>PTFE/silicone/PTFE<br>PTFE/ butyl/PTFE |

In order to visualize the most common liners on the market, please see photos below. However, please note that colors of the liners are no exact indication for the identification of a liner material.



# Environmental selection card

This selection targets one customer group with a lot of different samples in different matrices. LC and GC is used at 25% HPLC and 75% GC, with a focus on non polar solvents. They deal with small molecules chromatography and the analyte concentration varies (often very low). The matrix can be water, soil, sludge, recycling, fuel, oil, air etc.

In this chapter you will find the most important parts from the following product classes:

- Screw and crimp vials and closures
- Plastic, EPA and microsampling vials
- Headspace vials and closures
- Sample handling tools and storage



## LC/MS GC/MS certified kits



### 11 40 3196

LC/MS and GC/MS certified vial kit:  
1.5 mL short thread Thermo Scientific™  
SureStop™ vial,  
32 x 11.6 mm,  
clear glass, wide opening,  
with overwind-barrier;  
ultra high performance seal:  
PP short thread cap,  
blue, centre hole;  
silicone darkblue-translucent/PTFE natural,  
35° shore A,  
1.0 mm



### 11 40 3197

LC/MS and GC/MS certified vial kit:  
1.5 mL short thread SureStop vial,  
32 x 11.6 mm,  
amber glass, wide opening,  
with overwind-barrier;  
ultra high performance seal:  
PP short thread cap,  
blue, centre hole;  
silicone darkblue-translucent/PTFE natural,  
35° shore A,  
1.0 mm



### 11 40 2556

HPLC/GC certified vial kit:  
1.5 mL short thread vial,  
clear glass,  
1<sup>st</sup> hydrol. class, label;  
UltraClean closure:  
9 mm PP short thread cap,  
blue, centre hole;  
Silicone white/PTFE red,  
55° shore A,  
1.0 mm



### 11 40 2557

HPLC/GC certified vial kit:  
1.5 mL short thread vial,  
amber glass,  
1<sup>st</sup> hydrol. class, label;  
UltraClean closure:  
9 mm PP short thread cap,  
blue, centre hole;  
silicone white/PTFE red,  
55° shore A,  
1.0 mm

## 9 mm screw thread vials and closures



### 11 09 0519

1.5 mL short thread vial,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines



### 11 09 0520

1.5 mL short thread vial,  
32 x 11.6 mm,  
amber glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines



### 11 09 2746

1.5 mL short thread SureStop  
vial,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
with overwind-barrier



### 09 15 1819

9 mm combination seal:  
PP short thread cap,  
blue, with centre hole;  
RedRubber/PTFE beige,  
45° shore A,  
1.0 mm



### 09 15 0838

UltraClean closure:  
9 mm PP short thread cap,  
blue, centre hole;  
silicone white/PTFE red,  
55° shore A,  
1.0 mm



### 09 15 0869

9 mm combination seal:  
PP short thread cap,  
blue, centre hole;  
silicone white/PTFE blue,  
55° shore A,  
1.0 mm,  
slit

## Crimp vials and closures


**11 09 0476**

1.5 mL crimp neck vial,  
32 x 11.6 mm, clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 09 0477**

1.5 mL crimp neck vial,  
32 x 11.6 mm, amber glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 03 0209**

11 mm combination seal:  
aluminum cap, clear lacquered,  
centre hole;  
natural rubber red-orange/TEF  
transparent, 60° shore A, 1.0 mm

**11 03 1875**

11 mm combination seal:  
aluminum cap, clear lacquered,  
with centre hole;  
red rubber/PTFE beige,  
45° shore A, 1.0 mm

**11 03 0247**

UltraClean closure:  
11 mm aluminum cap, clear  
lacquered,  
centre hole;  
silicone white/PTFE red,  
45° shore A, 1.3 mm

## Headspace vials and closures


**18 09 1307**

20 mL precision thread  
headspace-vial,  
75.5 x 22.5 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
rounded bottom  
(for magnetic screw caps)

**18 03 1309**

UltraClean closure:  
18 mm magnetic  
universal screw cap,  
silver, centre hole;  
silicone transparent blue/PTFE white,  
45° shore A,  
1.3 mm

**20 09 0873**

20 mL headspace-vial,  
75.5 x 22.5 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
DIN crimp neck,  
long neck,  
rounded bottom

**20 03 0142**

UltraClean closure:  
20 mm aluminum cap,  
plain, centre hole;  
silicone transparent blue/PTFE white,  
45° shore A,  
3.0 mm

**20 03 0975**

UltraClean closure:  
20 mm magnetic cap,  
gold lacquered, 8 mm centre hole;  
silicone transparent blue/PTFE  
transparent,  
45° shore A,  
3.0 mm

## EPA/storage


**24 09 0589**

20 mL EPA crew neck vial,  
57 x 27.5 mm,  
clear glass,  
1<sup>st</sup> hydrol. class

**24 09 0402**

40 mL EPA crew neck vial,  
95 x 27.5 mm,  
clear glass,  
1<sup>st</sup> hydrol. class

**24 15 1163**

24 mm combination seal:  
PP screw cap,  
white, centre hole;  
silicone white/PTFE beige,  
45° shore A, 3.2 mm,  
EPA-quality

## Racks/tools


**11 06 0006**

11 mm crimper

**20 06 0008**

20 mm crimper

**12 21 2420**

PP storage box for 1.5 mL (1.8 mL, 2 mL) vials or 2 mL shell vials, blue, with cover (130 x 130 x 45 mm), 81 cavities with alphanumeric coding of all 4 margins as well as the cavities at the bottom

## Plastic vials


**11 19 1205**

1.5 mL PP  
short thread vial,  
32 x 11.6 mm,  
transparent,  
with filling lines

**11 19 1706**

0.7 mL PP  
short thread micro-vial,  
32 x 11.6 mm,  
transparent

**11 19 0932**

0.3 mL PP  
short thread micro-vial,  
32 x 11.6 mm,  
transparent

## Microsampling vials


**11 09 2357**

Short thread vial with  
integrated micro-insert,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
"Base bonded"

**11 09 2656**

Short thread vial with  
integrated micro-insert,  
32 x 11.6 mm,  
amber glass,  
1<sup>st</sup> hydrol. class,  
"Base bonded"

**11 09 0620**

1.1 mL microliter  
short thread vial ND9,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class

# 1. Crimp neck ND8



The vials are preferentially used on instruments of the following manufacturers: Agilent, Beckman, Carlo Erba, CTC, Fisons, PerkinElmer, Shimadzu, Thermo Scientific, VWR (Merck)/Hitachi, etc.

Broad selection of crimp neck vials ND8 available: crimp neck vials and micro vials ND8 can be closed with 8 mm aluminum caps, 9 mm PE-caps or with 8 mm push-on caps. However, micro-vials often need an adapter to run in the autosampler.

They often have a conical bottom shape, so that they cannot stand by themselves, but need an adapter.



## 1.1 Crimp neck vials and micro-vials ND8



| Part. no.                | 08 09 0405  | 08 09 0406  | 08 09 0284  | 08 09 0845  | 08 09 0953  |
|--------------------------|---|---|---|---|---|
| Description              | 0.7 mL<br>crimp neck vial,<br>40 x 7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 0.7 mL<br>crimp neck vial,<br>40 x 7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 0.8 mL<br>crimp neck vial,<br>30 x 8.2 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 1.2 mL<br>crimp neck vial,<br>40 x 8.2 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 1.2 mL<br>crimp neck vial,<br>40 x 8.2 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class |
| TFVol. (mL)              | 0.9   | 0.9   | 0.9   | 1.1   | 1.1   |
| UsVol. (mL)              | 0.8   | 0.8   | 0.8   | 1.00  | 1.00  |
| MWVol. (µL)              | 40  | 40  | 40  | 50  | 50  |
| Res. vol. (µL)           | <11   | <11   | <11   | <20   | <20   |
| 10 x 100 pcs. per PP-box |   |   | 100 pcs. per PP-box   |   |   |



| Part. no.                | 08 09 0276  | 08 09 0606   | 08 09 0305   | 08 09 0258   | 08 09 1080   |
|--------------------------|---|--|--|--|--|
| Description              | 0.3 mL<br>micro-vial,<br>31.5 x 5.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>round bottom | 0.2 mL<br>micro-vial,<br>31.5 x 5.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>conical | 0.6 mL<br>micro-vial,<br>40 x 7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>conical | 0.6 mL<br>micro-vial,<br>40 x 7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>conical | 0.4 mL<br>micro-vial,<br>30 x 7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>conical |
| TFVol. (mL)              | 0.35  | 0.26   | 0.64   | 0.64   | 1.3  |
| UsVol. (mL)              | 0.3   | 0.2  | 0.6  | 0.6  | 1.05   |
| MWVol. (µL)              | 30  | 25   | 25   | 25   | 25   |
| Res. vol. (µL)           | <6  | <3   | <3   | <3   | <3   |
| 10 x 100 pcs. per PP-box |   |  |  |  |  |

## 1.2 Aluminum crimp seals ND8

### 1.2.1 Natural rubber/TEF and red rubber/PTFE seals

- Temperature resistant from -40°C up to 120°C for natural rubber resp. up to 110°C for RedRubber.
- Natural rubber harder to penetrate with more fragmentation during penetration than RedRubber.
- Natural rubber ideal for multiple injections due to high resealability, but not as clean as the synthetic RedRubber.



| Part. no.           | 08 03 0451   | 08 03 1935                             | 08 03 2042           |
|---------------------|--|--|----------------------|
| Description cap     | Aluminum cap clear lacquered, 4 mm centre hole                                     |  |                      |
| Septa material      | Nat. rubber red-orange/TEF transparent<br>approved instrument manufacturer quality | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige |
| Durometer           | 60° shore A  | 60° shore A                            | 45° shore A          |
| Thickness           | 1.0 mm   | 1.0 mm                                 | 1.0 mm               |
| 100 pcs. per PE-bag |  |  |                      |

### 1.2.2 Silicone/PTFE seals

- Temperature resistant from -60°C up to 200°C.
- Preferably only for single injections due to low resealability properties.
- Different hardnesses (durometers) to meet requirements of the needle regarding penetration.
- Much cleaner than natural rubber or RedRubber.
- Silicone liners with PTFE on both sides for less coring during penetration.



| Part. no.           | 08 03 0249                                     | 08 03 0165                                   | 08 03 0884                    | 08 03 0113                           | 08 03 1156                            |
|---------------------|--|--|-------------------------------|--------------------------------------|---------------------------------------|
| Description cap     | Aluminum cap clear lacquered, 4 mm centre hole |  |                               |                                      |                                       |
| Septa material      | Silicone white/PTFE red<br><i>UltraClean</i>   | Silicone cream/PTFE red<br><i>UltraClean</i> | Silicone dark blue/PTFE white | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE red,<br>with slit |
| Durometer           | 45° shore A                                    | 55° shore A                                  | 45° shore A                   | 45° shore A                          | 45° shore A                           |
| Thickness           | 1.3 mm   | 1.5 mm                                       | 1.3 mm                        | 1.0 mm                               | 1.3 mm                                |
| 100 pcs. per PE-bag |  |  |                               |                                      |                                       |

### 1.2.3 Other crimp seals

- PTFE is very inert and temperature resistant, however, problems with leakage due to the inflexibility and thinness of the material; only for single injections; nearly no press fit in caps; mainly for uncritical HPLC analysis.



| Part. no.           | 08 03 0268  |
|---------------------|---|
| Description cap     | Aluminum cap,<br>clear lacquered,<br>4 mm centre hole |
| Septa material      | PTFE virginal   |
| Durometer           | 53° shore D   |
| Thickness           | 0.25 mm   |
| 100 pcs. per PE-bag |   |

### 1.3 Other combination seals for crimp neck ND8

- Push-on cap (08 08 1675) with thinned penetration point made of Polyethylene for crimp neck vials and micro-vials ND8.
- Inexpensive alternative to crimp caps for uncritical analyses, as it does not contain any septa, but only has a thinner penetration point.



| Part. no.           | 08 08 1675                        | 09 15 0753  | 09 15 0756  |
|---------------------|-----------------------------------|---|---|
| Description cap     | PE push-on cap,<br>blue           | PE-Cap, transparent,<br>9 x 5.9 mm,<br>4 mm centre hole | PE-Cap, transparent,<br>9 x 5.9 mm,<br>4 mm centre hole |
| Septa material      | with thinned<br>penetration point | Nat. rubber red-orange/TEF<br>transparent               | Silicone white/PTFE red                                 |
| Durometer           |                                   | 60° shore A   | 45° shore A   |
| Thickness           |                                   | 1.3 mm  | 1.3 mm  |
| 100 pcs. per PE-bag |                                   |   |   |

Further crimp seals ND8 or combination seals for crimp neck ND8 are available upon request

## 2. Screw neck ND8

The vials are preferentially used on instruments of the following manufacturers: Beckman, CTC, Gilson, Knauer, Shimadzu, Spark, Varian, VWR (Merck)/Hitachi, etc.

- Standard vials for GC and HPLC.
- Specially suitable for VWR (Merck)/Hitachi instruments (Articles 11 09 0210, 11 09 0259, 05 09 0129, 08 15 0460, 08 08 0027, 08 02 0177, 08 02 0039).
- Broad range of micro-inserts.
- Vials and seals also available as 2in1 kit.
- Small opening requires micro-inserts with a diameter of 5 mm.
- Micro-insert with flat bottom also available.



### 2.1 Crew neck vials ND8, small opening, 8-425 thread and micro-vials ND8



| Part no.                    | 11 09 0210   | 11 09 0259   | 11 09 0419   | 11 09 0382   | 11 09 0417   |
|-----------------------------|--|--|--|--|--|
| Description                 | 1.5 mL<br>screw neck vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening | 1.5 mL<br>screw neck vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening | 1.5 mL<br>screw neck vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening,<br>label + filling lines | 1.5 mL<br>screw neck vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening,<br>label + filling lines | 1.1 mL<br>micro-vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>conical, small opening |
| <i>SILANIZED 11 09 2175</i> |  |  |  |  |  |
| TFVol. (mL)                 | 1.9  | 1.9  | 1.9  | 1.9  | 1.3  |
| UsVol. (mL)                 | 1.5  | 1.5  | 1.65   | 1.5  | 1.00   |
| MWVol. (μL)                 | 200  | 200  | 200  | 200  | 30   |
| Res. vol. (μL)              | <110   | <110   | <110   | <110   | <3   |
| 100 pcs. per PP-box         |  |  |  |  |  |

### 2.2 Micro-inserts for vials with small opening



| Part no.                                | 05 09 0129   | 05 09 0269  | 05 09 1674   | 05 09 0968  | 05 09 0279  | 05 13 0426          |
|---|--|---|--|---|---|---------------------|
| Description                             | 0.1 mL micro-insert,<br>31 x 5 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>15 mm top | 0.1 mL micro-insert,<br>31 x 5 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>9 mm top | 0.2 mL micro-insert,<br>31 x 5 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>flat bottom | 0.1 mL micro-insert,<br>29 x 5 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>with assembled plastic<br>spring | 0.1 mL micro-insert,<br>27.5 x 4 mm, clear<br>glass,<br>1 <sup>st</sup> hydrol. class | Spring 36 x 5 mm    |
| <i>Metal spring required 05 09 0279</i> |  |   |  |   |   |                     |
| TFVol. (mL)                             | 0.2  | 0.25  | 0.3  | 0.2   | 0.2   |                     |
| UsVol. (mL)                             | 0.15   | 0.2   | 0.26   | 0.15  | 0.11  |                     |
| MWVol. (μL)                             | 25   | 30  | 40   | 25  | 25  |                     |
| Res. vol. (μL)                          | <1   | <2  | <8   | <1  | <1  |                     |
| 10 x 100 pcs. per PP-box                |  |   |  |   |   | 100 pcs. per PE-bag |

## 2.3 PP screw seals ND8

- Ready to use combination seals; no time-consuming and "tricky" assembly.
- Available with black or white screw caps with 8-425 thread.
- Available as closed top screw seals or with centre hole.
- Now available either with natural rubber or RedRubber as cost-effective seals.

### 2.3.1 Natural rubber/TEF, RedRubber/PTFE and butyl/PTFE seals

- Natural rubber is ideal for multiple injections due to high resealability, but not as easy to penetrate as RR/PTFE.
- Standard, moderately priced seals for GC and HPLC.
- RR/PTFE has a better purity than NR/TEF, is softer and has less fragmentation, but doesn't offer the same resealability as NR/TEF.
- Temperature resistant from -40°C up to 120°C for NR/TEF + butyl/PTFE resp. up to 110°C for RR/PTFE.
- Butyl as a synthetic rubber has good chemical properties (cleanliness).



| Part no.   | 08 15 0460                             | 08 15 1965  | 08 15 1637          |
|--|--|---|---------------------|
| Description cap  |  | Polypropylene screw cap black, 5.5 mm centre hole, 8-425 thread |                     |
| Septa material   | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige  | Butyl red/PTFE grey |
| Durometer  | 60° shore A                            | 45° shore A   | 55° shore A         |
| Thickness  | 1.3 mm                                 | 1.0 mm  | 1.3 mm              |
| Further screw seals ND8 with closed/open top resp. with white caps are available upon request<br>100 pcs. per PE-bag |  |   |                     |

### 2.3.2 Silicone/PTFE seals

- The special, slit liner for VWR (Merck)/Hitachi is only available unassembled, as the diameter with the most optimal valve effect does not achieve any press-fit in the cap. Enlargement of the diameter is only possible with negative effects on the building up of vacuums in the vial.
- Temperature resistant from -60°C up to 200°C.
- Silicone liners with PTFE on both sides for less coring.
- Much cleaner than natural rubber, RedRubber or.
- Different hardnesses (durometers) to meet requirements of the various types of needles regarding penetration.



| Part no.   | 08 15 0293                                   | 08 15 0427  | 08 15 0886                    | 08 15 0294                           | 08 15 1449                            |
|--|--|---|-------------------------------|--------------------------------------|---------------------------------------|
| Description cap  |  | Polypropylene screw cap black, 5.5 mm centre hole, 8-425 thread |                               |                                      |                                       |
| Septa material   | Silicone white/PTFE red<br><i>UltraClean</i> | Silicone cream/PTFE red<br><i>UltraClean</i>                    | Silicone dark blue/PTFE white | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE red,<br>with slit |
| Durometer  | 45° shore A                                  | 55° shore A   | 45° shore A                   | 45° shore A                          | 45° shore A                           |
| Thickness  | 1.3 mm                                       | 1.5 mm  | 1.3 mm                        | 1.0 mm                               | 1.3 mm                                |
| Further screw seals ND8 with closed/open top resp. with white caps are available upon request<br>100 pcs. per PE-bag |  |   |                               |                                      |                                       |

### 2.3.3 Natural rubber/TEF, RedRubber/PTFE, butyl/PTFE and silicone/PTFE seals, closed top



| Part no.   | 08 15 0654                             | 08 15 2105  | 08 15 1653          | 08 15 1040                                   |
|--|--|---|---------------------|--|
| Description cap  |  | Polypropylene screw cap black, closed top, 8-425 thread |                     |  |
| Septa material   | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige                                    | Butyl red/PTFE grey | Silicone white/PTFE red<br><i>UltraClean</i> |
| Durometer  | 60° shore A                            | 45° shore A   | 55° shore A         | 45° shore A                                  |
| Thickness  | 1.3 mm                                 | 1.0 mm  | 1.3 mm              | 1.3 mm                                       |
| Further screw seals ND8 with closed/open top resp. with white caps are available upon request<br>100 pcs. per PE-bag |  |   |                     |  |

Further 8 mm screw caps with different colors are available upon request

## 2.4 Septa 8 mm



| Part no.             | 08 02 0177    | 08 02 0232   | 08 02 0355   | 08 02 1966           | 08 02 1633          |
|----------------------|---------------|--|--|----------------------|---------------------|
| Description          | PTFE virginal | Nat. rubber red-orange/<br>TEF transparent<br>(only unassembled) | Nat. rubber red-orange/<br>TEF transparent,<br>tested by VWR (Merck)/Hitachi<br>(only unassembled) | RedRubber/PTFE beige | Butyl red/PTFE grey |
| Durometer            | 53° shore D   | 60° shore A  | 60° shore A  | 45° shore A          | 55° shore A         |
| Thickness            | 0.25 mm       | 1.0 mm   | 1.3 mm   | 1.0 mm               | 1.3 mm              |
| 1000 pcs. per PE-bag |               |  |  |                      |                     |



| Part no.  | 08 02 0103              | 08 02 0009              | 08 02 0881                    | 08 02 0039   | 08 02 0005                           |
|---|-------------------------|-------------------------|-------------------------------|--|--------------------------------------|
| Description   | Silicone white/PTFE red | Silicone cream/PTFE red | Silicone dark blue/PTFE white | Silicone white/PTFE blue, slit,<br>rec. by VWR (Merck)/Hitachi<br>(only unassembled) | PTFE red/silicone white/<br>PTFE red |
| Durometer   | 45° shore A             | 55° shore A             | 45° shore A                   | 55° shore A  | 45° shore A                          |
| Thickness   | 1.3 mm                  | 1.5 mm                  | 1.3 mm                        | 0.9 mm   | 1.0 mm                               |
| Against a small surcharge we also sell in smaller packaging units<br>1000 pcs. per PE-bag |                         |                         |                               |  |                                      |

## 2.5 PP screw caps ND8



| Part no.            | 08 08 0027   | 08 08 0420                                       | 08 08 0436   | 08 08 0435                                       |
|---------------------|--|--|--|--|
| Cap                 | Polypropylene screw cap,<br>black,<br>5.5 mm centre hole | Polypropylene screw cap,<br>black,<br>closed top | Polypropylene screw cap,<br>white,<br>5.5 mm centre hole | Polypropylene screw cap,<br>white,<br>closed top |
| 100 pcs. per PE-bag |  |  |  |  |

## 2.6 Screw neck vials ND8, small opening, 8-425 thread with pre-screwed PP screw seals ND8 and/or pre-assembled micro-inserts for vials with small opening

- Pre-screwed vials and/or pre-assembled micro-inserts reduce the risk of contamination of vials in laboratories. Furthermore special applications could require (e.g. in the tobacco industry) a pre-screwed vial or pre-assembled inserts.
- Pre-screwed vials are available with any of the crew neck vials and any seal of your choice.



| Part no.            | 11 14 1739   | 11 14 1716   | 11 14 1763  |
|---------------------|--|--|---|
| Description         | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class, small opening<br>(11 09 0210)   | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class, small opening<br>(11 09 0210)                             | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class, small opening<br>(11 09 0210)                                  |
| Seal                | pre-screwed with<br>Polypropylene screw cap, black,<br>5.5 mm centre hole (08 08 0027);<br>silicone white/PTFE blue,<br>55° shore A,<br>0.9 mm, slit<br>(08 02 0039),<br>rec. by VWR (Merck)/Hitachi | pre-screwed with<br>Polypropylene screw cap black,<br>5.5 mm centre hole;<br>silicone white/PTFE red,<br>45° shore A,<br>1.3 mm,<br>(08 15 0293) | pre-screwed with<br>Polypropylene screw cap black,<br>5.5 mm centre hole;<br>silicone white/PTFE red, slit<br>45° shore A,<br>1.3 mm,<br>(08 15 1449) |
| 100 pcs. per PP-box |  |  |   |

Further pre-screwed and/or pre-assembled combinations upon request

## 2.6 Screw neck vials ND8, small opening, 8-425 thread with pre-screwed PP screw seals ND8 and/or pre-assembled micro-inserts for vials with small opening (cont.)

| Part no.            | 11 14 1468  | 11 14 2319  | 11 14 1838  |
|---------------------|---|---|---|
| Description         | 1.5 mL<br>screw neck vial, 8-425 thread;<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening<br>(11 09 0210) | 1.5 mL<br>screw neck vial, 8-425 thread,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening<br>(11 09 0259) | 1.5 mL<br>screw neck vial, 8-425 thread,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening<br>(11 09 0259) |
|                     | <i>pre-screwed with</i>   | <i>pre-screwed with</i>   | <i>pre-screwed with</i>   |
| Seal                | Polypropylene screw cap black,<br>closed top, 8-425 thread;<br>silicone white/PTFE red,<br>45° shore A,<br>1.3 mm<br>(08 15 1040)         | Polypropylene screw cap black,<br>5.5 mm centre hole; 8-425 thread;<br>silicone white/PTFE red,<br>45° shore A,<br>1.3 mm<br>(08 15 0293) | Polypropylene screw cap black,<br>closed top, 8-425 thread;<br>silicone white/PTFE red,<br>45° shore A,<br>1.3 mm<br>(08 15 1040)         |
| 100 pcs. per PP-box |   |   |   |

Further pre-screwed and/or pre-assembled combinations upon request

## 2.7 Special 2in1 and 3in1 kits

2in1 and 3in1 kits for VWR (Merck)/Hitachi Autosampler

| 11 23 1047  | 11 09 0210   | 08 08 0027   | 08 02 0039   | 11 23 1144  | 11 23 1085  |
|---|--|--|--|---|---|
| 3in1 kit consisting of:<br>11 09 0210,<br>08 08 0027,<br>08 02 0039 | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear<br>glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening | Polypropylene<br>Screw cap,<br>black,<br>5.5 mm centre hole  | Silicone white/PTFE blue,<br>55° shore A,<br>0.9 mm, slit<br>rec. by VWR (Merck)/Hitachi | Same cap + same septa<br>in combination with<br>11 09 0259<br>( <i>amber glass, small<br/>opening</i> ) | Same vial + same cap<br>in combination with<br>08 02 0177<br>( <i>PTFE virginal 0.25 mm</i> )                           |
| 11 23 1045  | 11 09 0210   | 08 15 0460   |  | 11 23 1614  | 11 23 1499  |
| 2in1 kit consisting of:<br>11 09 0210,<br>08 15 0460°               | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear<br>glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening | Polypropylene screw cap,<br>black, 5.5 mm centre hole,<br>Nat. rubber red-orange/<br>TEF transparent,<br>60° shore A, 1.3 mm |  | Same seal<br>in combination with<br>11 09 0259<br>( <i>amber glass, small<br/>opening</i> )             | Same seal<br>in combination with<br>11 09 0419<br>( <i>clear glass, small opening,<br/>with label + filling lines</i> ) |
| 100 pcs. each in one kit  |  |  |  |   |   |

Further 2in1 and 3in1 kits are available upon request

2in1 kits for varian autosampler

| 11 23 1046   | 11 09 0210  | 08 15 0293  | 11 23 1280   |
|--|---|---|--|
| 2in1 kit consisting of:<br>11 09 0210,<br>08 15 0293 | 1.5 mL crew neck vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>small opening | PP screw cap, black, 5.5 mm centre hole;<br><b>UltraClean</b> silicone white/PTFE red,<br>45° shore A, 1.3 mm | Same seal in combination with<br>11 09 0419<br>( <i>clear glass, small opening,<br/>with label + filling lines</i> ) |
| 11 23 1098   | 11 09 0259  | 08 15 0293  | 11 23 1100   |
| 2in1 kit consisting of:<br>11 09 0259,<br>08 15 0293 | 1.5 mL crew neck vial,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class, small opening    | PP screw cap, black, 5.5 mm centre hole;<br><b>UltraClean</b> silicone white/PTFE red,<br>45° shore A, 1.3 mm | Same seal in combination with<br>11 09 0382<br>( <i>amber glass, small opening, with label + filling lines</i> )     |
| 100 pcs. each in one kit                             |   |   |  |

Further 2in1 kits are available upon request

# Food selection card

This selection targets more than one customer group. Food and as well pest protection customers, where LC and GC is used nearly 1:1 with polar and non-polar solvents. They all deal with small molecules chromatography, challenging matrices, many different samples and the analyte concentration varies (often very low). The matrix can be fruits, corn, meat, honey, vegetables, soil, etc.

In this chapter you will find the most important parts from the following product classes:

- Screw and crimp vials and closures
- Certified and MS certified vial kits
- Well plates and mats
- Microsampling vials



## LC/MS GC/MS CERT kits and CERT kits



| 11 40 3196  | 11 40 3197  | 11 40 2556  | 11 40 2557  |
|---|---|---|---|
| LC/MS and GC/MS certified vial kit:<br>1.5 mL short thread SureStop vial,<br>32 x 11.6 mm,<br>clear glass, wide opening,<br>with overwind-barrier;<br>ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm | LC/MS and GC/MS certified vial kit:<br>1.5 mL short thread SureStop vial,<br>32 x 11.6 mm,<br>amber glass, wide opening,<br>with overwind-barrier;<br>ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm | HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>clear glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>amber glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm |

## Thermo Scientific™ WebSeal™ plates

|   |  |  |   |   |  |   |
|---|--|--|---|---|--|---|
|   |  |  |   |   |  |   |
| 08 05 2926<br>Deep well microplate,<br>PP, 96 positions,<br>certified, height 14.7<br>mm, V-shape,<br>7 mm dia.,<br>220 µL total volume<br>(non coated, non<br>sterile) | 08 05 2920<br>Deep well microplate,<br>PP, 96 positions,<br>certified, height 41.6<br>mm, U-shape,<br>7 mm dia.,<br>1000 µL total volume<br>(non coated, non<br>sterile) | 08 05 2921<br>Square well microplate,<br>PP, 96 positions,<br>certified, height 44.4<br>mm, V-shape,<br>7 mm dia.,<br>2000 µL total volume<br>(non coated, non<br>sterile) | 08 29 2949<br>Sealmat, MicroMat<br>CLR, clear, silicone,<br>for 96 position<br>deep well microplate,<br>7 mm diameter | 08 29 2933<br>Sealmat,<br>blue, silicone/PTFE,<br>for 96 position<br>deep well microplate,<br>7 mm diameter | 08 29 2939<br>Sealmat, MicroMat<br>CLR, clear, silicone,<br>for 96 position<br>square well microplate<br>(non sterile) | 08 29 2938<br>Sealmat, blue,<br>Silicone/PTFE,<br>for 96 position<br>square well microplate |

## Crimp vials and closures


**11 09 0476**

1.5 mL crimp neck vial,  
32 x 11.6 mm, clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 09 0477**

1.5 mL crimp neck vial,  
32 x 11.6 mm, amber glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 03 0209**

11 mm combination seal:  
aluminum cap, clear lacquered,  
centre hole;  
natural rubber red-orange/TEF  
transparent, 60° shore A, 1.0 mm

**11 03 1875**

11 mm combination seal:  
aluminum cap, clear lacquered,  
with centre hole;  
red Rubber/PTFE beige,  
45° shore A, 1.0 mm

**11 03 0247**

UltraClean closure:  
11 mm aluminum cap, clear  
lacquered,  
centre hole;  
silicone white/PTFE red,  
45° shore A, 1.3 mm

## Headspace vials and closures


**18 09 1307**

20 mL precision thread  
headspace-vial,  
75.5 x 22.5 mm, clear  
glass,  
1<sup>st</sup> hydrol. class,  
rounded bottom  
(for magnetic screw caps)

**18 03 1309**

UltraClean closure:  
18 mm magnetic  
universal screw cap,  
silver, centre hole;  
Silicone transparent blue/PTFE white,  
45° shore A,  
1.3 mm

**20 09 0873**

20 mL headspace-vial,  
75.5 x 22.5 mm, clear  
glass,  
1<sup>st</sup> hydrol. class,  
DIN crimp neck,  
long neck,  
rounded bottom

**20 03 0142**

UltraClean closure:  
20 mm aluminum cap,  
plain, centre hole;  
Silicone transparent blue/PTFE white,  
45° shore A,  
3.0 mm

**20 03 0975**

UltraClean closure:  
20 mm magnetic cap,  
gold lacquered, 8 mm centre hole;  
Silicone transparent blue/PTFE  
transparent,  
45° shore A,  
3.0 mm

## Racks/tools


**11 06 0006**

11 mm crimper

**20 06 0008**

20 mm crimper

**12 21 2420**

PP storage box  
for 1.5 mL (1.8 mL, 2 mL)  
vials or 2 mL shell vials,  
blue, with cover (130 x 130 x 45 mm),  
81 cavities with alphanumeric coding of all 4  
margins as well as the cavities at the bottom

## Microsampling vials


**11 09 2357**

Short thread vial with  
integrated micro-insert,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
"Base bonded"

**11 09 2656**

Short thread vial with  
integrated micro-insert,  
32 x 11.6 mm,  
amber glass,  
1<sup>st</sup> hydrol. class,  
"Base bonded"

**11 09 0620**

1.1 mL microliter  
Short thread vial ND9,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class

# 3. Short thread ND9



The vials can be used on all common autosamplers due to their technical geometry, preferentially they are found on Agilent, HTA, Shimadzu, Thermo Scientific, Varian, Waters, etc.



## The universal autosampler vial

- Universally compatible on almost all autosamplers, thereby rationalization of other 1.5 mL vials, as for instance 11 mm crimp neck vials, crew neck vials 8-425 and 10-425, is possible.
- Vials with a restricted bottom part for higher recovery.
- Pre-screwed short thread vials available.

### 3.1 Short thread vials ND9, wide opening and micro-vials with short thread ND9



| Part no.                | 11 09 0500  | 11 09 0519  | 11 09 0520  | 11 09 0999   | 11 09 1957  | 11 09 2357  | 11 09 2656  |
|-------------------------|---|---|---|--|---|---|---|
| Description             | 1.5 mL<br>short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening | 1.5 mL<br>short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines | 1.5 mL<br>short thread vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines | Short thread vial<br>with integrated<br>0.2 mL micro-insert,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling lines | Short thread vial<br>with integrated<br>0.2 mL micro-insert,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling lines, | Short thread vial with<br>integrated micro-<br>insert,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling lines, | Short thread vial with<br>integrated micro-<br>insert,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol.class |
| SILANIZED<br>11 09 1241 | SILANIZED<br>11 09 2131   | SILANIZED<br>11 09 1242   | SILANIZED<br>11 09 1242   | "Top bonded"   | "Top bonded"  | "Base bonded"   | "Base bonded"   |
| TFVol. (mL)             | 1.85  | 1.85  | 1.85  | 0.34   | 0.34  | 0.4   | 0.4   |
| UsVol. (mL)             | 1.5   | 1.5   | 1.5   | 0.2  | 0.2   | 0.3   | 0.3   |
| MWVol. (μL)             | 200   | 200   | 200   | 25   | 25  | 30  | 30  |
| Res. vol. (μL)          | <120  | <120  | <120  | <1   | <1  | <3  | <3  |

100 pcs. per PP-box



| Part. no.      | 11 09 0620   | 11 09 2275  | 11 09 3563   | 11 09 2873   | 11 09 3404   | 11 14 1189  | 11 14 1655  |
|----------------|--|---|--|--|--|---|---|
| Description    | 1.1 mL<br>microliter<br>short thread vial<br>ND9,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class<br>SILANIZED<br>11 09 2178 | 0.9 mL<br>total microliter<br>short thread vial<br>ND9,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 0.9 mL<br>total microliter,<br>short thread vial<br>ND9,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label | 1.0 mL<br>microliter con. base,<br>Short thread vial<br>ND9,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 1.0 mL<br>microliter con. base,<br>Short thread vial<br>ND9,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | TopSert<br>TPX short thread vial,<br>32 x 11.6 mm,<br>clear, with integrated<br>0.2 mL glass micro-<br>insert | TopSert<br>TPX short thread vial,<br>32 x 11.6 mm,<br>amber, with integrated<br>0.2 mL glass micro-<br>insert |
| TFVol. (mL)    | 1.6  | 1.4   | 1.4  | 1.5  | 1.5  | 0.36  | 0.36  |
| UsVol. (mL)    | 1.5  | 1.1   | 1.1  | 1.3  | 1.3  | 0.2   | 0.2   |
| MWVol. (μL)    | 30   | 25  | 25   | 25   | 25   | 25  | 25  |
| Res. vol. (μL) | <3   | <1  | <1   | <3   | <3   | <1  | <1  |

100 pcs. per PP-box

Upon request we supply micro-inserts pre-assembled in vials.

### 3.2 Short thread Thermo Scientific™ SureStop™ vials ND9



| Part. no.           | 11 09 2746  | 11 09 2747   | 11 09 2748   |
|---------------------|---|--|--|
| Description         | 1.5 mL short thread SureStop vial, 32 x 11.6 mm, clear glass, wide opening, with overwind-barrier | 1.5 mL short thread SureStop vial, 32 x 11.6 mm, clear glass, wide opening, label + filling lines, with overwind-barrier | 1.5 mL short thread SureStop vial, 32 x 11.6 mm, amber glass, wide opening, label + filling lines, with overwind-barrier |
| TFVol. (mL)         | 1.85  | 1.85   | 1.85   |
| UsVol. (mL)         | 1.5   | 1.5  | 1.5  |
| MWVol. (µL)         | 200   | 200  | 200  |
| Res. vol. (µL)      | <120  | <120   | <120   |
| 100 pcs. per PP-box |   |  |  |

1.5 mL short thread SureStop vials ND9 with with sure stop function

- The thread's additional stopring defines the ideal endpoint of the screwing process.
- This objective screwing result eliminates an user-to-user variance.
- The optimal septum compression produces a significant higher analytical reproducibility.



### 3.3 Micro-inserts for short thread vials ND9 with wide opening



| Part. no.                | 06 09 0357  | 06 09 0669  | 06 09 0865  | 06 09 0866  | 06 19 2240   | 06 19 2241   | 06 19 2242  |
|--------------------------|---|---|---|---|--|--|---|
| Description              | 0.1 mL micro-insert, 31 x 6 mm, clear glass, 1 <sup>st</sup> hydrol. class, 15 mm top | 0.1 mL micro-insert, 31 x 6 mm, clear glass, 1 <sup>st</sup> hydrol. class, 12 mm top | 0.1 mL micro-insert, 29 x 5.7 mm, clear glass, 1 <sup>st</sup> hydrol. class, with assembled plastic spring | 0.2 mL micro-insert, 31 x 6 mm, clear glass, 1 <sup>st</sup> hydrol. class, flat bottom | 0.1 mL PP micro-insert, 29 x 6 mm, clear, 10 mm top, flat bottom | 0.1 mL PP micro-insert, 29 x 6 mm, clear, 10 mm top, filling lines and attached plastic spring | 0.2 mL PP micro-insert, 31 x 6 mm, clear, flat bottom |
| SILANIZED 06 09 1240     |   |   |   |   |  |  |   |
| TFVol. (mL)              | 0.34  | 0.35  | 0.3   | 0.5   | 0.30   | 0.30   | 0.5   |
| UsVol. (mL)              | 0.25  | 0.3   | 0.25  | 0.35  | 0.25   | 0.25   | 0.35  |
| MWVol. (µL)              | 30  | 30  | 30  | 40  | 30   | 30   | 40  |
| Res. vol. (µL)           | <4  | <4  | <4  | <8  | <4   | <4   | <8  |
| 10 x 100 pcs. per PP-box |   |   |   |   |  |  |   |

### 3.4 plastic vials ND9 and plastic micro-vials ND9



| Part no.            | 11 19 1205  | 11 19 1516  | 11 19 1706   | 11 19 0932   | 11 19 3598   | 11 19 1021  | 11 19 1216   |
|---------------------|---|---|--|--|--|---|--|
| Description         | 1.5 mL PP short thread vial, transparent, filling lines, 32 x 11.6 mm, slightly concave shaped bottom<br>PE version<br>11 19 3647 | 1.5 mL PP short thread vial, amber, filling lines, 32 x 11.6 mm, slightly concave shaped bottom | 0.7 mL PP short thread micro-vial, transparent, 32 x 11.6 mm | 0.3 mL PP short thread micro-vial, transparent, 32 x 11.6 mm | 0.7 mL PE short thread micro-vial, white, 32 x 11.6 mm | 0.3 mL TPX short thread micro-vial, crystal clear, 32 x 11.6 mm | 0.3 mL PP short thread micro-vial, amber, 32 x 11.6 mm |
| TFVol. (mL)         | 1.85  | 1.85  | 0.87   | 0.4  | 0.87   | 0.4   | 0.4  |
| UsVol. (mL)         | 1.50  | 1.50  | 0.60   | 0.25   | 0.60   | 0.25  | 0.25   |
| MWVol. (µL)         | 200   | 200   | 150  | 30   | 150  | 30  | 30   |
| Res. vol. (µL)      | <110  | <110  | <80  | <4   | <80  | <4  | <4   |
| 100 pcs. per PE-bag |   |   |  |  |  |   |  |

### 3.5 PP short thread seals ND9

- Synthetic RedRubber/PTFE material as a cost-effective match of the instrument manufacturer quality. In contrast to natural rubber it is not suitable for multiple injections, however softer for a safe penetration.
- With pre-cut septa only the silicone material is slit in Y-shape while the PTFE lamination remains intact. This way concentration changes occurring with completely slit septa can be avoided.
- Short thread seals also available as closed top version (blue cap).
- Already assembled seal with slit liner available, in order to avoid vacuum within the vial in case of multiple injections.
- Screw cap with the design of a crimp cap; therefore suitable for robotic handling.

#### 3.5.1 PP short thread cap transparent, 6 mm centre hole

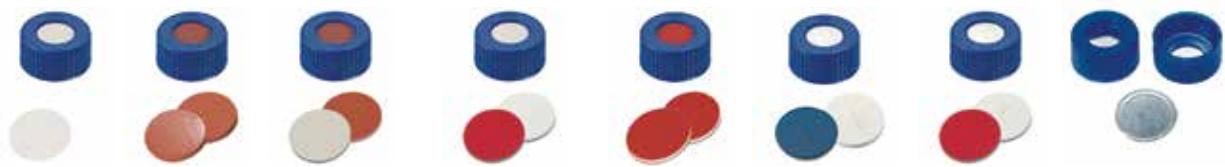


| Part no.       | 09 15 0981    | 09 15 0478                             | 09 15 2011                                     | 09 15 0481                                | 09 15 0480                       | 09 15 0352                          | 09 15 2021                           |
|----------------|---------------|--|--|---|----------------------------------|-------------------------------------|--------------------------------------|
| Septa material | PTFE virginal | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red <b>UltraClean</b> | PTFE red/silicone white/PTFE red | Silicone white/PTFE blue, with slit | Silicone white/PTFE red, pre-cut (Y) |
| Durometer      | 53° shore D   | 60° shore A                            | 45° shore A                                    | 55° shore A                               | 45° shore A                      | 55° shore A                         | 55° shore A                          |
| Thickness      | 0.2 mm        | 1.0 mm                                 | 1.0 mm   | 1.0 mm                                    | 1.0 mm                           | 1.0 mm                              | 1.0 mm                               |

100 pcs. per PE-bag

#### 3.5.2 PP short thread cap blue

##### 3.5.2.1 PP short thread cap blue, 6 mm centre hole



| Part no.       | 09 15 0982    | 09 15 0867                             | 09 15 1819                                     | 09 15 0838                                | 09 15 0868                       | 09 15 0869                          | 09 15 2016                           | 09 15 2487                                   |
|----------------|---------------|--|--|---|----------------------------------|-------------------------------------|--------------------------------------|--|
| Septa material | PTFE virginal | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red <b>UltraClean</b> | PTFE red/silicone white/PTFE red | Silicone white/PTFE blue, with slit | Silicone white/PTFE red, pre-cut (Y) | Aluminum liner                               |
| Durometer      | 53° shore D   | 60° shore A                            | 45° shore A                                    | 55° shore A                               | 45° shore A                      | 55° shore A                         | 55° shore A                          |  |
| Thickness      | 0.2 mm        | 1.0 mm                                 | 1.0 mm   | 1.0 mm                                    | 1.0 mm                           | 1.0 mm                              | 1.0 mm                               | 0.06 mm<br>(sealed by transparent flat-seal) |

100 pcs. per PE-bag

##### 3.5.2.2 PP short thread cap blue, closed top



| Part no.       | 09 15 1828    | 09 15 1887                             | 09 15 1799                                |
|----------------|---------------|--|---|
| Septa material | PTFE virginal | Nat. rubber red-orange/TEF transparent | Silicone white/PTFE red <b>UltraClean</b> |
| Durometer      | 53° shore D   | 60° shore A                            | 55° shore A                               |
| Thickness      | 0.2 mm        | 1.0 mm                                 | 1.0 mm                                    |

100 pcs. per PE-bag

#### 3.5.3 PP short thread cap red, 6 mm centre hole



| Part no.       | 09 15 1337    | 09 15 1176                             | 09 15 2012                                     | 09 15 1178                                | 09 15 1177                       | 09 15 1179                          |
|----------------|---------------|--|--|---|----------------------------------|-------------------------------------|
| Septa material | PTFE virginal | Nat. rubber red-orange/TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red <b>UltraClean</b> | PTFE red/silicone white/PTFE red | Silicone white/PTFE blue, with slit |
| Durometer      | 53° shore D   | 60° shore A                            | 45° shore A                                    | 55° shore A                               | 45° shore A                      | 55° shore A                         |
| Thickness      | 0.2 mm        | 1.0 mm                                 | 1.0 mm   | 1.0 mm                                    | 1.0 mm                           | 1.0 mm                              |

100 pcs. per PE-bag

### 3.5.4 PP short thread cap black, 6 mm centre hole



| Part no.       | 09 15 1668    | 09 15 1570                                 | 09 15 2013                                     | 09 15 1572                                   | 09 15 1571                           | 09 15 1669                             |
|----------------|---------------|--|--|--|--------------------------------------|--|
| Septa material | PTFE virginal | Nat. rubber red-orange/<br>TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red<br><b>UltraClean</b> | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE blue,<br>with slit |
| Durometer      | 53° shore D   | 60° shore A                                | 45° shore A                                    | 55° shore A                                  | 45° shore A                          | 55° shore A                            |
| Thickness      | 0.2 mm        | 1.0 mm                                     | 1.0 mm   | 1.0 mm                                       | 1.0 mm                               | 1.0 mm                                 |

100 pcs. per PE-bag

### 3.5.5 PP short thread cap green, 6 mm centre hole



| Part no.       | 09 15 1539    | 09 15 1356                                 | 09 15 1911                                     | 09 15 1332                                   | 09 15 1485                           | 09 15 1746                             |
|----------------|---------------|--|--|--|--------------------------------------|--|
| Septa material | PTFE virginal | Nat. rubber red-orange/<br>TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red<br><b>UltraClean</b> | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE blue,<br>with slit |
| Durometer      | 53° shore D   | 60° shore A                                | 45° shore A                                    | 55° shore A                                  | 45° shore A                          | 55° shore A                            |
| Thickness      | 0.2 mm        | 1.0 mm                                     | 1.0 mm   | 1.0 mm                                       | 1.0 mm                               | 1.0 mm                                 |

100 pcs. per PE-bag

### 3.5.6 PP short thread cap yellow, 6 mm centre hole



| Part no.       | 09 15 2015    | 09 15 1542                                 | 09 15 2014                                     | 09 15 1527                                   | 09 15 1486                           | 09 15 1745                             |
|----------------|---------------|--|--|--|--------------------------------------|--|
| Septa material | PTFE virginal | Nat. rubber red-orange/<br>TEF transparent | RedRubber/PTFE beige<br>(Approved IM quality*) | Silicone white/PTFE red<br><b>UltraClean</b> | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE blue,<br>with slit |
| Durometer      | 53° shore D   | 60° shore A                                | 45° shore A                                    | 55° shore A                                  | 45° shore A                          | 55° shore A                            |
| Thickness      | 0.2 mm        | 1.0 mm                                     | 1.0 mm   | 1.0 mm                                       | 1.0 mm                               | 1.0 mm                                 |

100 pcs. per PE-bag

### 3.5.7 Magnetic short thread cap, 6 mm centre hole

(for CTC GC PAL + Thermo Scientific™

TriPlus™ Autosampler)

- More convenient and safer in handling than 11 mm magnetic crimp seals.
- Ready-to-use closures.
- Officially tested and approved by CTC.

### 3.5.8 9 mm short thread MS cap transparent

- One component closure – no bleeding.
- Absolutely inert.
- Pierceable like a septa.
- LC/GC MS certified.
- Tight like a septa.

### 3.5.9 9 mm short thread PP cap with thinned penetration area

- Easy to penetrate.
- Cost effective closure without septum.
- Single use only.



| Part no.       | 09 15 1907                                |
|----------------|---|
| Septa material | Silicone white/PTFE red <b>UltraClean</b> |
| Durometer      | 55° shore A                               |
| Thickness      | 1.0 mm                                    |

100 pcs. per PE-bag

| Part no.       | 09 08 2000                                  |
|----------------|---|
| Septa material | With thinned penetration area and diaphragm |

100 pcs. per PE-bag

| Part no.       | 09 08 2771                        | 09 08 2772     |
|----------------|-----------------------------------|----------------|
| Septa material | With integral thinned PP membrane | clear and blue |
|                |                                   | polypropylene  |

100 pcs. per PE-bag

### 3.5.10 UltraBond seals ND9

(Cap + liner form an inseparable unit, so that the liner cannot be pushed into the vial even with a blunt needle)

Analogous to the LECTRABOND closure from Waters resp. the INTERSEAL closure from Agilent we also offer several UltraBond short thread seals, among others also in an *improved instrument manufacturer quality*. The new septa material is an especially pure silicone material, which optimizes the product safety even more. Further, the PTFE layer was modified, which permits an even easier penetration of the needle.



| Part no.       | 09 04 1220                                     | 09 04 1533   | 09 04 1534  |
|----------------|--|--|---|
| Description    | PP short thread cap black,<br>6 mm centre hole | PP short thread cap blue,<br>6 mm centre hole            | PP short thread cap blue,<br>6 mm centre hole                       |
| Septa material | Silicone white/PTFE red                        | Silicone beige/PTFE white<br><i>Improved IM quality*</i> | Silicone beige/PTFE white, with slit<br><i>Improved IM quality*</i> |
| Durometer      | 45° shore A                                    | 45° shore A  | 45° shore A   |
| Thickness      | 1.3 mm   | 1.3 mm   | 1.3 mm  |
|                | 100 pcs. per PE-bag                            |  |   |

Special 2in1 kits for Waters instruments

|  |   |   |
|--|---|---|
| <b>11 24 1628</b>                                  | <b>11 09 0500</b>   | <b>09 04 1533</b>   |
| 2in1 kit consisting of:<br>11 09 0500 + 09 04 1533 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening                             | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm       |
| <b>11 24 1622</b>                                  | <b>11 09 0500</b>   | <b>09 04 1534</b>   |
| 2in1 kit consisting of:<br>11 09 0500 + 09 04 1534 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening                             | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm, SLIT |
| <b>11 24 1859</b>                                  | <b>11 09 0519</b>   | <b>09 04 1533</b>   |
| 2in1 kit consisting of:<br>11 09 0519 + 09 04 1533 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening,<br>label and filling lines | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm       |
| <b>11 24 1860</b>                                  | <b>11 09 0519</b>   | <b>09 04 1534</b>   |
| 2in1 kit consisting of:<br>11 09 0519 + 09 04 1534 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening,<br>label and filling lines | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm, SLIT |
| <b>11 24 1861</b>                                  | <b>11 09 0520</b>   | <b>09 04 1533</b>   |
| 2in1 kit consisting of:<br>11 09 0520 + 09 04 1533 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening,<br>label and filling lines | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm       |
| <b>11 24 1696</b>                                  | <b>11 09 0520</b>   | <b>09 04 1534</b>   |
| 2in1 kit consisting of:<br>11 09 0520 + 09 04 1534 | 1.5 mL short thread vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydroly. class,<br>wide opening,<br>label and filling lines | 9 mm UltraBond PP short thread cap, blue,<br>centre hole;<br>silicone beige/PTFE white,<br>45° shore A,<br>1.3 mm, SLIT |

100 pcs. each in one kit

Further 2in1 kits are available upon request

### 3.5.11 HPLC and GC certified vial kits

(Short thread vials and short thread seals ND9)

HPLC and GC certified vial kits certifications are getting more and more important, in order to make processes more reproducible and avoid possible sources of errors from the beginning. For Thermo Fisher Scientific highest quality, consistency and quality control have always been very important and have been documented by HPLC and GC certified vials and closures.

- Each batch of HPLC and GC-certified kit is tested on 15 critical parameters. In a realistic method, an HPLC/UV and GC/MS-test of vials/closure combination of blanks and contaminations will be carried out.
- The batch-specific test certificate with the HPLC and GC-Chromatograms can be handed out upon request.
- The HPLC and GC certified kits are delivered completely shrinkwrapped for reasons of originality, purity and transport safety. This means an additional safety for the end user.



| Cat. no     | 11 40 2556  | 11 40 2557  |
|-------------|---|---|
| Description | HPLC/GC certified vial kit<br>1.5 mL short thread vial,<br>clear glass,<br>1 <sup>st</sup> hydrolytic class,<br>label + filling lines | HPLC/GC certified vial kit<br>1.5 mL short thread vial,<br>amber glass,<br>1 <sup>st</sup> hydrolytic class,<br>label + filling lines |
| Seal        | UltraClean seal:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>1.0 mm                             | UltraClean seal:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>1.0 mm                             |

100 vials and seals each in one kit

Further certified combinations are available upon request

### 3.5.12 LC/MS and GC/MS certified vial kits (short thread vials and short thread seals ND9)

The LC/MS and GC/MS certified kits represent our premium range of certified products. Each lot of the vial/closure combination has been tested by LC/MS and GC/MS on traces of blank values and contaminations.

- Available as clear and amber 9 mm short thread vial in the SureStop version with the sure-stop function for the lowest evaporation rate of all autosampler vials.
- Additionally the glass surface of these specific SureStop vials provides very low adsorption tendencies for all types of polar compounds; in fact a lot lower as for all other vials of 1st hydrolytic class glass (without surface treatment).
- The closure contains a very soft ultra low bleed (Ultra high performance) silicone septum with PTFE layer, optimized for ultra trace analysis.
- The batch-specific test certificate with the MS-Chromatograms can be handed out on request.
- The LC/MS and GC/MS certified kits are delivered completely shrink wrapped in order to assure originality, purity and transport safety.



| Cat. no     | 11 40 3196   | 11 40 3197   |
|-------------|--|--|
| Description | LC/MS and GC/MS<br>Certified vial kit<br>1.5 mL<br>Short thread SureStop vial,<br>32 x 11.6 mm, clear glass,<br>wide opening, label + filling lines<br>with overwind-barrier | LC/MS and GC/MS<br>Certified vial kit<br>1.5 mL<br>Short thread SureStop vial,<br>32 x 11.6 mm, amber glass,<br>wide opening, label + filling lines<br>with overwind-barrier |
| Seal:       | Ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>Silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm                          | Ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>Silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm                          |

100 vials and seals each in one kit

Further certified combinations are available upon request

### 3.6 Short thread vials ND9, wide opening with pre-screwed PP short thread seals ND9 and/or pre assembled micro-inserts with wide opening

- Pre-screwed vials reduce the risk of contamination of vials in laboratories. Furthermore special applications could require a pre-screwed vial (e.g. in the tobacco industry).
- Pre-screwed vials are available with any of the short thread vials and any seal of your choice.



| Part no.            | 11 14 1963  | 11 14 1841  | 11 14 1867  | 11 14 2551  |
|---------------------|---|---|---|---|
| Description         | 1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening<br>(11 09 0500)           | 1.5 mL short thread vial,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines<br>(11 09 0520) | 1.5 mL short thread vial,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines<br>(11 09 0520)       | 1.5 mL short thread vial,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines<br>(11 09 0520) |
| pre-screwed with    | pre-screwed with  | pre-screwed with  | pre-screwed with  | pre-screwed with  |
| Seal                | PP short thread cap blue,<br>6 mm centre hole,<br>Silicone white/PTFE blue,<br>with slit,<br>55° shore A,<br>1.0 mm<br>(09 15 0869) | PP short thread cap blue,<br>6 mm centre hole,<br>silicone white/PTFE blue,<br>with slit,<br>55° shore A,<br>1.0 mm<br>(09 15 0869)                 | PP UltraBond seal blue,<br>6 mm centre hole,<br>silicone beige/PTFE white, with slit<br>(improved IM quality*),<br>45° shore A,<br>1.3 mm<br>(09 04 1534) | PP short thread cap transparent,<br>centre hole,<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm,<br>pre-cut (Y)<br>(09 15 2021)              |
| 100 pcs. per PP-box |   |   |   |   |

Further pre-screwed and/or pre-assembled combinations upon request

### 3.7 Special 2in1 kits

2in1 kits with short thread vials

|   |  |  |
|---|--|--|
| <b>11 24 1050</b><br>2in1 kit consisting of:<br>11 09 0500 + 09 15 0838 | <b>11 09 0500</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening                             | <b>09 15 0838</b><br>PP short thread cap blue,<br>6 mm centre hole;<br><b>UltraClean</b> silicone white/PTFE red,<br>55° shore A,<br>1.0 mm        |
| <b>11 24 1051</b><br>2in1 kit consisting of:<br>11 09 0500 + 09 15 0869 | <b>11 09 0500</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening                             | <b>09 15 0869</b><br>PP short thread cap blue,<br>6 mm centre hole;<br>Silicone white/PTFE blue,<br>55° shore A,<br>1.0 mm, with slit              |
| <b>11 24 2391</b><br>2in1 kit consisting of:<br>11 09 0519 + 09 15 1669 | <b>11 09 0519</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>09 15 1669</b><br>PP short thread cap, black,<br>6 mm centre hole;<br>Silicone white/PTFE blue,<br>55° shore A,<br>1.0 mm, slit                 |
| <b>11 24 1238</b><br>2in1 kit consisting of:<br>11 09 0519 + 09 15 0869 | <b>11 09 0519</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>09 15 0869</b><br>PP short thread cap blue,<br>6 mm centre hole;<br>Silicone white/PTFE blue,<br>55° shore A,<br>1.0 mm, slit                   |
| <b>11 24 1141</b><br>2in1 kit consisting of:<br>11 09 0500 + 09 15 0481 | <b>11 09 0500</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening                             | <b>09 15 0481</b><br>PP short thread cap transparent,<br>6 mm centre hole;<br><b>UltraClean</b> silicone white/PTFE red,<br>55° shore A,<br>1.0 mm |
| <b>11 24 1091</b><br>2in1 kit consisting of:<br>11 09 0520 + 09 15 0481 | <b>11 09 0520</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm, amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>09 15 0481</b><br>PP short thread cap transparent,<br>6 mm centre hole;<br><b>UltraClean</b> silicone white/PTFE red,<br>55° shore A,<br>1.0 mm |
| 100 pcs. each in one kit  |  |  |

# 4. Screw neck ND10



The vials are preferentially used on instruments of the following manufacturers: Jasco, PerkinElmer, Shimadzu, Varian, Waters, etc.

- Packed in a cleanroom which is a new hygienic standard for chromatography vials.
- Wide opening enables easy filling with viscous materials.
- Alternatively you can also look for short thread vials in chapter 3.1.
- Any combination of 1.5 mL crew neck vial 10-425 with one of our 10 mm PP screw seals can be obtained as a 2in1 kit.
- Closed top seals and replacement septa are available.
- Broad range of micro-inserts.



## 4.1 Screw neck vials ND10, wide opening, 10-425 thread and appropriate micro-inserts

|                            |  |  |   |  |  |  |
|----------------------------|--|--|---|--|--|--|
|                            |  |  |   |  |  |  |
| <b>Part no.</b> 10 09 0743 | <b>10 09 1196</b>  | <b>10 09 1197</b>  | <b>06 09 0357</b>   | <b>06 09 0669</b>  | <b>06 09 0865</b>  | <b>06 09 0866</b>  |
| Description                | 1.5 mL<br>Sscrew neck vial,<br>10-425 thread,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines | 1.5 mL<br>sScrew neck vial,<br>10-425 thread,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines | 1.5 mL<br>screw neck vial,<br>10-425 thread,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines | 0.1 mL<br>micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>15 mm top | 0.1 mL<br>micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>12 mm top | 0.1 mL<br>Mmicro-insert,<br>29 x 5.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>with assembled<br>plastic spring |
| TFVol. (mL)                | 2.0  | 2.0  | 0.34  | 0.35   | 0.3  | 0.5  |
| UsVol. (mL)                | 1.50   | 1.50   | 0.25  | 0.30   | 0.25   | 0.35   |
| MWVol. (µL)                | 200  | 200  | 30  | 30   | 30   | 40   |
| Res. vol. (µL)             | <120   | <120   | <4  | <4   | <4   | <8   |
| 100 pcs. per PP-box        |  |  | 10 x 100 pcs. per PP-box  |  |  |  |

## 4.2 PP screw seals ND10



|                            |  |  |   |   |  |
|----------------------------|--|--|---|---|--|
|                            |  |  |   |   |  |
| <b>Part no.</b> 10 15 1256 | <b>10 15 1257</b>                          | <b>10 15 0744</b>                            | <b>10 15 1258</b>                       | <b>10 15 1328</b>                       | <b>10 15 1905</b>                      |
| Description                | PP screw cap black,<br>7 mm centre hole    | PP screw cap black,<br>7 mm centre hole      | PP screw cap black,<br>7 mm centre hole | PP screw cap black,<br>7 mm centre hole | PP screw cap black,<br>closed top      |
| Septa material             | Nat. rubber red-orange/<br>TEF transparent | Silicone white/PTFE red<br><i>UltraClean</i> | Silicone white/PTFE beige               | PTFE red/silicone white/<br>PTFE red    | Silicone white/PTFE blue,<br>with slit |
| Durometer                  | 60° shore A                                | 45° shore A                                  | 45° shore A                             | 45° shore A                             | 55° shore A                            |
| Thickness                  | 1.3 mm                                     | 1.3 mm                                       | 1.5 mm                                  | 1.0 mm                                  | 1.5 mm                                 |

Further screw seals ND10 with closed/open top resp. With white caps are available upon request  
100 pcs. per PE-bag

## 4.3 PP screw caps ND10



|   |   |
|---|---|
|   |   |
| <b>Part no.</b> 10 08 0742                            | <b>10 08 1899</b>                               |
| Septa material  |   |
| Polypropylene<br>screw cap black,<br>7 mm centre hole | Polypropylene<br>screw cap black,<br>closed top |
| 100 pcs. per PE-bag                                   |   |

# Academia selection card

This selection targets more than one customer group. Here we find chromatographers at universities, research centers, MPI's, Fraunhofer institutes, etc., where both LC and GC is used nearly 1:1 with polar and non-polar solvents. They all deal with mainly small molecules chromatography, challenging matrices, many different samples and the analyte concentration varies. The matrix can be everything, as we talk about basic research here. And another challenge is the cost pressure of these institutes, which limits the access to expensive consumables from time to time.

In this chapter you will find the most important parts from the following product classes:

- Screw and crimp vials and closures
- Headspace vials and closures
- Vial racks and tools



## Crimp vials and closures

|  |  |   |  |   |
|--|--|---|--|---|
|  |  |   |  |   |
| 11 09 0476<br>1.5 mL crimp neck vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | 11 09 0477<br>1.5 mL crimp neck vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | 11 03 0209<br>11 mm combination seal:<br>aluminum cap,<br>clear lacquered,<br>centre hole;<br>natural rubber red-orange/TEF<br>transparent, 60° shore A, 1.0 mm | 11 03 1875<br>11 mm combination seal:<br>aluminum cap,<br>clear lacquered,<br>with centre hole;<br>red rubber/PTFE beige,<br>45° shore A, 1.0 mm | 11 03 0247<br>UltraClean closure:<br>11 mm aluminum cap,<br>clear lacquered,<br>centre hole;<br>silicone white/PTFE red,<br>45° shore A, 1.3 mm |

## Headspace vials and closures

|   |  |   |  |   |
|---|--|---|--|---|
|   |  |   |  |   |
| 18 09 1307<br>20 mL precision thread<br>headspace-vial,<br>75.5 x 22.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom<br>(for magnetic screw caps) | 18 03 1309<br>UltraClean closure:<br>18 mm magnetic<br>universal screw cap,<br>silver, centre hole;<br>Silicone transparent blue/PTFE white,<br>45° shore A,<br>1.3 mm | 20 09 0873<br>20 mL headspace-vial,<br>75.5 x 22.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN crimp neck,<br>long neck,<br>rounded bottom | 20 03 0142<br>UltraClean closure:<br>20 mm aluminum cap,<br>plain, centre hole;<br>silicone transparent blue/PTFE white,<br>45° shore A,<br>3.0 mm | 20 03 0975<br>UltraClean closure:<br>20 mm magnetic cap, gold<br>lacquered, 8 mm centre hole;<br>Silicone transparent blue/PTFE<br>transparent,<br>45° shore A,<br>3.0 mm |

## 9 mm screw thread vials and closures



**11 09 0519**  
1.5 mL short thread vial,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 09 0520**  
1.5 mL short thread vial,  
32 x 11.6 mm,  
amber glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

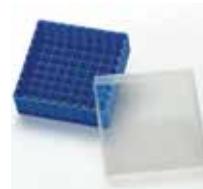
**11 09 2746**  
1.5 mL short thread  
SureStop vial,  
32 x 11.6 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
with overwind-barrier

**09 15 1819**  
9 mm combination seal:  
PP short thread cap,  
blue, with centre hole;  
RedRubber/PTFE beige,  
45° shore A,  
1.0 mm

**09 15 0838**  
UltraClean closure:  
9 mm PP short thread cap,  
blue, centre hole;  
Silicone white/PTFE red,  
55° shore A,  
1.0 mm

**09 15 0869**  
9 mm combination seal:  
silicone white/PTFE blue,  
55° shore A,  
1.0 mm,  
slit

## Racks/tools



**11 06 0006**  
11 mm crimper

**20 06 0008**  
20 mm crimper

**12 21 2420**  
PP storage box  
for 1.5 mL (1.8 mL, 2 mL)  
vials or 2 mL shell vials,  
blue, with cover  
(130 x 130 x 45 mm),  
81 cavities with alphanumeric coding of all  
4 margins as well as the cavities at the bottom

# 5. Crimp neck ND11



The vials are preferentially used on instruments of the following manufacturers:  
Agilent, Carlo Erba, CTC, DANI, Fisons, Gerstel, Jasco, PerkinElmer,  
Shimadzu, Spark, Thermo Scientific, Varian, etc.

- Vials with integrated micro-insert are also available now in clear and amber glass.
- Use our TopSert micro-vial as a cost-effective alternative to glass vials with fused-in micro-inserts resp. to micro-insert with plastic spring! Their glass micro-insert is absolutely centered in the plastic mould and pressed firmly against the septa due to its slightly exceeding edges.
- Vials with a barcode label can be obtained as well as pre-crimped vials.
- Standard vials for GC and HPLC.
- Microliter vials (11 09 0619/11 09 2276) for sample preparation (reactions, concentrations) or as an alternative for conical micro-vials resp. crimp neck vials with inserts.



## 5.1 Crimp neck vials ND11, wide opening and micro-vials with crimp neck ND11



| Part no.          | 11 09 0356   | 11 09 0476   | 11 09 0477   | 11 09 0921   | 11 09 1956   | 11 09 2353  | 11 09 2786  |
|-------------------|--|--|--|--|--|---|---|
| Description       | 1.5 mL<br>crimp neck vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening<br><br>SILANIZED<br>11 09 2085 | 1.5 mL<br>crimp neck vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines<br><br>SILANIZED<br>11 09 2172 | 1.5 mL<br>crimp neck vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label + filling lines<br><br>SILANIZED<br>11 09 1767 | Crimp neck vial<br>with integrated<br>0.2 mL micro-insert,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling lines<br>"Top bonded" | Crimp neck vial with<br>integrated<br>0.2 mL micro-insert,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling lines<br>"Top bonded" | Snap/crimp vial<br>ND11 with integrated<br>micro-insert,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class<br><br>"Base bonded" | Snap/crimp vial<br>ND11 with integrated<br>micro-insert,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class<br><br>"Base bonded" |
| TFVol. (mL)       | 2.0  | 2.0  | 2.0  | 0.4  | 0.4  | 0.39  | 0.39  |
| UsVol. (mL)       | 1.50   | 1.50   | 1.50   | 0.21   | 0.2  | 0.3   | 0.3   |
| MWVol. (µL)       | 200  | 200  | 200  | 25   | 25   | 30  | 30  |
| Res. vol.<br>(µL) | <100   | <100   | <100   | <1   | <1   | <3  | <3  |

100 pcs. per PP-box



| Part no.       | 11 09 0619  | 11 09 2276  | 11 09 3564   | 11 09 3451   | 11 09 2671  | 11 09 0415  | 11 09 0486   | 11 19 3597  | 11 14 1190  | 11 14 1656  |
|----------------|---|---|--|--|---|---|--|---|---|---|
| Description    | 1.1 mL<br>microliter-vial,<br>32 x 11.6<br>mm,<br>clear glass,<br>1 <sup>st</sup> hydrol.<br>class<br><br>SILANIZED<br>11 09 2177 | 0.9 mL<br>total microliter<br>snap/crimp<br>ring vial<br>ND11,<br>32 x 11.6<br>mm,<br>clear glass,<br>1 <sup>st</sup> hydrol.<br>class<br>label | 0.9 mL<br>total microliter<br>snap/crimp<br>vial ND11<br>clear glass<br>1 <sup>st</sup> hydrol.<br>class | 1.0 mL<br>microliter con.<br>base<br>crimp neck<br>vial<br>32 x 11.6 mm<br>clear glass<br>1 <sup>st</sup> hydrol.<br>class | 1.0 mL<br>microliter con.<br>base<br>crimp neck<br>vial<br>32 x 11.6 mm<br>clear glass<br>1 <sup>st</sup> hydrol.<br>class<br>amber glass<br>1 <sup>st</sup> hydrol.<br>class | 1.1 mL<br>micro-vial,<br>32 x 11.6<br>mm,<br>clear glass,<br>1 <sup>st</sup> hydrol.<br>class,<br>conical | 0.9 mL<br>micro-vial,<br>32 x 10 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol.<br>class,<br>conical | 0.7 mL<br>PE snap/crimp<br>vial ND11<br>Micro-vial<br>white<br>32 x 11.6 mm<br>clear, with<br>integrated<br>0.2 mL glass<br>micro-insert<br>SILANIZED<br>11 14 1266 | TopSert<br>TPX snap/<br>crimp vial<br>ND11,<br>32 x 11.6<br>mm,<br>clear, with<br>integrated<br>0.2 mL glass<br>micro-insert<br>SILANIZED<br>11 14 1695 | TopSert<br>TPX snap/<br>crimp vial<br>ND11,<br>32 x 11.6<br>mm,<br>amber, with<br>integrated<br>0.2 mL glass<br>micro-insert<br>SILANIZED<br>11 14 1695 |
| TFVol. (mL)    | 1.8   | 1.4   | 1.4  | 1.5  | 1.5   | 1.3   | 1.1  | 0.87  | 0.35  | 0.35  |
| UsVol. (mL)    | 1.5   | 1.2   | 1.1  | 1.3  | 1.3   | 1.1   | 0.9  | 8.60  | 0.2   | 0.2   |
| MWVol. (µL)    | 40  | 25  | 25   | 25   | 30  | 30  | 150  | 30  | 30  | 30  |
| Res. vol. (µL) | <8  | <1  | <1   | <3   | <3  | <4  | <2   | <80   | <4  | <4  |

100 pcs. per PP-box

10 x 100 pcs.  
per PP-box

100 pcs. per  
PE-bag

100 pcs. per PP-box

## 5.2 Micro-inserts for crimp neck vials ND11 with wide opening



| Part no.       | 06 09 0357   | 06 09 0669  | 06 09 0865   | 06 19 3973   | 06 09 0866   |
|----------------|--|---|--|--|--|
| Description    | 0.1 mL<br>micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>15 mm top<br>SILANIZED 06 09 1240 | 0.1 mL<br>micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>12 mm to | 0.1 mL<br>micro-insert,<br>29 x 5.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>with assembled plastic spring<br>SILANIZED 06 09 1343 | 0.2 mL<br>PP micro-insert,<br>28.3 x 5.9 mm,<br>clear,<br>connected plastic spring | 0.2 mL<br>micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>flat bottom<br>SILANIZED 06 09 1792 |
| TFVol. (mL)    | 0.34   | 0.35  | 0.3  | 0.2  | 0.5  |
| UsVol. (mL)    | 0.25   | 0.3   | 0.25   | 0.13   | 0.35   |
| MWVol. (µL)    | 30   | 30  | 30   | 40   | 40   |
| Res. vol. (µL) | <4   | <4  | <4   | <6   | <8   |

10 x 100 pcs. per PP-box

## 5.3 Aluminum crimp seals ND11

### 5.3.1 Natural rubber/TEF seals

- Three layer septa of natural rubber/ butyl/TEF combines the good physical properties of nat. rubber (resealability) with the good chemical properties of butyl (cleanliness).
- Temperature resistant from -40°C up to 120°C.
- Standard seal for GC and HPLC.
- Ideal for multiple injections due to high resealability.



| Part no.       | 11 03 0209  | 11 03 0300   | 11 03 0535   | 11 03 0301   | 11 03 0302   | 11 03 0303   | 11 03 0304   |
|----------------|---|--|--|--|--|--|--|
| Description    | Aluminum cap clear<br>lacquered,<br>5.5 mm centre hole                  | Aluminum cap clear<br>lacquered,<br>5.5 mm centre hole     | Aluminum cap clear<br>lacquered,<br>5.5 mm centre hole | Aluminum cap green<br>lacquered,<br>5.5 mm centre hole     | Aluminum cap red<br>lacquered,<br>5.5 mm centre hole       | Aluminum cap blue<br>lacquered,<br>5.5 mm centre hole      | Aluminum cap gold<br>lacquered,<br>5.5 mm centre hole      |
| Septa material | Nat. rubber<br>red-orange/<br>TEF transparent<br>(Approved IM quality*) | Nat. rubber<br>red-orange/<br>butyl red/TEF<br>transparent | Nat. rubber<br>red-orange/<br>TEF transparent          | Nat. rubber<br>red-orange/<br>butyl red/TEF<br>transparent | Nat. rubber<br>red-orange/<br>butyl red/TEF<br>transparent | Nat. rubber<br>red-orange/<br>butyl red/TEF<br>transparent | Nat. rubber<br>red-orange/<br>butyl red/TEF<br>transparent |
| Durometer      | 60° shore A   | 45° shore A  | 60° shore A  | 45° shore A  | 45° shore A  | 45° shore A  | 45° shore A  |
| Thickness      | 1.0 mm  | 1.0 mm   | 1.0 mm   | 1.0 mm   | 1.0 mm   | 1.0 mm   | 1.0 mm   |

100 pcs. per PE-bag

### 5.3.2 RedRubber/PTFE seals

- Temperature resistant from -40°C up to 110°C.
- Softer alternative to natural rubber/TEF and butyl/PTFE.
- Cleaner than natural rubber or butyl; low fragmentation.
- RedRubber is a synthetic rubber.



| Part no.       | 11 03 1875  | 11 03 1984  | 11 03 1985  | 11 03 1986   | 11 03 1987   |
|----------------|---|---|---|--|--|
| Description    | Aluminum cap clear<br>lacquered, 5.5 mm centre hole               | Aluminum cap green<br>lacquered, 5.5 mm centre hole | Aluminum cap red lacquered,<br>5.5 mm centre hole | Aluminum cap blue lacquered,<br>5.5 mm centre hole | Aluminum cap gold lacquered,<br>5.5 mm centre hole |
| Septa material | RedRubber/PTFE beige<br>Approved instrument manufacturer quality* |   |   |  |  |
| Durometer      | 45° shore A   | 45° shore A   | 45° shore A                                       | 45° shore A  | 45° shore A  |
| Thickness      | 1.0 mm  | 1.0 mm  | 1.0 mm  | 1.0 mm   | 1.0 mm   |

100 pcs. per PE-bag

### 5.3.3 Silicone/PTFE seals

- Cross-slit liner as penetration aid and for low coring, but also for avoiding vacuum in the vial in case of multiple injections.
- Temperature resistant from -60°C up to 200°C.
- Much cleaner than natural rubber, RedRubber or butyl.



| Part no.            | 11 03 0247                                       | 11 03 0362                                       | 11 03 0885                                       | 11 03 0196                                       | 11 03 0464                                       | 11 03 1625                                     | 11 03 0666                                      | 11 03 0667                                      | 11 03 1624                                      |
|---------------------|--|--|--|--|--|--|---|---|---|
| Description cap     | Aluminum cap clear lacquered, 5.5 mm centre hole | Aluminum cap clear lacquered, 5.5 mm centre hole | Aluminum cap clear lacquered, 5.5 mm centre hole | Aluminum cap clear lacquered, 5.5 mm centre hole | Aluminum cap green lacquered, 5.5 mm centre hole | Aluminum cap red lacquered, 5.5 mm centre hole | Aluminum cap blue lacquered, 5.5 mm centre hole | Aluminum cap blue lacquered, 5.5 mm centre hole | Aluminum cap gold lacquered, 5.5 mm centre hole |
| Septa material      | Silicone white/PTFE red <i>UltraClean</i>        | Silicone cream/PTFE red                          | Silicone dark blue/PTFE white                    | PTFE red/silicone white/PTFE red                 | Silicone white/PTFE red, cross-slit              | Silicone white/PTFE red <i>UltraClean</i>      | Silicone white/PTFE red <i>UltraClean</i>       | Silicone white/PTFE red <i>UltraClean</i>       | Silicone white/PTFE red <i>UltraClean</i>       |
| Durometer           | 45° shore A                                      | 55° shore A                                      | 45° shore A                                      | 45° shore A                                      | 55° shore A                                      | 45° shore A                                    | 45° shore A                                     | 45° shore A                                     | 45° shore A                                     |
| Thickness           | 1.3 mm   | 1.5 mm   | 1.3 mm   | 1.0 mm   | 1.5 mm   | 1.3 mm   | 1.3 mm  | 1.3 mm  | 1.3 mm  |
| 100 pcs. per PE-bag |  |  |  |  |  |  |   |   |   |

### 5.3.4 Other aluminum crimp seals

- Total Phthalate Free seal (TPF seal), septa
- PTFE is very inert and high temperature resistant mainly for uncritical HPLC analysis.
- Material free of any elastomers and halogens.
- Butyl as synthetic rubber is much cleaner than nat. rubber.
- Butyl is temperature resistant from -40°C up to 120°C.



| Part no.   | 11 03 2519  | 11 03 2578  | 11 03 0339  | 11 03 1641                                       | 11 03 1663                                       |
|--|---|---|---|--|--|
| Description cap  | 11 mm TPF combination seal: aluminum cap, clear lacquered, 5.5 mm centre hole | 11 mm combination seal: Aluminum cap, clear lacquered, 5.5 mm centre hole | Aluminum cap clear lacquered, 5.5 mm centre hole, roll groove | Aluminum cap clear lacquered, 5.5 mm centre hole | Aluminum cap clear lacquered, 5.5 mm centre hole |
| Septa material   | Aluminum liner, (sealed by an additional assembled ring)                      | PTFE virginal (sealed by an additional assembled ring)                    | PTFE virginal   | butyl red/PTFE grey                              | PTFE grey/butyl red/PTFE grey                    |
| Durometer  | 53° shore D   | 53° shore D   | 53° shore D   | 55° shore A                                      | 55° shore A                                      |
| Thickness  | 0.06 mm   | 0.25 mm   | 0.25 mm   | 1.3 mm   | 1.3 mm   |
| All before-mentioned crimp seals are also available with gold, green, blue and red caps (with the exception of 11 03 0339, 11 03 2519 and 11 03 2578)) |   |   |   |  |  |
| 100 pcs. in a clear crimp neck vial  |   |   | 100 pcs. per PE-bag   |  |  |

### 5.4 Magnetic crimp seals ND11

(for CTC PAL + TriPlus Autosampler)



| Part no.            | 11 03 0318                                     | 11 03 0332                                     |
|---------------------|--|--|
| Description cap     | Magnetic cap, gold lacquered, 5 mm centre hole | Magnetic cap, gold lacquered, 5 mm centre hole |
| Septa material      | Silicone white/PTFE red <i>UltraClean</i>      | PTFE red/silicone white/PTFE red               |
| Durometer           | 45° shore A                                    | 45° shore A                                    |
| Thickness           | 1.3 mm   | 1.0 mm   |
| 100 pcs. per PE-bag |  |  |

### 5.5 Other combination seals for crimp neck ND11



| Part no.            | 13 15 0996   |
|---------------------|--|
| Description cap     | PE-Cap, transparent, 13 x 7.5 mm, 4.5 mm centre hole |
| Septa material      | Silicone white/PTFE red <i>UltraClean</i>            |
| Durometer           | 55° shore A  |
| Thickness           | 1.0 mm   |
| 100 pcs. per PE-bag |  |

## 5.6 Crimp neck vials ND11, wide opening, with pre-crimped aluminum seals ND11 and/or pre-assembled micro-inserts for vials with wide opening

- Pre-crimped vials reduce the risk of contamination of vials in laboratories. Furthermore special applications could require a pre-crimped vial (e.g. in the tobacco industry).
- Pre-crimped vials are available with any of the crimp/snap neck vials and any seal of your choice.



| Part no.                        | 11 31 1469  | 11 31 1968  | 11 31 1730  | 11 31 1221   | 11 31 1596  |
|---------------------------------|---|---|---|--|---|
| Description vial                | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening (11 09 0356)   | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening (11 09 0356)                 | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening (11 09 0356)                           | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening (11 09 0356)                          | 1.5 mL crimp neck vial, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class, wide opening, label + filling lines (11 09 0477)                    |
| pre-crimped                     | pre-crimped   | pre-crimped   | pre-crimped   | pre-crimped  | pre-crimped   |
| Description of pre-crimped seal | Aluminum cap clear lacquered, 5.5 mm centre hole, Nat. rubber red-orange/ TEF transparent, 60° shore A, 1.0 mm (11 03 0209)<br>(Approved IM quality*) | Aluminum cap clear lacquered, 5.5 mm centre hole, Nat. rubber red-orange/ TEF transparent, 60° shore A, 1.3 mm (11 03 0900) | Aluminum cap clear lacquered, 5.5 mm centre hole, Nat. rubber red-orange/ butyl red/TEF transparent, 45° shore A, 1.0 mm (11 03 0300) | Aluminum cap blue lacquered, 5.5 mm centre hole, Nat. rubber red-orange/ butyl red/TEF transparent, 45° shore A, 1.0 mm (11 03 0303) | Aluminum cap clear lacquered, 5.5 mm centre hole, Nat. rubber red-orange/ TEF transparent, 60° shore A, 1.0 mm (11 03 0209)<br>(Approved IM quality*) |
| 100 pcs. per PP-box             |   |   |   |  |   |

Further pre-crimped and/or pre-assembled combinations upon request

## 5.7 Special 2in1 kits

### 2in1 kits with crimp neck vials ND11

|  |   |   |
|--|---|---|
| <b>11 25 1054</b>                                  | <b>11 09 0356</b>   | <b>11 03 0300</b>   |
| 2in1 kit consisting of:<br>11 09 0356 + 11 03 0300 | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening                          | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ butyl red/TEF transparent, 45° shore A, 1.0 mm |
| <b>11 25 1053</b>                                  | <b>11 09 0356</b>   | <b>11 03 0209</b>   |
| 2in1 kit consisting of:<br>11 09 0356 + 11 03 0209 | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening                          | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ TEF transparent, 60° shore A, 1.0 mm           |
| <b>11 25 2281</b>                                  | <b>11 09 0476</b>   | <b>11 03 0300</b>   |
| 2in1 kit consisting of:<br>11 09 0476 + 11 03 0300 | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening, label and filling lines | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ butyl red/TEF transparent, 45° shore A, 1.0 mm |
| <b>11 25 1287</b>                                  | <b>11 09 0477</b>   | <b>11 03 0300</b>   |
| 2in1 kit consisting of:<br>11 09 0477 + 11 03 0300 | 1.5 mL crimp neck vial, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class, wide opening, label and filling lines | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ butyl red/TEF transparent, 45° shore A, 1.0 mm |
| <b>11 25 1097</b>                                  | <b>11 09 0477</b>   | <b>11 03 0209</b>   |
| 2in1 kit consisting of:<br>11 09 0477 + 11 03 0209 | 1.5 mL crimp neck vial, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class, wide opening, label and filling lines | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ TEF transparent, 60° shore A, 1.0 mm           |
| <b>11 25 2263</b>                                  | <b>11 09 0356</b>   | <b>11 03 0535</b>   |
| 2in1 kit consisting of:<br>11 09 0356 + 11 03 0535 | 1.5 mL crimp neck vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening                          | 11 mm aluminum cap, clear lacquered, centre hole; natural rubber red-orange/ TEF transparent, 60° shore A, 1.0 mm           |
| 100 pcs. each in one kit                           |   |   |

Further 2in1 kits are available upon request

# 6. Snap ring ND11



The vials are preferentially used on instruments of the following manufacturers: Agilent, CTC, DANI, Dionex, Jasco, Shimadzu, Spark, Thermo Scientific, Varian, VWR (Merck)/Hitachi, Waters, etc.

- We recommend this vial-/closure system for HPLC applications only.
- Universally usable vials for almost all autosamplers, even for those with robotic handling.
- Micro-inserts can be delivered pre-assembled in vials.
- Vials can also be crimped with a standard 11 mm aluminum crimp seal, as the two snap ring lips have the same height as a crimp neck
- Wide opening enables easy filling with viscous materials.



## 6.1 Snap ring vials ND11, wide opening



| Part. no.      | 11 09 0627  | 11 09 0644   | 11 09 0645   | 11 09 2276   | 11 09 3564  | 11 09 3405                  | 11 09 3406                  | 11 09 2353   | 11 09 2786   |
|----------------|---|--|--|--|---|-----------------------------|-----------------------------|--|--|
| Description    | 1.5 mL snap ring vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening | 1.5 mL snap ring vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening, label + filling lines | 1.5 mL snap ring vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening, label + filling lines | 0.9 mL total microliter snap ring vial ND11, 32 x 11.6 mm, wide opening, label + filling lines | 0.9 mL total microliter snap/crimp vial ND11, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, label | 1.0 mL microliter con. base | 1.0 mL microliter con. base | Snap/crimp vial with integrated micro-insert, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class | Snap/crimp vial with integrated micro-insert, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class |
| SILANIZED      | SILANIZED   | SILANIZED  | SILANIZED  | SILANIZED  | SILANIZED   | SILANIZED                   | SILANIZED                   |  |  |
| 11 09 2173     | 11 09 2174  | 11 09 2189   |  |  |   |                             |                             |  |  |
| TFVol. (mL)    | 1.90  | 1.90   | 1.90   | 1.40   | 1.4   | 1.5                         | 1.5                         | "Base bonded"  | "Base bonded"  |
| UsVol. (mL)    | 1.5   | 1.5  | 1.5  | 1.2  | 1.1   | 1.3                         | 1.3                         | 0.40   | 0.3  |
| MWVol. (μL)    | 200   | 200  | 200  | 25   | 25  | 25                          | 25                          | 30   |  |
| Res. vol. (μL) | <100  | <100   | <100   | <1   | <1  | <3                          | <3                          | <3   | <4   |

100 pcs. per PP-box

## 6.2 Plastic snap ring micro-vials ND11



| Part no.       | 11 14 1190  | 11 14 1656  | 11 19 0933  | 11 19 1022   | 11 19 1707  | 11 19 3597   | 11 19 1217  |
|----------------|---|---|---|--|---|--|---|
| Description    | <b>TopSert</b><br>TPX snap/crimp vial ND11, 32 x 11.6 mm, clear, with integrated 0.2 mL glass micro-insert<br>SILANIZED<br>11 14 1266 | <b>TopSert</b><br>TPX snap/crimp vial ND11, 32 x 11.6 mm, amber, with integrated 0.2 mL glass micro-insert<br>SILANIZED<br>11 14 1695 | 0.3 mL PP snap ring micro-vial, transparent, 32 x 11.6 mm | 0.3 mL TPX snap ring micro-vial, crystal clear, 32 x 11.6 mm | 0.7 mL PP snap ring micro-vial, transparent, 32 x 11.6 mm | 0.7 mL PE snap/crimp vial ND11, micro-vial white, 32 x 11.6 mm | 0.3 mL PP snap ring micro-vial, amber, 32 x 11.6 mm |
| TFVol. (mL)    | 0.35  | 0.35  | 0.4   | 0.4  | 0.9   | 0.87   | 0.4   |
| UsVol. (mL)    | 0.2   | 0.2   | 0.25  | 0.25   | 0.64  | 0.60   | 0.25  |
| MWVol. (μL)    | 30  | 30  | 30  | 30   | 50  | 150  | 30  |
| Res. vol. (μL) | <4  | <4  | <4  | <4   | <25   | <80  | <4  |

100 pcs. per PP-box

100 pcs. per PE-bag

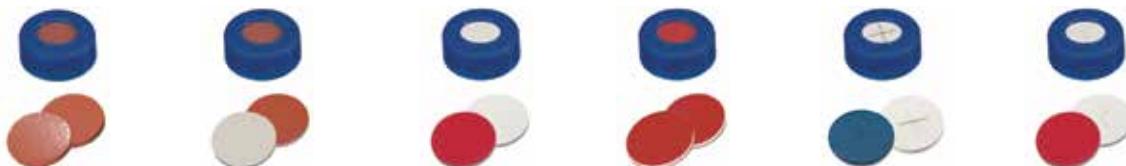
For micro Inserts please refer to chapter 5.2.

## 6.2.1 With PE snap ring cap transparent, 6 mm centre hole, hard or soft version



| Part no.            | 11 15 0635                                 | 11 15 2106   | 11 15 0637                                   | 11 15 0636                           | 11 15 0650                                 | 11 15 2045                              |
|---------------------|--|--|--|--------------------------------------|--|---|
| Part no. soft cap   | 11 15 1850                                 | 11 15 1983   | 11 15 1852                                   | 11 15 1851                           | 11 15 1853                                 | 11 15 2046                              |
| Septa material      | Nat. rubber red-orange/<br>TEF transparent | RedRubber/PTFE beige<br><i>Instrument manuf. quality</i> | Silicone white/PTFE red<br><b>UltraClean</b> | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE<br>blue,<br>cross-slit | Silicone white/PTFE red,<br>pre-cut (Y) |
| Durometer           | 60° shore A                                | 45° shore A  | 45° shore A                                  | 45° shore A                          | 55° shore A                                | 45° shore A                             |
| Thickness           | 1.0 mm                                     | 1.0 mm   | 1.3 mm                                       | 1.0 mm                               | 1.0 mm                                     | 1.3 mm                                  |
| 100 pcs. per PE-bag |  |  |  |                                      |  |   |

## 6.2.2 With PE snap ring cap blue, 6 mm centre hole, hard or soft version



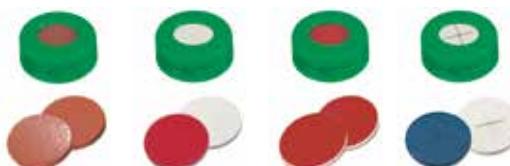
| Part no.            | 11 15 1267                                 | 11 15 2107  | 11 15 1151                                   | 11 15 1268                           | 11 15 1269                              | 11 15 2047                              |
|---------------------|--|---|--|--------------------------------------|---|---|
| Part no. soft cap   | 11 15 1856                                 | 11 15 1817  | 11 15 1854                                   | 11 15 1857                           | 11 15 1858                              | 11 15 2048                              |
| Septa material      | Nat. rubber red-orange/<br>TEF transparent | RedRubber/PTFE beige,<br><i>Instrument manuf. quality</i> | Silicone white/PTFE red<br><b>UltraClean</b> | PTFE red/silicone white/<br>PTFE red | Silicone white/PTFE<br>blue, cross-slit | Silicone white/PTFE red,<br>pre-cut (Y) |
| Durometer           | 60° shore A                                | 45° shore A   | 45° shore A                                  | 45° shore A                          | 55° shore A                             | 45° shore A                             |
| Thickness           | 1.0 mm                                     | 1.0 mm  | 1.3 mm                                       | 1.0 mm                               | 1.0 mm                                  | 1.3 mm                                  |
| 100 pcs. per PE-bag |  |   |  |                                      |   |   |

## 6.2.3 With PE snap ring cap red, 6 mm centre hole, only hard version



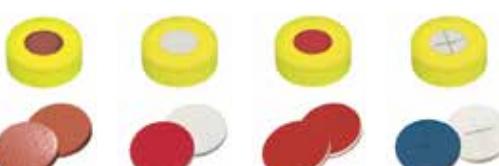
| Part no.            | 11 15 1323                                    | 11 15 1325                                       | 11 15 1324                               | 11 15 1326                                  |
|---------------------|---|--|--|---|
| Septa material      | Nat. rubber<br>red-orange/<br>TEF transparent | Silicone white/<br>PTFE red<br><b>UltraClean</b> | PTFE red/<br>Silicone white/<br>PTFE red | Silicone white/<br>PTFE blue,<br>cross-slit |
| Durometer           | 60° shore A                                   | 45° shore A                                      | 45° shore A                              | 55° shore A                                 |
| Thickness           | 1.0 mm  | 1.3 mm   | 1.0 mm                                   | 1.0 mm                                      |
| 100 pcs. per PE-bag |   |  |  |   |

## 6.2.4 With PE snap ring cap green, 6 mm centre hole, only hard version



| Part no.            | 11 15 1555                                    | 11 15 2017                                       | 11 15 2018  | 11 15 1794                                  |
|---------------------|---|--|---|---|
| Septa material      | Nat. rubber<br>red-orange/<br>TEF transparent | Silicone white/<br>PTFE red<br><b>UltraClean</b> | Silicone white/<br>PTFE red/<br>Silicone white/<br>PTFE red | Silicone white/<br>PTFE blue,<br>cross-slit |
| Durometer           | 60° shore A                                   | 45° shore A                                      | 45° shore A   | 55° shore A                                 |
| Thickness           | 1.0 mm  | 1.3 mm   | 1.0 mm  | 1.0 mm                                      |
| 100 pcs. per PE-bag |   |  |   |   |

## 6.2.5 With PE snap ring cap yellow, 6 mm centre hole, only hard version



| Part no.            | 11 15 1556                                   | 11 15 1886                                       | 11 15 1677                               | 11 15 1793                                  |
|---------------------|--|--|--|---|
| Septa material      | Nat. rubber<br>red-orange/TEF<br>transparent | Silicone white/<br>PTFE red<br><b>UltraClean</b> | PTFE red/<br>silicone white/<br>PTFE red | Silicone white/<br>PTFE blue,<br>cross-slit |
| Durometer           | 60° shore A                                  | 45° shore A                                      | 45° shore A                              | 55° shore A                                 |
| Thickness           | 1.0 mm                                       | 1.3 mm   | 1.0 mm                                   | 1.0 mm                                      |
| 100 pcs. per PE-bag |  |  |  |   |

Colored PE snap ring caps are also available with RedRubber/PTFE layer

## 6.2.6 PE snap cap for snap ring vials ND11 with thinned penetration area



| Part no.            | 11 08 1676                        | 11 08 3960                       | 11 08 3961                       |
|---------------------|-----------------------------------|----------------------------------|----------------------------------|
| Description cap     | PE push-on cap, blue              | PE Snap cap, blue                | PE Snap cap, transparent         |
| Septa material      | with thinned<br>penetration point | with thinned<br>penetration area | with thinned<br>penetration area |
| Durometer           |                                   |                                  |                                  |
| Thickness           |                                   |                                  |                                  |
| 100 pcs. per PE-bag |                                   |                                  |                                  |

# 7. Screw neck ND13



The vials are preferentially used on instruments of the following manufacturers:  
Dionex, Shimadzu, Spark, Varian, VWR (Merck)/Hitachi, Waters (Wisp 48 Position Carousel), etc.

- Vials are packed in a cleanroom in reclosable, tamper-proof evident PP-boxes.
- Any combination of 4 mL crew neck vial ND13 with one of our 13 mm PP screw seals can be obtained as a 2in1 kit
- Upon request barcode labelled vials can also be supplied.
- For storage purposes also available with closed top screw seals.
- Acrylic vial racks with 40 cavities for 4 mL vials



## 7.1 Screw neck vials ND13 and appropriate micro-inserts



| Part no.       | 13 09 0222   | 13 09 1335  | 13 09 0280  | 13 09 1336  | 13 19 3423  | 40 09 0146   | 40 09 3970  | 50 13 0147             |
|----------------|--|---|---|---|---|--|---|------------------------|
| Description    | 4 mL<br>screw neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 4 mL<br>screw neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling<br>lines | 4 mL<br>screw neck vial,<br>45 x 14.7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling<br>lines | 4 mL<br>screw neck vial,<br>45 x 14.7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling<br>lines | 2 mL<br>screw neck micro-<br>vial,<br>45 x 14.7 mm,<br>clear PP | 0.3 mL<br>micro-insert,<br>40 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class, 15<br>mm top | 0.8 mL<br>micro-insert,<br>38 x 8 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>label + filling<br>lines | Spring 50 x 7.5<br>mm  |
| TFVol. (mL)    | 5  | 5   | 5   | 5   | 2.5   | 0.5  | 0.95  |                        |
| UsVol. (mL)    | 4.1  | 4.1   | 4.1   | 4.1   | 2   | 0.4  | 0.8   |                        |
| MWVol. (µL)    | 800  | 800   | 800   | 800   | 150   | 40   | 40  |                        |
| Res. vol. (µL) | <400   | <400  | <400  | <400  | <15   | <9   | <10   |                        |
|                | 100 pcs. per PP-box  |   |   |   | 100 pcs. per<br>PE-bag  | 10 x 100 pcs. per PP-box   |   | 100 pcs. per<br>PE-bag |

## 7.2 PP screw seals ND13

- Ready to use combination seals; no time-consuming and “tricky” assembly.
- No contamination of the liner with sweat/fat that normally is caused by manual assembly.
- Available as closed or open top screw seals with 13-425 thread.
- Tamper-proof evident and reclosable zip-lock bags ensure product safety.
- Broad variety of different septa materials for almost all applications.



| Part no.        | 13 15 0456  | 13 15 1639  | 13 15 0815  | 13 15 0887  | 13 15 0292  | 13 15 1293  | 13 08 3971                                 | 13 15 0439   | 13 15 1638   | 13 15 0648   |
|-----------------|---|---|---|---|---|---|--|--|--|--|
| Description cap | Polypropylene<br>screw cap<br>black,<br>8.5 mm<br>centre hole | Polypropylene<br>screw cap<br>transparent, | Polypropylene<br>screw cap<br>black,<br>closed top | Polypropylene<br>screw cap<br>black,<br>closed top | Polypropylene<br>screw cap<br>black,<br>closed top |
| Septa material  | Nat. rubber<br>red-orange/<br>TEF<br>transparent              | Butyl red/<br>PTFE grey                                       | Silicone<br>cream/PTFE<br>red                                 | Silicone dark<br>blue/PTFE<br>white                           | PTFE red/<br>silicone white/<br>PTFE red                      | Silicone<br>white/PTFE<br>blue,<br>cross-slit                 | With thinned<br>Penetration<br>area PP     | Nat. rubber<br>red-orange/<br>TEF<br>transparent   | Butyl red/<br>PTFE grey                            | Silicone<br>cream/PTFE<br>red                      |
| Durometer       | 60° shore A   | 55° shore A   | 55° shore A   | 45° shore A   | 45° shore A   | 55° shore A   |  | 60° shore A  | 55° shore A  | 55° shore A  |
| Thickness       | 1.3 mm  | 1.3 mm  | 1.5 mm  | 1.3 mm  | 1.0 mm  | 1.5 mm  | 0.25 mm                                    | 1.3 mm   | 1.3 mm   | 1.5 mm   |

Further screw seals ND13 with closed/open top caps are available upon request  
100 pcs. per PE-bag

## 7.3 Septa 12 mm

| Part no.   | 12 02 0168                    | 12 02 0223                              | 12 02 1635          | 12 02 0143              | 12 02 0463                        | 12 02 0322               |
|--|-------------------------------|---|---------------------|-------------------------|-----------------------------------|--------------------------|
| Septa material   | PTFE virginal                 | Nat. rubber red-orange/ TEF transparent | butyl red/PTFE grey | Silicone cream/PTFE red | PTFE red/silicone white/ PTFE red | Silicone white/PTFE blue |
| Durometer  | 53° shore D                   | 60° shore A                             | 55° shore A         | 55° shore A             | 45° shore A                       | 55° shore A              |
| Thickness  | 0.25 mm<br>(only unassembled) | 1.3 mm                                  | 1.3 mm              | 1.5 mm                  | 1.0 mm                            | 1.5 mm<br>cross-slit     |
| Further 12 mm septa are available upon request<br>1000 pcs. per PE-bag |                               |   |                     |                         |                                   |                          |

## 7.4 PP screw caps ND13

| Part no.            | 13 08 0166   | 13 08 0336                                 | 13 08 0639   | 13 08 0452                                 |
|---------------------|--|--|--|--|
| Cap                 | Polypropylene screw cap, black, 8.5 mm centre hole | Polypropylene screw cap, black, closed top | Polypropylene screw cap, white, 8.5 mm centre hole | Polypropylene screw cap, white, closed top |
| 100 pcs. per PE-bag |  |  |  |  |

## 7.5 Special 2in1 kits

3in1 kits for VWR (Merck)/Hitachi and Waters autosamplers

### Part no. 3in1 kit

| 13 28 1071  | 13 09 0222   | 13 08 0166   | 12 02 0168                                |
|---|--|--|---|
| 3in1 kit consisting of:<br>13 09 0222,<br>13 08 0166,<br>12 02 0168 | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | Polypropylene screw cap, black, 8.5 mm centre hole | PTFE virginal,<br>53° shore D,<br>0.25 mm |
| 13 28 1076  | 13 09 0280   | 13 08 0166   | 12 02 0168                                |
| 3in1 kit consisting of:<br>13 09 0280<br>13 08 0166<br>12 02 0168   | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | Polypropylene screw cap, black, 8.5 mm centre hole | PTFE virginal,<br>53° shore D,<br>0.25 mm |
| 100 pcs. each in one kit  |  |  |   |

Other 2in1 kits

### Part no. 2in1 kit

| 13 28 1067   | 13 09 0222   | 13 15 0456   |
|--|--|--|
| 2in1 kit consisting of:<br>13 09 0222,<br>13 15 0456 | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | PP screw cap, black,<br>8.5 mm centre hole;<br>nat. rubber red-orange/ TEF transparent,<br>60° shore A, 1.3 mm |
| 13 28 1069   | 13 09 0222   | 13 15 0815   |
| 2in1 kit consisting of:<br>13 09 0222,<br>13 15 0815 | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | PP screw cap, black,<br>8.5 mm centre hole;<br>Silicone cream/PTFE red,<br>55° shore A, 1.5 mm                 |
| 13 28 1070   | 13 09 0222   | 13 15 0292   |
| 2in1 kit consisting of:<br>13 09 0222,<br>13 15 0292 | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | PP screw cap, black,<br>8.5 mm centre hole;<br>PTFE red/silicone white/PTFE red,<br>45° shore A, 1.0 mm        |
| 13 28 1541   | 13 09 0222   | 13 15 1293   |
| 2in1 kit consisting of:<br>13 09 0222<br>13 15 1293  | 4 mL crew neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | PP screw cap, black,<br>8.5 mm centre hole;<br>Silicone white/PTFE blue,<br>55° shore A, 1.5 mm<br>cross-slit  |
| 100 pcs. each in one kit                             |  |  |

Further 2in1 kits are available upon request

# 8. Shell vials



The vials are preferentially used on instruments of the following manufacturers: Alcott, Gilson, Shimadzu, Waters (Wisp 96 respectively 48 position carousel)

- PE-Plugs of 08 14 0513/08 14 0595; 11 14 0544/11 14 0545 and 15 14 0548/  
15 14 0562 may be used for the fixation of a micro-insert; thus no springs are required for their usage.
- For the 1 mL shell vials a plug with and one without insertion barrier for micro-inserts is available. The one without barrier shows a better valve effect with regard to the formation of a vacuum.
- Star-shaped diaphragm enables easy penetration of the PE-Plug.
- 08 14 1168 + 08 14 1169 with soft style plug for Waters and Shimadzu.
- Recommended for HPLC usage.
- Shell vials and the appropriate plugs can also be supplied as a 2in1 kit.
- A handy and inexpensive vial/closure combination for uncritical analyses.



## 8.1 Shell vials 1 mL and 4 mL and appropriate micro-inserts



| Part no.  | 08 14 0641  | 08 14 3963  | 08 14 3964  | 08 14 1168*   | 08 14 1169*   | 05 09 0706  | 15 14 0548   | 15 14 0562   | 06 09 0651   |
|---|---|---|---|---|---|---|--|--|--|
| Description   | 1 mL shell vial, 35 x 7.8 mm, clear glass, 1 <sup>st</sup> hydrol. class, 6 mm PE-Plug, transparent, for ALCOTT | 1 mL shell vial, 40 x 8.2 mm, clear glass, 1 <sup>st</sup> hydrol. class, 8 mm PE-Lamella Plug, easy to penetrante, apply and remove, soft, without insertion barrier | 1 mL shell vial, 40 x 8.2 mm, amber glass, 1 <sup>st</sup> hydrol. class, 8 mm PE-Lamella Plug, easy to penetrante, apply and remove, soft, without insertion barrier | 1 mL shell vial, 40 x 8.2 mm, clear glass, 1 <sup>st</sup> hydrol. class, 8 mm PE-Plug, soft, without insertion barrier for micro-insert, transparent | 1 mL shell vial, 40 x 8.2 mm, amber glass, 1 <sup>st</sup> hydrol. class, 8 mm PE-Plug, soft, without insertion barrier for micro-insert, transparent | 0.1 mL micro-insert, 34 x 5 mm, clear glass, 1 <sup>st</sup> hydrol. class, 13 mm top | 4 mL shell vial, 44.6 x 14.65 mm, clear glass, 1 <sup>st</sup> hydrol. class, 15 mm PE-Plug, transparent | 4 mL shell vial, 44.6 x 14.65 mm, amber glass, 1 <sup>st</sup> hydrol. class, 15 mm PE-Plug, transparent | 0.3 mL micro-insert, 43.45 x 6 mm, clear glass, 1 <sup>st</sup> hydrol. class, 13 mm top |
| for Waters Wisp 96 Pos. Carousel, Shimadzu                |   |   |   | for Waters Wisp 96 Pos. Carousel, Shimadzu  | for Waters Wisp 96 Pos. Carousel, Shimadzu  | (only in comb. with 08 14 0513 + 08 14 0595)  | for Waters Wisp 48 Pos. Carousel   | for Waters Wisp 48 Pos. Carousel   |  |
| TFVol. (mL)   | 1.1   | 1.4   | 1.4   | 1.4   | 1.4   | 0.2   | 5.5  | 5.5  | 0.4  |
| UsVol. (mL)   | 0.8   | 1   | 1   | 1   | 1   | 0.15  | 4  | 4  | 0.3  |
| MWVol. (µL)   | 60  | 100   | 100   | 100   | 100   | 25  | 1000   | 1000   | 50   |
| Res. vol. (µL)  | <25   | <80   | <80   | <80   | <80   | <0.1  | <800   | <800   | <8   |
| 100 pcs. per PP-box (vials) / 100 pcs. per PE-bag (plugs) |   |   |   |   | 10 x 100 pcs. per PP-box  | 100 pcs. per PP-box (vials) / 100 pcs. per PE-bag (plugs)                             | 100 pcs. per PP-box  | 10 x 100 pcs. per PP-box   |  |

\*In case a micro-insert is used in combination with the shell vial, please use 08 14 0513 respectively 08 14 0595, as they have an insertion barrier for micro-inserts. However, please note that flexibility of the plug with insertion barrier is reduced, so that pushing of the plug into the vial as well as penetration is more difficult.

## 8.2 Shell vials 2 mL and appropriate micro-inserts



| Part no.  | 11 14 0544  | 11 14 0545  | 06 09 0357  | 06 09 0669  | 06 09 0866  |
|---|---|---|---|---|---|
| Description   | 2 mL shell vial,<br>31.5 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>12 mm PE-Plug,<br>transparent<br>for various instruments | 2 mL shell vial,<br>31.5 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>12 mm PE-Plug,<br>transparent<br>for various instruments | 0.1 mL micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>15 mm top<br><i>SILANIZED</i><br>06 09 1240 | 0.1 mL micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>12 mm top<br><i>SILANIZED</i><br>06 09 1792 | 0.2 mL micro-insert,<br>31 x 6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>flat bottom<br><i>SILANIZED</i><br>06 09 1792 |
| TFVol. (mL)   | 2.3   | 2.3   | 0.34  | 0.35  | 0.5   |
| UsVol. (mL)   | 1.5   | 1.5   | 0.25  | 0.30  | 0.35  |
| MWVol. (µL)   | 200   | 200   | 30  | 30  | 40  |
| Res. vol. (µL)  | <100  | <100  | <4  | <4  | <8  |
| 100 pcs. per PP-box (vials) / 100 pcs. per PE-bag (plugs) |   |   |   |   |   |

## 8.3 PP shell vials 1 mL, 3 mL and 4 mL



| Part no.  | 08 34 2194  | 15 34 2199   | 15 34 2197  |
|---|---|--|---|
| Description   | 1 mL PP shell vial,<br>40 x 8 mm,<br>clear;<br><br>8 mm PE Plug,<br>transparent | 3 mL PP shell vial,<br>44.6 x 14.65 mm,<br>clear,<br>with inner cone;<br>15 mm PE Plug,<br>transparent | 4 mL PP shell vial,<br>44.6 x 14.65 mm,<br>clear; |
| TFVol. (mL)   | 1.28  | 4.00   | 5.5   |
| UsVol. (mL)   | 1.05  | 3  | 4   |
| MWVol. (µL)   | 50  | 40   | 1000  |
| Res. vol. (µL)  | <25   | <8   | <800  |
| 100 pcs. per PE-bag (vials) / 100 pcs. per PE-bag (plugs) |   |  |   |

# Industrial selection card

This selection targets more than one customer group. Petro and as well other industry customers, where LC and GC is used at 25% HPLC and 75% GC, with a focus on non polar solvents. (Exception: Ion Chromatography, where only water is used as solvent) They deal with small molecules chromatography and the analyte concentration varies (often very low). The matrix can be water, soil, sludge, recycling, fuel, oil, air etc.

In this chapter you will find the most important parts from the following product classes:

- Screw and crimp vials and closures
- Plastic vials
- Headspace vials and closures
- Certified kits
- Vial storage



## 9 mm screw thread vials and closures

|  |  |   |   |   |   |
|--|--|---|---|---|---|
|  |  |   |   |   |   |
| <b>11 09 0519</b><br>1.5 mL<br>short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>11 09 0520</b><br>1.5 mL<br>short thread vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>11 09 2746</b><br>1.5 mL<br>short thread SureStop vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>with overwind-barrier | <b>09 15 1819</b><br>9 mm combination seal:<br>PP short thread cap,<br>blue, with centre hole;<br>RedRubber/PTFE beige,<br>45° shore A,<br>1.0 mm | <b>09 15 0838</b><br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | <b>09 15 0869</b><br>9 mm combination seal:<br>PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE blue,<br>55° shore A,<br>1.0 mm,<br>slit |

## CERT kits

|  |  |                                    |                                    |
|--|--|------------------------------------|------------------------------------|
|  |  |                                    |                                    |
| <b>11 40 2556</b><br>HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>clear glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | <b>11 40 2557</b><br>HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>amber glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | <b>11 06 0006</b><br>11 mm crimper | <b>20 06 0008</b><br>20 mm crimper |

## Racks/tools

## Crimp vials and closures


**11 09 0476**

1.5 mL crimp neck vial,  
32 x 11.6 mm, clear glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 09 0477**

1.5 mL crimp neck vial,  
32 x 11.6 mm, amber glass,  
1<sup>st</sup> hydrol. class,  
wide opening,  
label and filling lines

**11 03 0209**

11 mm combination seal:  
aluminum cap, clear lacquered,  
centre hole;  
natural rubber red-orange/TEF  
transparent, 60° shore A, 1.0 mm

**11 03 1875**

11 mm combination seal:  
aluminum cap, clear lacquered,  
with centre hole;  
RedRubber/PTFE beige,  
45° shore A, 1.0 mm

**11 03 0247**

UltraClean closure:  
11 mm aluminum cap,  
clear lacquered,  
centre hole;  
silicone white/PTFE red,  
45° shore A, 1.3 mm

## Headspace vials and closures


**18 09 1307**

20 mL precision thread  
headspace-vial,  
75.5 x 22.5 mm,  
clear glass,  
1<sup>st</sup> hydrol. class,  
rounded bottom  
(for magnetic screw caps)

**18 03 1309**

UltraClean closure:  
18 mm magnetic  
universal screw cap,  
silver, centre hole;  
silicone transparent blue/PTFE white,  
45° shore A,  
1.3 mm

**20 09 0873**

20 mL headspace-vial,  
75.5 x 22.5 mm, clear  
glass,  
1<sup>st</sup> hydrol. class,  
DIN crimp neck,  
long neck,  
rounded bottom

**20 03 0142**

UltraClean closure:  
20 mm aluminum cap,  
plain, centre hole;  
silicone transparent blue/PTFE white,  
45° shore A,  
3.0 mm

**20 03 0975**

UltraClean closure:  
20 mm magnetic cap, gold  
lacquered, 8 mm centre hole;  
silicone transparent blue/PTFE  
transparent,  
45° shore A,  
3.0 mm

## Plastic vials


**11 19 1205**

1.5 mL PP  
short thread vial,  
32 x 11.6 mm,  
transparent,  
with filling lines

**11 19 1706**

0.7 mL PP  
short thread micro-vial,  
32 x 11.6 mm,  
transparent

**11 19 0932**

0.3 mL PP  
short thread micro-vial,  
32 x 11.6 mm,  
transparent

**24 09 0589**

20 mL EPA crew neck vial,  
57 x 27.5 mm,  
clear glass, 1<sup>st</sup> hydrol.  
class

**24 09 0402**

40 mL EPA crew neck vial,  
95 x 27.5 mm,  
clear glass, 1<sup>st</sup> hydrol.  
class

**24 15 1163**

24 mm combination seal:  
PP screw cap,  
white, centre hole;  
Silicone white/PTFE beige,  
45° shore A, 3.2 mm,  
EPA-quality

# 9. Headspace ND20 (ND18)



Chapter 9 "Headspace" of our catalogue has been completely redesigned, in order to simplify the identification of suitable consumables for a certain instrument. Especially in headspace this is extremely difficult, as besides numerous vial types there are also different cap types required depending on the autosampler.

While you can take the suitable vial type for the different instrument manufacturers from the upper part of the double paged chart, you'll find the appropriate recommended closures in the middle section.

The various cap types that have to be considered are color-coded. At the bottom of the page a break-down of the indicated part numbers according to the color-coded cap types and the different septa materials is listed. For better illustration of the septa type you'll find on page 49 photographs and article descriptions.



## Important safety tip

As headspace vials have to withstand high internal pressure, almost all vials on the next page have a wall thickness of 1.2 mm. Thus it is guaranteed that the vial will not burst. Contrary to a widely spread opinion, the seal and not the vial represents the weakest part of the whole system. Under pressure the septa will bulge against the aluminum cap with such a force that the cap is torn apart. By own testing we verified that e.g. our PerkinElmer vial 20 09 0297 can easily withstand 10 bars or more while the seal is torn apart at around 10 bars when no pressure release system – like our headspace cap – is used.

## Headspace vials might differ in

- **Volume (5 mL, 10 mL, 20 mL)**
- **Rounded or flat bottom**

A rounded bottom is more sturdy and thus more resistant to the high pressure within the vial during the heating process. Furthermore the vial slides more easily into the heating block when being transported by a magnet. A flat bottom might be necessary when vials have to run within the instrument on a slightly downwards tendency.
- **Bevelled top or flat DIN crimp neck/screw neck**

A bevelled top headspace neck might be required for some special closure systems (PerkinElmer), however, a liner has more surface to lie on with a flat DIN crimp neck. The more surface for the liner to rest on, the tighter the seal.

Length of the neck (instrument specific)
- **Clear/amber glass**
- **With/without label and filling lines**
- **Upon request with a barcode label**

## Headspace closures might differ in

- **Type of cap**

Centre hole crimp cap, headspace cap, centre tear off cap, complete tear off cap, magnetic crimp cap with 5 mm or 8 mm centre hole, bimetal cap, magnetic screw cap (with 8 mm centre hole or closed top), PP screw cap, PE Ccap. screw caps are a novelty in the crimp neck dominated headspace area. However, they represent a ready to use, convenient solution, that does not require any additional tools (crimpers, decappers). Thus samples can be taken and sealed out in the field without the necessity of sample transfer later in the lab. The magnetic screw seals can be used universally for headspace as well as for SPME.
- **Type of liner**

Butyl, butyl/PTFE, pharma-fix-liner (butyl/PTFE), silicone/PTFE, silicone/aluminum foil, viton, natural rubber/TEF

Besides the material the liners may differ in thickness, hardness (° shore A), color, type of PTFE lamination, grade of silicone (UltraClean).

## 9.1 Headspace-vials ND20 + ND18



| Part no.            | 20 09 0342   | 20 09 0801   | 20 09 1405<br>20 09 1691   | 20 09 0802  | 20 09 0795   | 20 09 0297<br>20 09 1223  | 20 09 0440  |
|---------------------|--|--|--|---|--|---|---|
| Description         | 5 mL<br>headspace-vial,<br>38.2 x 22 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom | 5 mL<br>crimp neck vial,<br>38 x 20 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>flat bottom | 10 mL<br>headspace-vial,<br>46 x 22.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN-crimp neck,<br>rounded bottom | 10 mL<br>crimp neck vial,<br>54.5 x 20 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>flat bottom | 10 mL<br>headspace-vial,<br>46 x 22.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN-crimp neck,<br>long neck, flat bottom | 20 mL<br>headspace-vial,<br>75.5 x 23 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom | 20 mL<br>headspace-vial,<br>75.5 x 23 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom,<br>label + filling lines |
| TFVol. (mL)         | 9.4  | 8  | 12.3   | 12.2  | 11.7   | 22  | 22.4  |
| UsVol. (mL)         | 5  | 5  | 10   | 10  | 10   | 20  | 20  |
| MWVol. (μL)         | 1500   | 1500   | 1500   | 1500  | 1500   | 1500  | 1500  |
| Res. vol. (μL)      | 800  | 800  | 800  | 800   | 800  | 800   | 800   |
| 100 pcs. per PP-box |  |  |  |   |  |   |   |
| Perkin Elmer        | Varian   | Carlo Erba, CTC,<br>Fisons, Varian (CP)  | Varian   | Carlo Erba, Dani,<br>Fisons, Agilent  | Perkin Elmer,<br>Tekmar  | Perkin Elmer,<br>Tekmar   |   |

TFVol. = Total Volume/Filling Volume (mL), UsVol. = Usable Volume (mL), MWVol. = Minimum Working Volume (mL), Res. vol. = Residual Volume (μL)



| Part no.            | 20 09 3175  | 20 09 0796   | 20 09 0873<br>20 09 1690   | 20 09 1222   | 18 09 1306<br>18 09 1310   | 18 09 1307<br>18 09 1311   |
|---------------------|---|--|--|--|--|--|
| Description         | 20 mL<br>headspace-vial,<br>75.5 x 22.75 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>bevelled crimp neck,<br>long neck,<br>flat bottom | 20 mL<br>headspace-vial,<br>75.5 x 22.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN-crimp neck,<br>long neck,<br>rounded bottom | 20 mL<br>headspace-vial,<br>75.5 x 22.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN-crimp neck,<br>long neck,<br>rounded bottom | 20 mL<br>SPME vial,<br>75.5 x 22.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>DIN-crimp neck,<br>long neck,<br>rounded bottom,<br>special crimp neck | 10 mL<br>precision thread<br>vial ND18,<br>46 x 22.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom | 20 mL<br>precision thread<br>vial ND18,<br>75.5 x 22.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom |
| TFVol. (mL)         | 21.2  | 21.2   | 20.9   | 21.2   | 10.8   | 20.6   |
| UsVol. (mL)         | 20  | 20   | 20   | 20   | 8  | 18   |
| MWVol. (μL)         | 1500  | 1500   | 1500   | 1500   | 1500   | 1500   |
| Res. vol. (μL)      | 800   | 800  | 800  | 800  | 800  | 800  |
| 100 pcs. per PP-box |   |  |  |  |  |  |
| Agilent             | Carlo Erba, Dani,<br>Fisons, Agilent  | CTC PAL (Varian,<br>Gerstel, Atas,<br>Shimadzu), TriPlus HS  | SPME vial for<br>CTC PAL   | CTC PAL (Varian,<br>Gerstel, Atas,<br>Shimadzu, Agilent)   | CTC PAL (Varian,<br>Gerstel, Atas,<br>Shimadzu, Agilent)   |  |

## 9. Headspace ND20 (ND18)

## 9.2 Headspace vials + closures ND20 + ND18 (Headspace compatibility chart)

|   |   |   |  |  |  |  |
|---|---|---|--|--|--|--|
| Scale 1:3<br>Original size p.s. 95  |   |   |  |  |  |  |
| <b>Part no.</b>   | <b>20 09 0795</b>                                 | <b>20 09 0796<br/>20 09 3175</b>                              | <b>20 09 1405<br/>20 09 1691</b>   | <b>20 09 0873<br/>20 09 1690</b>   | <b>20 09 1222</b>                              | <b>18 09 1306<br/>18 09 1310</b>                                       |
| Description   | 10 mL headspace-vial, flat bottom 46 x 22.5 mm    | 20 mL headspace-vial, flat bottom 75.5 x 22.5 mm              | 10 mL headspace-vial, rounded bottom 46 x 22.5 mm  | 20 mL headspace-vial, rounded bottom 75.5 x 22.5 mm                        | 20 mL SPME vial, rounded bottom 75.5 x 22.5 mm | 10 mL Precision thread vial, rounded bottom 46 x 22.5 mm               |
| For use on instruments  | Agilent, Carlo Erba, DANI, Fisons                 | Agilent, Carlo Erba, DANI, Fisons                             | Carlo Erba, CTC PAL (Varian, Gerstel, Atas, Shimadzu), Fisons, Varian, Thermo Scientific | CTC PAL (Varian, Gerstel, Atas, Shimadzu) Thermo Scientific TriPlus HS *** | SPME vial for CTC PAL                          | CTC Combi PAL (Varian, Gerstel, Atas, Shimadzu), PerkinElmer*, Agilent |
| Remarks   | ***not suitable for Thermo Scientific HS250/HS500 |   |  |  |  |  |
| Autosampler compatibility   |   |   |  |  |  |  |
| Agilent G1888A, Agilent HS 7694 (DANI HS 39.50/HS 86.50)  | 20 03 0030/20 03 0901<br>20 03 0264/20 03 0828    | 20 03 0030/20 03 0901<br>20 03 0264/20 03 0828                |  |  |  |  |
| Agilent CTC Combi Pal   |   |   |  |  |  |  |
| CTC Combi PAL (HS Mode) (Gerstel MPS 2/Varian)<br>CTC PAL HTC-xt, CTC HTS-xt, CTC HTX-xt, CTC PAL Combi-xt liquid Mode, CTC Combi-xt HS Option, CTC GC-xt HS Option |   |   | 20 03 0975<br>20 03 1536   | 20 03 0975<br>20 03 1536   | 20 03 0975<br>20 03 1536                       | 18 03 1578/18 03 1309<br>18 03 1414                                    |
| CTC Combi PAL (SPME Mode) (Gerstel MPS 2/Varian)<br>CTC Combi- xt SPME Options  |   |   |  |  | 20 03 1246/<br>20 03 1264                      | 18 03 1578/18 03 1309<br>18 03 1414/18 03 2063                         |
| CTC HS 500  |   |   | 20 03 0665   | 20 03 0665   |  |  |
| HTA HT200H  | 20 03 0142/<br>20 03 0901                         |   |  | 20 03 0142/<br>20 03 0901  |  |  |
| PerkinElmer HS6   |   |   |  |  |  |  |
| PerkinElmer HS40/HS100/HS101  |   |   |  |  |  |  |
| TurboMatrix™ HS16/HS40/HS40XL/HS40 Trap/HS110/HS110 Trap  |   |   |  |  |  |  |
| Shimadzu AOC-5000 (HS Mode)<br>Shimadzu SIL-30 ACMP   |   |   | 20 03 0975<br>20 03 1536   | 20 03 0975<br>20 03 1536   | 20 03 0975<br>20 03 1536                       | 18 03 1578/18 03 1309<br>18 03 1414                                    |
| Shimadzu AOC-5000 (SPME Mode)   |   |   |  |  | 20 03 1246/20 03 1264                          | 18 03 1578/18 03 1309<br>18 03 1414/18 03 2063                         |
| Thermo Scientific HS250/HS500 (Carlo Erba/Fisons/Thermo Scientific)   |   |   | 20 03 0711/20 03 0665/<br>20 03 0710   |  |  |  |
| Thermo Scientific HS800 (Carlo Erba/Fisons/Thermo Scientific)   |   |   | 20 03 0711/20 03 0665/<br>20 03 0710   | 20 03 0711/20 03 0665/<br>20 03 0710                                       |  |  |
| Thermo Scientific HS850 (Carlo Erba/ Fisons/ Thermo Scientific)   |   |   | 20 03 0142/20 03 0901/<br>20 03 0127/20 03 0030/<br>20 03 0059                           | 20 03 0142/<br>20 03 0901/20 03 0127/<br>20 03 0030/20 03 0059             |  |  |
| Thermo Scientific HS2000, Thermo Scientific TriPlus (HS Mode), Thermo Scientific TriPlus 300, Thermo Scientific TriPlus RSH   |   |   | 20 03 0142/20 03 0901/<br>20 03 0127/20 03 0030/<br>20 03 0059                           | 20 03 0142/20 03 0901/<br>20 03 0127/20 03 0030/<br>20 03 0059             |  |  |
| Thermo Scientific TriPlus (SPME Mode)   |   |   | 20 03 0142/<br>20 03 0901  | 20 03 0142/<br>20 03 0901  |  |  |
| Tekmar HT 3   |   |   |  |  |  |  |
| Varian CP-9020/9025, CP-9060 Varian Genesis   |   | same closures for Genesis                                     | 20 03 0142/20 03 0901/<br>20 03 0030/20 03 0059  |  |  |  |
| Breakdown headspace-seals   |   |   |  |  |  |  |
| Aluminum crimp cap, plain, 10 mm centre hole  |   | Headspace-cap, clear lacquered (pressure release cap)         |  | Magnetic crimp cap, gold, 5 mm centre hole                                 |  |  |
| <b>20 03 0127</b>   |   | <b>20 03 0126</b>   |  | <b>20 03 0711</b>  |  |  |
| with butyl, dark grey, 55° shore A, 3.0 mm  |   | with butyl, dark grey, 55° shore A, 3.0 mm                    |  | with butyl, dark grey, 55° shore A, 3.0 mm                                 |  |  |
| <b>20 03 0059</b>   |   | <b>20 03 0112</b>   |  | <b>20 03 0710</b>  |  |  |
| with butyl/PTFE, grey, 50° shore A, 3.0 mm  |   | with butyl/PTFE, grey, 50° shore A, 3.0 mm                    |  | with pharma-fix-septa, butyl/PTFE, 50° shore A, 3.0 mm                     |  |  |
| <b>20 03 0030</b>   |   | <b>20 03 0264</b>   |  | <b>20 03 0665</b>  |  |  |
| with pharma-fix-septa, butyl/PTFE, 50° shore A, 3.0 mm  |   | with pharma-fix-septa, butyl/PTFE, 50° shore A, 3.0 mm        |  | with silicone blue transp./PTFE transp., 45° shore A, 3.0 mm               |  |  |
| <b>20 03 0142</b>   |   | <b>20 03 0163</b>   |  |  |  |  |
| with silicone blue transp./PTFE white, 45° shore A, 3.0 mm  |   | with silicone blue transp./PTFE white, 45° shore A, 3.0 mm    |  |  |  |  |
| <b>20 03 0901</b>   |   | <b>20 03 0828</b>   |  |  |  |  |
| with silicone white/PTFE beige, 45° shore A, 3.2 mm   |   | with silicone white/PTFE beige, 45° shore A, 3.2 mm           |  |  |  |  |
| <b>20 03 0327</b>   |   | <b>20 03 0326</b>   |  |  |  |  |
| with silicone white/Aluminum foil silver, 50° shore A, 3.0 mm   |   | with silicone white/Aluminum foil silver, 50° shore A, 3.0 mm |  |  |  |  |



## 9.3 Other crimp neck vials ND20 and crew neck vial ND18



Scale 1:2, original size: P. 95



Scale 1:2, original size: P. 95



Scale 1:2

| Part no.       | 20 09 0289  | 20 09 0343  | 18 09 0864  |
|----------------|---|---|---|
| Description    | 50 mL crimp neck vial,<br>101 x 31 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 100 mL crimp neck vial,<br>94.5 x 51.6 mm,<br>clear glass,<br>3 <sup>rd</sup> hydrol. class | 20 mL headspace-vial,<br>75.5 x 23 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>rounded bottom,<br>with screw thread ND18 |
| TFVol. (mL)    | 58  | 118.8   | 21.2  |
| UsVol. (mL)    | 50  | 100   | 20  |
| MWVol. (µL)    | 3080  | 10 000  | 1500  |
| Res. vol. (µL) | 1500  | 6000  | 800   |
|                | 100 pcs. per PP-box   | 88 pcs. shrink-wrapped  | 100 pcs. per PP-box   |

Perkin Elmer

## 9.4 Aluminum crimp seals ND20

Overview of the various crimp caps, which can be obtained with a broad variety of different liners

| Centre hole cap                                       | Headspace cap   | Centre tear-off cap                           | Complete tear-off cap                         | Magnetic crimp cap                    | Magnetic crimp cap                    | Magnetic bimetal crimp cap           |
|---|---|---|---|---------------------------------------|---------------------------------------|--------------------------------------|
|   |   |   |   |                                       |                                       |                                      |
| Plain, red, blue,<br>gold, green<br>10 mm centre hole | Clear lacquered,<br>scorelines break open<br>at $3.0 \pm 0.5$ bar for<br>pressure release | Clear lacquered,<br>red, blue, gold,<br>green | Clear lacquered,<br>red, blue, gold,<br>green | Gold,<br>5 mm centre hole<br>RSH, PAL | Gold,<br>8 mm centre hole<br>RSH, PAL | Red,<br>8 mm centre hole<br>RSH, PAL |

Any type of cap can only be obtained in combination with a liner or a stopper

### 9.4.1 Butyl seals

- Temperature resistant from -40°C up to 120°C.
- Due to the missing PTFE lamination only suitable for uncritical analyses.
- Low-cost product.



| Part no.       | 20 03 0127                                       | 20 03 0126                        | 20 03 0195                              | 20 03 0212                                | 20 03 0711                              | 20 03 1157                              |
|----------------|--|-----------------------------------|---|---|---|---|
| Description    | Aluminum cap, plain,<br>cap<br>10 mm centre hole | Headspace cap,<br>clear lacquered | Centre tear-off cap,<br>clear lacquered | Complete tear-off cap,<br>clear lacquered | Magnetic cap, gold,<br>5 mm centre hole | Magnetic cap, gold,<br>8 mm centre hole |
| Septa material | Chloro-butyl, dark grey                          |                                   |   |   |   |   |
| Durometer      | 55° shore A                                      |                                   |   |   |   |   |
| Thickness      | 3.0 mm   |                                   |   |   |   |   |
|                | 100 pcs. per PE-bag                              |                                   |   |   |   |   |

## 9.4.2 Butyl/PTFE seals (completely PTFE laminated)

- Temperature resistant from -40°C up to 120°C.
- Completely laminated with PTFE.



| Part no.       | 20 03 0059                             | 20 03 0112                     | 20 03 0194                           | 20 03 0186                             | 20 03 0698                           | 20 03 1186                           | 20 03 1623                                  |
|----------------|--|--------------------------------|--------------------------------------|--|--------------------------------------|--------------------------------------|---|
| Description    | Aluminum cap, plain, 10 mm centre hole | Headspace cap, clear lacquered | Centre tear-off cap, clear lacquered | Complete tear-off cap, clear lacquered | Magnetic cap, gold, 5 mm centre hole | Magnetic cap, gold, 8 mm centre hole | Magnetic bimetal cap, red, 8 mm centre hole |
| Septa material |  |                                |                                      | Bromo-butyl/PTFE, grey                 |                                      |                                      |   |
| Durometer      |  |                                |                                      | 50° shore A                            |                                      |                                      |   |
| Thickness      |  |                                |                                      | 3.0 mm                                 |                                      |                                      |   |
|                |  |                                |                                      | 100 pcs. per PE-bag                    |                                      |                                      |   |

## 9.4.3 Pharma-fix seals (butyl/PTFE)

- Special, moulded butyl/PTFE liner that is only laminated with PTFE in the contact area towards the sample. On the glass rims the elastic butyl achieves a very tight seal.
- Temperature resistant from -40°C up to 120°C.
- Tighter alternative to the completely laminated butyl/PTFE liners (see chapter 10.3.2).



| Part no.       | 20 03 0030                             | 20 03 0264                     | 20 03 0060                           | 20 03 0061                             | 20 03 0710                           | 20 03 1200                           |
|----------------|--|--------------------------------|--------------------------------------|--|--------------------------------------|--------------------------------------|
| Description    | Aluminum cap, plain, 10 mm centre hole | Headspace cap, clear lacquered | Centre tear-off cap, clear lacquered | Complete tear-off cap, clear lacquered | Magnetic cap, gold, 5 mm centre hole | Magnetic cap, gold, 8 mm centre hole |
| Septa material |  |                                |                                      | Pharma-Fix-Septa, bromo-butyl/PTFE     |                                      |                                      |
| Durometer      |  |                                |                                      | 50° shore A                            |                                      |                                      |
| Thickness      |  |                                |                                      | 3.0 mm                                 |                                      |                                      |
|                |  |                                |                                      | 100 pcs. per PE-bag                    |                                      |                                      |

## 9.4.4 Silicone/PTFE seals (completely PTFE laminated)

- Temperature resistant from -60°C up to 200°C.
- Clean/UltraClean liners for sensitive analyses.
- White/beige liner corresponds to competitor HT liner.
- Completely laminated with PTFE.
- Soft liners for easy penetration.



| Part no.        | 20 03 0142                                      | 20 03 0163                     | 20 03 0226                           | 20 03 0227                             | 20 03 0665  | 20 03 0975                           | 20 03 1536                                  |
|-----------------|---|--------------------------------|--------------------------------------|--|---|--------------------------------------|---|
| Description cap | Aluminum cap, plain, 10 mm centre hole          | Headspace cap, clear lacquered | Centre tear-off cap, clear lacquered | Complete tear-off cap, clear lacquered | Magnetic cap, gold, 5 mm centre hole                  | Magnetic cap, gold, 8 mm centre hole | Magnetic bimetal cap, red, 8 mm centre hole |
| Septa material  | Silicone blue transparent/PTFE white UltraClean |                                |                                      |  | Silicone blue transparent/PTFE transparent UltraClean |                                      |   |
| Durometer       | 45° shore A                                     |                                |                                      |  | 45° shore A   |                                      |   |
| Thickness       | 3.0 mm  |                                |                                      |  | 3.0 mm  |                                      |   |
|                 |   |                                |                                      | 100 pcs. per PE-bag                    |   |                                      |   |



| Part no.       | 20 03 0901                             | 20 03 0828                             | 20 03 1785                           | 20 03 1604                                  |
|----------------|--|--|--------------------------------------|---|
| Description    | Aluminum cap, plain, 10 mm centre hole | Headspace cap, clear lacquered         | Magnetic cap, gold, 8 mm centre hole | Magnetic bimetal cap, red, 8 mm centre hole |
| Septa material |  | Silicone white/PTFE beige (HT quality) |                                      |   |
| Durometer      |  | 45° shore A                            |                                      |   |
| Thickness      | 3.2 mm                                 |  |                                      |   |
|                |  | 100 pcs. per PE-bag                    |                                      |   |

## 9.4.5 Silicone/aluminum foil seals

- Temperature resistant from -60°C up to 220°C.
- Often used on PerkinElmer instruments.
- Completely laminated with aluminum foil silver.



| Part no.        | 20 03 0327                             | 20 03 0326                          | 20 03 0670                           |
|-----------------|--|-------------------------------------|--------------------------------------|
| Description cap | Aluminum cap, plain, 10 mm centre hole | Headspace cap, clear lacquered      | Magnetic cap, gold, 5 mm centre hole |
| Septa material  |  | Silicone white/aluminum foil silver |                                      |
| Durometer       |  | 50° shore A                         |                                      |
| Thickness       |  | 3.0 mm                              |                                      |
|                 |  | 100 pcs. per PE-bag                 |                                      |

## 9.4.6 Ultra high temperature (UHT) seal (silicone/PTFE)

- High temperature, high quality silicone/PTFE septum for less extractables at low to mid-high temperatures.
- Operation up to 300°C possible.
- Low bleeding level at high temperatures (>120°C).



## 9.4.7 Magnetic seals for SPME-vial 20 09 1222 for CTC

- Special silicone/PTFE liner with an only 0.05 mm thin casted teflon film instead of 0.13 mm skived PTFE lamination that is standard for any other 20 mm headspace liner. Thus penetration is even easier, as PTFE is the hardest part to penetrate.
- These Special products should only be used in combination with the SPME-Vial 20 09 1222 which has a much thicker crimp neck than all standard headspace vials.
- Much thinner liners for easier penetration of the sensitive phase.



## 9.4.8 Magnetic SPME seals for standard headspace-vials

- Standard 3 mm septa thickness at the crimp border for convenient crimp process with standard headspace vials and crimper.
- With thinned penetration area in the center (still silicone faced) for easy penetration and excellent resealing.



| Part no.        | 20 03 3056  |
|-----------------|---|
| Description cap | Ultra high temperature seal: 20 mm steel crimp cap, silver, with 5 mm centre hole |
| Septa material  | Ultra high temperature septa (UHT) 20 mm silicone dark red/PTFE <i>UltraClean</i> |
| Durometer       | 45° shore A   |
| Thickness       | 3.0 mm  |
|                 | 100 pcs. per PE-bag   |

| Part no.        | 20 03 1246                                 |
|-----------------|--|
| Description cap | Magnetic cap, gold, 8 mm centre hole       |
| Septa material  | Silicone white/PTFE blue <i>UltraClean</i> |
| Durometer       | 55° shore A                                |
| Thickness       | 1.5 mm                                     |
|                 | 100 pcs. per PE-bag                        |

| Part no.        | 20 03 3467                               | 20 03 3468                                  |
|-----------------|--|---|
| Description cap | Magnetic cap, gold, 8 mm centre hole     | Magnetic bimetal cap, red, 8 mm centre hole |
| Septa material  | Silicone white/PTFE blue, thinned center | Silicone white/PTFE blue, thinned center    |
| Durometer       | 55° shore A                              | 55° shore A                                 |
| Thickness       | 3.0/1.5 mm                               | 3.0/1.5 mm                                  |
|                 | 100 pcs. per PE-bag                      |   |

## 9.5 Septa/stoppers 20 mm



| Part no.       | 20 02 0122                      | 20 02 0057                      | 20 02 0035                     | 20 02 0141                        | 20 02 2054                              | 20 02 0638                              |
|----------------|---------------------------------|---------------------------------|--------------------------------|-----------------------------------|---|---|
| Septa material | Moulded septa butyl, dark grey, | Moulded septa butyl/PTFE, grey, | Pharma-Fix-Septa (butyl/PTFE), | Silicone blue transp./PTFE white, | Silicone blue transp./PTFE transparent, | Silicone white/PTFE beige, (HT quality) |
| Durometer      | 55° shore A                     | 50° shore A                     | 50° shore A                    | 45° shore A                       | 45° shore A                             | 45° shore A                             |
| Thickness      | 3.0 mm                          | 3.0 mm                          | 3.0 mm                         | 3.0 mm                            | 3.0 mm                                  | 3.2 mm                                  |

Further 20 mm septa available upon request  
Septa – 1000 pcs. per PE-bag /stopper – 100 pcs. per PE-bag



| Part no.       | 20 02 0335                           | 20 10 0290   | 20 10 3972                                 | 20 10 3962   |
|----------------|--------------------------------------|--|--|--|
| Septa material | Silicone white/Aluminum foil silver, | 20 mm butyl<br>Injection Stopper,<br>grey rec. by<br>PerkinElmer | 20 mm bromo butyl<br>freeze drying stopper | 20 mm bromo butyl<br>Injection stopper, dark<br>grey |
| Durometer      | 50° shore A                          |  |  |  |
| Thickness      | 3.0 mm                               |  |  |  |

Further 20 mm septa available upon request  
Septa – 1000 pcs. per PE-bag / Stopper – 100 pcs. per PE-bag

## 9.6 Other combination seals for HS-neck/crimp neck ND20

- Seals for washer bottles on the instruments.
- Now also available as PE-Cap with 8 mm hole.
- Intermediate closure when collecting samples out in the field.



| Part no.  | 22 15 0321   | 22 15 1697          | 22 15 0712                           | 22 15 0863   | 22 15 1646          | 22 15 1334                           | 22 15 1824                                   | 22 15 1869   |
|---|--|---------------------|--------------------------------------|--|---------------------|--------------------------------------|--|--|
| Description cap   | PE-cap, transparent, 22 x 8.4 mm, 4.3 mm centre hole |                     |                                      | PE-cap, transparent, 22 x 9.1 mm, 4.3 mm centre hole |                     |                                      |  | PE-cap, transparent, 22 x 9.1 mm, 8.0 mm centre hole   |
| Septa material  | Nat. rubber red-orange/TEF transparent               | butyl red/PTFE grey | Silicone blue transparent/PTFE white | Nat. rubber red-orange/TEF transparent               | butyl red/PTFE grey | Silicone blue transparent/PTFE white | Silicone blue transparent/PTFE white, Y-slit | Silicone blue transparent/PTFE white, Y-slit   |
| Durometer   | 60° shore A  | 55° shore A         | 45° shore A                          | 60° shore A  | 55° shore A         | 45° shore A                          | 45° shore A                                  | 45° shore A  |
| Thickness   | 1.3 mm   |                     |                                      |  |                     |                                      |  |  |
| suitable for 20 09 0297, 20 09 0342, 20 09 0440, 20 09 1223 |  |                     |                                      |  |                     |                                      |  | 20 09 0289, 20 09 0343, 20 09 0795, 20 09 0796, 20 09 0801, 20 09 0802, 20 09 0873, 20 09 1405, 20 09 1690, 20 09 1691 |
| 100 pcs. per PE-bag   |  |                     |                                      |  |                     |                                      |  |  |

### 9.6.1 Septa 19.5 mm



| Part no.       | 19 02 0245                              | 19 02 1636           | 19 02 0693                            |
|----------------|---|----------------------|---------------------------------------|
| Septa material | Nat. rubber red-orange/TEF transparent, | butyl red/PTFE grey, | Silicone blue transparent/PTFE white, |
| Durometer      | 60° shore A                             | 55° shore A          | 45° shore A                           |
| Thickness      | 1.3 mm                                  | 1.3 mm               | 1.3 mm                                |

1000 pcs. per PE-bag

### 9.6.2 Headspace wash kit

- Convenient “all in one” solution for PAL autosampler.
- Reproducible syringe clean up.
- Improved sealing, less evaporation or contamination of wash solvents.
- Easy to apply caps.



| Part no. | 20 33 3392                                 |
|----------|--|
|          | 10 mL vials with easy to apply Y-slit caps |

25 pcs. vials and caps per PP Box

## 9.7 Magnetic universal screw seals ND18

(for precision thread vials 18 09 1306, 18 09 1310, 18 09 1307, 18 09 1311 for CTC, Agilent, Shimadzu, Varian, Gerstel, PerkinElmer etc.)

- 18 03 1309 and 18 03 1414 have been tested and approved by CTC.
- Closed top versions for sample storage.
- Precision thread vials and closures now also used on PerkinElmer TurboMatrix 16, 40 and 110 autosampler that have been constructed after 01.09.2006.
- 18 03 2063 especially suitable for SPME due to the pre-cut septa.



| Part no.        | 18 03 1578                                  | 18 03 1309   | 18 03 1414                                 | 18 03 1416          | 18 03 2063   | 18 03 1666                                | 18 03 1667          |
|-----------------|---|--|--|---------------------|--|---|---------------------|
| Description cap | Magnetic screw cap silver, 8 mm centre hole |  |  |                     | Magnetic screw cap silver, 8 mm centre hole (SPME) | Magnetic screw cap silver, closed top     |                     |
| Septa material  | Silicone white/PTFE red <b>UltraClean</b>   | Silicone blue transparent/PTFE white <b>UltraClean</b> | Silicone white/PTFE blue <b>UltraClean</b> | Butyl red/PTFE grey | Silicone white/PTFE red, pre-cut star (*)          | Silicone white/PTFE red <b>UltraClean</b> | Butyl red/PTFE grey |
| Durometer       | 45° shore A                                 | 45° shore A  | 55° shore A                                | 55° shore A         | 55° shore A  | 45° shore A                               | 55° shore A         |
| Thickness       | 1.3 mm                                      | 1.3 mm   | 1.5 mm                                     | 1.6 mm              | 1.5 mm   | 1.3 mm                                    | 1.6 mm              |

These screw seals are not suitable for article number 18 09 0864  
100 pcs. per PE-bag

### 9.7.1 Septa 17.5 mm for magnetic universal screw seals ND18



| Part no.       | 17 02 1580              | 17 02 1417                           | 17 02 1318               | 17 02 1415          |
|----------------|-------------------------|--------------------------------------|--------------------------|---------------------|
| Septa material | Silicone white/PTFE red | Silicone blue transparent/PTFE white | Silicone white/PTFE blue | butyl red/PTFE grey |
| Durometer      | 45° shore A             | 45° shore A                          | 55° shore A              | 55° shore A         |
| Thickness      | 1.3 mm                  | 1.3 mm                               | 1.5 mm                   | 1.6 mm              |

1000 pcs. per PE-bag

### 9.7.2 mMagnetic universal screw seals for SPME application

- Standard 2 mm septa thickness at the border for a tight seal with precision thread ND 18 vials.
- with thinned penetration area in the center for easy penetration and excellent resealing.



| Part no.       | 18 03 3469   |
|----------------|--|
| Septa material | Magnetic cap, silver, 8 mm centre hole<br>Silicone white/PTFE blue, thinned centre |
| Durometer      | 55° shore A  |
| Thickness      | 2.0/1.5 mm   |

1000 pcs. per PE-bag

## 9.8 PP screw seals ND18 for 18 09 0864



| Part no.        | 18 15 1386  | 18 15 1387                                   | 18 15 1398  | 18 15 1544                                   | 18 15 2102  | 18 15 2069                                   | 18 15 0871  |
|-----------------|---|--|---|--|---|--|---|
| Description cap | Polypropylene<br>Screw cap black, 12 mm centre hole | Polypropylene<br>Screw cap black, closed top | Polypropylene<br>Screw cap black, 12 mm centre hole | Polypropylene<br>Screw cap black, closed top | Polypropylene<br>Screw cap black, 12 mm centre hole | Polypropylene<br>Screw cap black, closed top | Polypropylene<br>Screw cap black, 12 mm centre hole |
| Septa material  | Butyl red/PTFE grey                                 |  |   |  | Silicone white/PTFE red                             |  | Silicone blue transparent/PTFE white                |
| Durometer       | 55° shore A   | 55° shore A                                  | 55° shore A   | 55° shore A                                  | 55° shore A   | 55° shore A                                  | 45° shore A   |
| Thickness       | 1.6 mm  | 1.6 mm                                       | 2.0 mm  | 2.0 mm                                       | 1.5 mm  | 1.5 mm                                       | 1.7 mm  |

Further screw seals ND18 with closed/open top caps are available upon request

100 pcs. per PE-bag

These screw seals are not suitable for article numbers 18 09 1306, 18 09 1307, 18 09 1310, 18 09 1311

### 9.8.1 Septa 16 mm



| Part no.       | 16 02 0653                             | 16 02 1384          | 16 02 1385          | 16 02 2068              | 16 02 0870                       | 16 02 0705                       |
|----------------|--|---------------------|---------------------|-------------------------|----------------------------------|----------------------------------|
| Septa material | Nat. rubber red-orange/TEF transparent | Butyl red/PTFE grey | Butyl red/PTFE grey | Silicone white/PTFE red | Silicone blue transp./PTFE white | PTFE red/silicone white/PTFE red |
| Durometer      | 60° shore A                            | 55° shore A         | 55° shore A         | 55° shore A             | 45° shore A                      | 45° shore A                      |
| Thickness      | 1.3 mm                                 | 1.6 mm              | 2.0 mm              | 1.5 mm                  | 1.7 mm                           | 1.0 mm                           |

1000 pcs. per PE-bag



- Easy to handle and inexpensive storage vials with push-on snap caps.
- Different volumes of 5 mL, 10 mL, 15 mL and 25 mL available.
- Caps and vials separately obtainable.
- Quickly and easily to reopen and reseal.
- No liners are required in the cap.
- For storage of powders and solids.

### 10.1 Snap cap vials ND18/ND22 and appropriate snap caps

TFVol. = Total Volume/Filling Volume (mL), UsVol. = Usable Volume (mL), MWVol. = Minimum Working Volume (mL), Res. vol. = Residual Volume (mL)



| Part no.       | 18 09 0906  | 18 09 0907   | 20 09 0784   | 22 09 0908   |
|----------------|---|--|--|--|
| Description    | 5 mL snap cap vial ND18,<br>40 x 20 mm, clear glass,<br>1 <sup>st</sup> hydrol. class | 10 mL snap cap vial ND18,<br>50 x 22 mm, clear glass,<br>1 <sup>st</sup> hydrol. class | 15 mL snap cap vial ND22,<br>48 x 26 mm, clear glass,<br>1 <sup>st</sup> hydrol. class | 25 mL snap cap vial ND22,<br>65 x 26 mm, clear glass,<br>1 <sup>st</sup> hydrol. class |
| TFVol. (mL)    | 9.1   | 14   | 19.3   | 27   |
| UsVol. (mL)    | 8   | 12.7   | 18.5   | 25   |
| MWVol. (mL)    | 0.6   | 1  | 1  | 1  |
| Res. vol. (mL) | 0.3   | 0.5  | 0.6  | 0.6  |
|                | 100 pcs. per PP-box   |  | 100 pcs. per cardboard box   | 100 pcs. per PP-box  |



| Part no.    | 18 08 0913  | 18 08 0913   | 22 08 0794   | 22 08 0794   |
|-------------|---|--|--|--|
| Description | 18 mm PE snap cap,<br>cap<br>19.8 x 5.2 mm,<br>transparent, closed top,<br>for ND18 | 18 mm PE snap cap,<br>19.8 x 5.2 mm,<br>transparent, closed top,<br>for ND18 | 22 mm PE snap cap,<br>23.5 x 5.5 mm,<br>transparent, closed top,<br>for ND22 | 22 mm PE snap cap,<br>23.5 x 5.5 mm,<br>transparent, closed top,<br>for ND22 |
|             | 100 pcs. per PE-bag   |  |  |  |

### 10.2 PP micro centrifuge tubes



Micro centrifuge tubes with lid

- chromatography certified
- safe click close function
- transparent PP
- number scale
- writing patch

| Part no.    | 08 19 3967          | 11 19 3968           | 11 19 3969          |
|-------------|---------------------|----------------------|---------------------|
| Description | 0.5 mL              | 1.5 mL               | 2.0 mL              |
|             | 500 pcs. per PE-bag | 1000 pcs. per PE-bag | 500 pcs. per PE-bag |



# 11. Screw neck ND24 (EPA)

The vials are preferentially used on instruments of the following manufacturers:  
Agilent, Dionex, Shimadzu, Tekmar, Thermo Scientific, Varian

- All types of EPA vials can be delivered against a small surcharge with a certificate of cleanliness that might especially be needed for TOC analysis.  
A copy of our certificate of cleanliness is shown under the point "Technical Information" on our website.
- EPA vials can be obtained with any type of screw seal ND24 already screwed on (see also chapter 11.5 "Pre-Screwed vials").
- Broad range of EPA vials in clear and amber glass.
- Volumes of 20 mL, 30 mL, 40 mL and 60 mL available.



## 11.1 Screw neck vials ND24 (EPA)

Upon special request also available pre-screwed with a seal of your choice.



| Part no.            | 24 09 0589  | 24 09 0927  | 24 09 0839  | 24 09 0923  | 24 09 0402  | 24 09 0928  | 24 09 1089   | 24 09 1090   |
|---------------------|---|---|---|---|---|---|--|--|
| Description         | 20 mL<br>EPA crew neck<br>vial,<br>57 x 27.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 20 mL<br>EPA crew neck<br>vial,<br>57 x 27.5 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 30 mL<br>EPA crew neck<br>vial,<br>72.5 x 27.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 30 mL<br>EPA crew neck<br>vial,<br>72.5 x 27.5 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 40 mL<br>EPA crew neck<br>vial,<br>95 x 27.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 40 mL<br>EPA crew neck<br>vial,<br>95 x 27.5 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 60 mL<br>EPA crew neck<br>vial,<br>140 x 27.5 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 60 mL<br>EPA crew neck<br>vial,<br>140 x 27.5 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class |
| TFVol. (mL)         | 23.3  | 23.3  | 31.1  | 31.1  | 42.9  | 42.9  | 64.4   | 64.4   |
| UsVol. (mL)         | 20  | 20  | 27.4  | 27.4  | 40  | 40  | 60   | 60   |
| MWVol. (mL)         | 1   | 1   | 1.4   | 1.4   | 1.4   | 1.4   | 1.4  | 1.4  |
| Res. vol. (mL)      | 0.5   | 0.5   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7  | 0.7  |
| 100 pcs. per PP-box |   |   |   |   |   |   |  |  |

## 11.2 PP screw seals ND24

- Ready to use combination seals; no time-consuming and "tricky" assembly.
- No contamination of the liner with sweat/fat that normally is caused by manual assembly.
- Available as closed top screw seals or with centre hole in white 24-400 caps.
- Broad variety of different septa materials for almost all applications.
- Also UltraBond seals ND24 are offered, i.e. that the cap and the silicone/PTFE liner of these seals form an inseparable unit avoiding the problem of liners falling out of the cap. This 100% firm fit of the liner is achieved by a patented process that requires no adhesives, but instead changes the molecular structure of both components to achieve the fixation.
- Also pre-sealed vials are available!



### 11.2.1 PP screw seals ND24 (assembled)

|  |   |                                |   |   |                                |   |                                |
|--|---|--------------------------------|---|---|--------------------------------|---|--------------------------------|
|  |   |                                |   |   |                                |   |                                |
| <b>Part no.</b>  | <b>24 15 1394</b>                       | <b>24 15 1395</b>              | <b>24 15 1163</b>                       | <b>24 15 1540</b>                       | <b>24 15 1007</b>              | <b>24 04 0842</b>                         | <b>24 04 0841</b>              |
| Description  | PP screw cap white, 12.5 mm centre hole | PP screw cap white, closed top | PP screw cap white, 12.5 mm centre hole | PP screw cap white, closed top          | PP screw cap white, closed top | PP screw cap white, centre hole           | PP screw cap white, closed top |
| Septa material   | butyl red/PTFE grey                     | butyl red/PTFE grey            | Silicone white/PTFE beige (EPA-quality) | Silicone white/PTFE beige (EPA-quality) | PTFE/EPDM/PTFE                 | Silicone natural/PTFE beige (EPA-quality) |                                |
| Durometer  | 55° shore A                             | 55° shore A                    | 45° shore A                             | 45° shore A                             | 65° shore A                    | 45° shore A                               |                                |
| Thickness  | 2.5 mm                                  | 2.5 mm                         | 3.2 mm                                  | 3.2 mm                                  | 2.0 mm                         | 3.2 mm                                    |                                |
| Further screw seals ND24 with closed/open top are available upon request |   |                                |   |   |                                |   |                                |
| 100 pcs. per PE-bag  |   |                                |   | 100 pcs. per PE-bag                     |                                |   |                                |

## 11.3 Septa 22 mm

|                      |                              |                     |                           |                          |                                     |                     |                   |
|----------------------|------------------------------|---------------------|---------------------------|--------------------------|-------------------------------------|---------------------|-------------------|
|                      |                              |                     |                           |                          |                                     |                     |                   |
| <b>Part no.</b>      | <b>22 02 1390</b>            | <b>22 02 1393</b>   | <b>22 02 1108</b>         | <b>22 02 0409</b>        | <b>22 02 0487</b>                   | <b>24 08 0403</b>   | <b>24 08 0592</b> |
| Description          | cap                          |                     |                           |                          |                                     | Polypropylene       | Polypropylene     |
| Septa material       | butyl red/PTFE grey          | butyl red/PTFE grey | Silicone white/PTFE beige | Silicone white/PTFE blue | Silicone white/Aluminum foil silver | Screw cap, white,   | Screw cap, white, |
| Durometer            | 55° shore A                  | 55° shore A         | 45° shore A               | 55° shore A              | 50° shore A                         | 12.5 mm centre hole | closed top        |
| Thickness            | 1.6 mm<br>(only unassembled) | 2.5 mm              | 3.2 mm<br>(EPA-quality)   | 1.5 mm,<br>cross-slit    | 3.0 mm                              |                     |                   |
| 1000 pcs. per PE-bag |                              |                     |                           | 100 pcs. per PE-bag      |                                     |                     |                   |

## 11.5 Specially assembled EPA vials with screw seals ND24

|                  |  |  |  |   |  |   |   |
|------------------|--|--|--|---|--|---|---|
| <b>Part no.</b>  | <b>24 14 1513</b>  | <b>24 14 0976</b>  | <b>24 14 1621</b>  | <b>24 14 1538</b>   | <b>24 14 1094</b>  | <b>24 14 1278</b>   | <b>24 14 1354</b>   |
| Description      | 20 mL EPA crew neck vial, 57 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, (24 09 0589) | 40 mL crew neck vial, 95 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, EPA (24 09 0402) | 40 mL crew neck vial, 95 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, EPA (24 09 0402) | 40 mL crew neck vial, 95 x 27.5 mm, amber glass, 1 <sup>st</sup> hydrol. class, 1 <sup>st</sup> hydrol. class, EPA (24 09 0402) | 40 mL crew neck vial, 95 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, EPA (24 09 0928) | 60 mL crew neck vial, 140 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, EPA (24 09 1089) | 60 mL crew neck vial, 140 x 27.5 mm, clear glass, 1 <sup>st</sup> hydrol. class, EPA (24 09 1089) |
| pre-screwed with | pre-screwed with   | pre-screwed with   | pre-screwed with   | pre-screwed with  | pre-screwed with   | pre-screwed with  | pre-screwed with  |
| Description of   | UltraBond seal, white, centre hole, Silicone nat./PTFE beige (EPA-quality)                       | PP screw cap, white, centre hole, Silicone white/PTFE beige                                      | UltraBond seal, white, centre hole, Silicone natural/PTFE beige (EPA-quality)                    | PP screw cap, white, closed top, Silicone natural/PTFE beige (EPA-quality)  | PP screw cap, white, centre hole, Silicone white/PTFE beige                                      | PP screw cap, white, centre hole, Silicone white/PTFE beige                                       | UltraBond seal, white, centre hole, Silicone natural/PTFE beige (EPA-quality)                     |
| screwed-on       |  |  |  |   |  |   |   |
| seal             |  |  |  |   |  |   |   |
| Durometer        | 45° shore A  | 45° shore A  | 45° shore A  | 45° shore A   | 45° shore A  | 45° shore A   | 45° shore A   |
| Thickness        | 3.2 mm<br>(24 04 0842)   | 3.2 mm<br>(24 15 1163)   | 3.2 mm<br>(24 04 0842)   | 3.2 mm<br>(24 04 0841)  | 3.2 mm<br>(24 15 1163)   | 3.2 mm<br>(24 15 1163)  | 3.2 mm<br>(24 04 0842)  |

Further crew neck vials ND24 with screwed-on open top/closed top screw seals are available upon request

100 pcs. per PP-box

# Pharma/Biopharma selection card

This selection targets both customer groups.

The "normal" Pharma customer deals with small molecules chromatography. Small molecules are normally very stable and do not react heavily on different environments, short: easy to handle!

Bio molecules like Peptides, Proteins, etc. are Macromolecules, very sensitive to their environmental conditions (temperature, pH, solvent, etc.). They can only be analyzed via LC, GC is not possible. Solvents are normally water or water/polar solvents mixtures.

Therefore we reduced the number of products and offer the most important parts from the following product classes:

- Certified kits
- Screw, snap and crimp vials and closures
- Plastic and microsampling vials
- Well plates and mats
- Vial racks



## 9 mm screw thread vials and closures

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   |   |   |   |   |
| <b>11 09 0519</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>11 09 0520</b><br>1.5 mL short thread vial,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>label and filling lines | <b>11 09 2746</b><br>1.5 mL short thread<br>SureStop vial,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening,<br>with overwind-barrier | <b>09 15 1819</b><br>9 mm combination seal:<br>PP short thread cap,<br>blue, with centre hole;<br>RedRubber/PTFE beige,<br>45° shore A,<br>1.0 mm | <b>09 15 0838</b><br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>Silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | <b>09 15 0869</b><br>9 mm combination seal:<br>PP short thread cap,<br>blue, centre hole;<br>Silicone white/PTFE blue,<br>55° shore A,<br>1.0 mm,<br>slit |

## LC/MS GC/MS CERT Kkits and CERT kits

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
| <b>11 40 3196</b><br>LC/MS and GC/MS certified vial kit:<br>1.5 mL short thread SureStop vial,<br>32 x 11.6 mm,<br>clear glass, wide opening,<br>with overwind-barrier;<br>Ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>Silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm | <b>11 40 3197</b><br>LC/MS and GC/MS certified vial kit:<br>1.5 mL short thread SureStop vial,<br>32 x 11.6 mm,<br>amber glass, wide opening,<br>with overwind-barrier;<br>Ultra high performance seal:<br>PP short thread cap,<br>blue, centre hole;<br>Silicone darkblue-translucent/PTFE natural,<br>35° shore A,<br>1.0 mm | <b>11 40 2556</b><br>HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>clear glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>Silicone white/PTFE red,<br>55° shore A,<br>1.0 mm | <b>11 40 2557</b><br>HPLC/GC certified vial kit:<br>1.5 mL short thread vial,<br>amber glass,<br>1 <sup>st</sup> hydrol. class, label;<br>UltraClean closure:<br>9 mm PP short thread cap,<br>blue, centre hole;<br>Silicone white/PTFE red,<br>55° shore A,<br>1.0 mm |



| 08 05 2926  | 08 05 2920   | 08 05 2921   | 08 29 2949  | 08 29 2933                                    | 08 29 2939  | 08 29 2938                                    |
|---|--|--|---|---|---|---|
| Deep well microplate, PP, 96 positions, certified, height 14.7 mm, V-shape, 7 mm dia., 220 $\mu$ L total volume (non coated, non sterile) | Deep well microplate, PP, 96 positions, certified, height 41.6 mm, U-shape, 7 mm dia., 1000 $\mu$ L total volume (non coated, non sterile) | Square well microplate, PP, 96 positions, certified, height 44.4 mm, V-shape, 7 mm dia., 2000 $\mu$ L total volume (non coated, non sterile) | Sealmat, MicroMat CLR, clear, silicone, for 96 position | Sealmat, blue, silicone/PTFE, for 96 position | Sealmat, MicroMat CLR, clear, silicone, for 96 position | Sealmat, blue, Silicone/PTFE, for 96 position |

## Plastic vials



| 11 19 1205   | 11 19 1706   | 11 19 0932   |
|--|--|--|
| 1.5 mL PP short thread vial, 32 x 11.6 mm, transparent, with filling lines | 0.7 mL PP short thread micro-vial, 32 x 11.6 mm, transparent | 0.3 mL PP short thread micro-vial, 32 x 11.6 mm, transparent |

## Microsampling vials



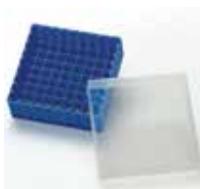
| 11 09 2357  | 11 09 2656  | 11 09 0620  |
|---|---|---|
| Short thread vial with integrated micro-insert, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, "Base bonded" | Short thread vial with integrated micro-insert, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class, "Base bonded" | 1.1 mL microliter short thread vial ND9, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class |

## Snap vials and closures



| 11 09 0644   | 11 09 0645   | 11 15 2107  | 11 15 1151  | 11 15 1269   |
|--|--|---|---|--|
| 1.5 mL snap ring vial, 32 x 11.6 mm, clear glass, 1 <sup>st</sup> hydrol. class, wide opening, label and filling lines | 1.5 mL snap ring vial, 32 x 11.6 mm, amber glass, 1 <sup>st</sup> hydrol. class, wide opening, label and filling lines | 11 mm combination seal: PE-Snap ring cap, blue, with centre hole; RedRubber/PTFE beige, 45° shore A, 1.0 mm | UltraClean closure: 11 mm PE snap ring cap, blue, centre hole; Silicone white/PTFE red, 45° shore A, 1.3 mm | 11 mm combination seal: PE snap ring cap, blue, centre hole; Silicone white/PTFE blue, 55° shore A, 1.0 mm, cross-slit |

## Racks/Tools



| 12 21 2420  |
|---|
| PP storage box for 1.5 mL (1.8 mL, 2 mL) vials or 2 mL shell vials, blue, with cover (130 x 130 x 45 mm), 81 cavities with alphanumeric coding of all 4 margins as well as the cavities at the bottom |

# 12. Standard, certified and high performance 96 and 384 position block systems

- The first complete and chromatography tested portfolio of well plates for separation science applications.
- Prepare and analyze samples in less time with less lab bench space and storage space required per sample.
- Easier and quicker filling and sealing process using multi-channel pipetting tools.
- Efficient transport of many samples in a single plate.
- SBS/ANSI standard footprint assures compatibility with all well plate capable prep stations and chromatography autosamplers.



## 12.1 Standard 96 block systems

(Standard well plates, plastic, non coated, non sterile, chromatography tested)



| Part no.  | 08 05 2898  | 08 05 3643  | 08 05 2900  | 08 05 2901                                       | 08 05 3644  | 08 05 2902                             |
|---|---|---|---|--|---|--|
| Description   | Micro well microplate, round opening, 96 position | Micro well microplate, round opening, 96 position | Micro well microplate, round opening, 96 position | Deep well microplate, round opening, 96 position | Square well microplate, square opening, 96 position | Square well microplate, square opening |
| Material  | PP  |   |   |  |   |  |
| Height (mm)   | 14.4  | 26.5  | 31.6  | 44   | 31  | 44                                     |
| Shape   | V-shape, 8 mm diameter                            | U-shape, 8 mm diameter                            | U-shape, 8 mm diameter                            | U-shape, 8 mm diameter                           | U-shape   | V-shape                                |
| TFVol. (µL)   | 450   | 1100  | 1300  | 2000   | 1600  | 2000                                   |
| UsVol. (µL)   | 10-400  | 50-900  | 50-1000   | 50-2000  | 50-1300   | 50-1900                                |
| Blocks, mats and tapes for water, water and polar solvents, polar solvents; for simple applications; high sample concentrations; non regulated labs; MS single ion mode |   |   |   |  |   |  |
| 20 pieces   | 50 pieces   | 5 pieces  | 5 pieces  | 96 pieces  | 5 pieces  |  |

### 12.1.1 sealmats (WebSeals) block cover, non sterile

(for 08 05 2898, 08 05 2899, 08 05 2900 and 08 05 2901, 08 05 2902)



| Part no.    | 08 29 3639               | 08 29 2929               | 08 29 2930   | 08 29 3637            | 08 29 3640            |
|-------------|--------------------------|--------------------------|--|-----------------------|-----------------------|
| Description | Sealmat (block cover)    | Sealmat (block cover)    | Sealmat (block cover)<br>Sealmat (block cover), slit: 08 29 2931 | Sealmat (block cover) | Sealmat (block cover) |
| Color       | clear                    | clear                    | blue   | clear                 | clear                 |
| Material    | Silicone                 | EVA                      | Silicone/PTFE  | EVA                   | Silicone              |
| Shape       | round, for 8 mm diameter | round, for 8 mm diameter | round, for 8 mm diameter   | square (square well)  | square (square well)  |
|             | 50 pieces                | 5 pieces                 | 5 pieces   | 50 pieces             | 50 pieces             |

## 12.2 Standard 384 block systems, square well (Standard well plates, plastic, non coated, non sterile, chromatography tested)



| Part no.      | 08 05 2904  | 08 05 2906                                   |
|---------------|---|--|
| Description   | Deep well microplate square opening (square well) | Well microplate square opening (square well) |
| Material      | PP  |  |
| Height ( mm ) | 22  | 15.4   |
| Shape         | U-shape   | V-shape                                      |
| TFVol. (µL)   | 252   | 145  |
| UsVol. (µL)   | 5-240   | 4-120  |

Blocks, mats and tapes for water, water and polar solvents, polar solvents; for simple applications; high sample concentrations; non regulated labs; MS single ion mode

5 pieces

10 pieces

## 12.2.1 Sealmats (WebSeals) block cover, non sterile (for 08 05 2904, 08 05 2905, 08 05 2906, 08 05 2903)



| Part no.    | 08 29 2943                      | 08 29 2950                      | 08 29 3641                      |
|-------------|---------------------------------|---------------------------------|---------------------------------|
| Description | Sealmat – WebSeal (block cover) | Sealmat – WebSeal (block cover) | Sealmat – WebSeal (block cover) |
| Color       | clear                           | clear                           | clear                           |
| Material    | Silicone                        | Silicone, slit                  | Silicone with cross             |
| Shape       | 384 pos., square (square well)  | 384 pos., square (square well)  | 384 pos., square (square well)  |
|             | 5 pieces                        | 5 pieces                        | 50 pieces                       |

## 12.3 Standard 96 block systems, well-plate, PP, certified

(Standard well plates, plastic, non coated, non sterile)



| Part no.      | 08 05 3646   | 08 05 2924  | 08 05 2925  | 08 05 2926  | 08 05 3645  | 08 05 2920                                       | 08 05 2921                             |
|---------------|--|---|---|---|---|--|--|
| Description   | Low volume Micro well microplate, round opening, 96 position | Deep well microplate, round opening, 96 position | Square well microplate, square opening |
| Material      | PP   |   |   |   |   |  |  |
| Height ( mm ) | 15.0   | 14.7  | 14.7  | 14.7  | 33.0  | 41.6   | 44.4                                   |
| Shape         | Total V-shape, 5.6 mm diameter                               | Flat bottom, 7 mm diameter                        | U-shape, 7 mm diameter                            | V-shape, 7 mm diameter                            | U-shape, 7 mm diameter                            | U-shape, 7 mm diameter                           | V-shape                                |
| TFVol. (µL)   | 100  | 350   | 270   | 220   | 1000  | 1000   | 2000                                   |
| UsVol. (µL)   | 5-80   | 10-300  | 10-250  | 10-190  | 50-900  | 50-900   | 50-1900                                |

Blocks, mats and tapes for water, water and polar solvents, polar solvents; for sensitive applications; lower sample concentrations; regulated labs; TIC and full chromatograms

50 pieces

10 pieces

10 pieces

10 pieces

96 pieces

5 pieces

5 pieces

## 12.3.1 Sealmats (WebSeals) block cover, silicone, non sterile

(for 08 05 2924, 08 05 2925, 08 05 2926, 08 05 2920 and 08 05 2921)



| Part no.    | 08 29 3642                 | 08 29 3813               | 08 29 2949             | 08 29 2933               | 08 29 2939            | 08 29 2938            | 08 29 3640            |
|-------------|----------------------------|--------------------------|------------------------|--------------------------|-----------------------|-----------------------|-----------------------|
| Description | Sealmat (block cover)      | Sealmat (block cover)    | Sealmat (block cover)  | Sealmat (block cover)    | Sealmat (block cover) | Sealmat (block cover) | Sealmat (block cover) |
| Color       | clear                      | clear                    | clear                  | blue                     | clear                 | blue                  | clear                 |
| Material    | Silicone with Cross        | EVA                      | Silicone               | Silicone/PTFE            | Silicone              | Silicone/PTFE         | Silicone with cross   |
| Shape       | round, for 5.6 mm diameter | round, for 7 mm diameter | round, flat base, step | round, for 7 mm diameter | Square (square well)  | Square (square well)  | Square (square well)  |
|             | 50 pieces                  | 100 pieces               | 5 pieces               |                          |                       |                       | 50 pieces             |

## 12.4. Standard 384 block systems, microplate, PP, square opening, certified (standard well plates, plastic, non coated, non sterile)



| Part no.    | 08 05 2922  | 08 05 2923  |
|-------------|---|---|
| Description | MicroWell microplate<br>square opening<br>384 positions | MicroWell microplate<br>square opening<br>384 positions |
| Material    | PP  | PP  |
| Height (mm) | 14.4  | 30.2  |
| Shape       | U-shape, square   | V-shape, square   |
| TFVol. (µL) | 58  | 300   |
| UsVol. (µL) | 2-35  | 5-240   |

Blocks, mats and tapes for water, water and polar solvents, polar solvents; for sensitive applications; lower sample concentrations; regulated labs; TIC and full chromatograms

10 pieces

6 pieces

### 12.4.1 sealmats (WebSeals) block cover, non sterile (for 08 05 2922 and 08 05 2923)



| Part no.    | 08 29 2943                                    | 08 29 2942                                    | 08 29 3641                         |
|-------------|---|---|------------------------------------|
| Description | Sealmat - Webseal<br>(block cover)            | Sealmat - WebSeal<br>(block cover)            | Sealmat - WebSeal<br>(block cover) |
|             | Sealmat<br>(block cover),<br>slit: 08 29 2950 | Sealmat<br>(block cover),<br>slit: 08 29 2944 |                                    |
| Color       | clear   | blue  | clear                              |
| Material    | Silicone                                      | Silicone/PTFE                                 | Silicone with cross                |
| Shape       | Square<br>(square well)                       | Square<br>(square well)                       | 384 pos., square<br>(square well)  |

5 pieces

5 pieces

50 pieces

## 12.5. Standard 96 block systems, micro-well-plate, deep well microplate, glass coated round and square opening, (chromatography tested, non sterile)



| Part no.    | 08 05 2927  | 08 05 2914  | 08 05 2915   | 08 05 2916   | 08 05 2917   |
|-------------|---|---|--|--|--|
| Description | Micro well microplate,<br>round opening,<br>96 position | Micro well microplate,<br>round opening,<br>96 position | Micro well Plate,<br>round opening,<br>96 position | Deep well microplate,<br>round opening,<br>96 position | Square well Plate,<br>square opening,<br>96 position |
| Material    | PP, glass coated  | PP, glass coated  | PP, glass coated                                   | PP, glass coated                                       | PP, glass coated                                     |
| Height (mm) | 14.6  | 14.6  | 14.6   | 41.5   | 44   |
| Shape       | U-shape,<br>7 mm diameter                               | V-shape,<br>7 mm diameter                               | Flat bottom,<br>7 mm diameter                      | U-shape  | V-shape,<br>7 mm diameter                            |
| TFVol. (µL) | 300   | 220   | 370  | 1.2 mL   | 2.4 mL   |
| UsVol. (µL) | 250   | 190   | 300  | 1 mL   | 2 mL   |

Blocks, mats and tapes all solvents (incl. non-polar); for very sensitive applications; lowest sample concentrations; regulated labs; hydrophobic samples (Proteins); MSCERT level

10 pieces

10 pieces

10 pieces

10 pieces

10 pieces

### 12.5.1 sealmats (WebSeals) block cover, silicone/PTFE, non sterile

(for 08 05 2927, 08 05 2914, 08 05 2915, 08 05 2917 and 08 05 2916)



| Part no.    | 08 29 3213                                    | 08 29 2932                                    | 08 29 2939                                    | 08 29 2938                                    |
|-------------|---|---|---|---|
| Description | Sealmat (block cover)                         | Sealmat                                       | Sealmat (block cover)                         | Sealmat (block cover)                         |
|             | Sealmat<br>(block cover),<br>slit: 08 29 2937 | Sealmat<br>(block cover),<br>slit: 08 29 2936 | Sealmat<br>(block cover),<br>slit: 08 29 2941 | Sealmat<br>(block cover),<br>slit: 08 29 2940 |
| Color       | clear   | blue  | clear   | blue  |
| Material    | Silicone                                      | Silicone/PTFE                                 | Silicone                                      | Silicone/PTFE                                 |
| Shape       | round, dome base                              | round, dome base,<br>for 7 mm diameter        | Square<br>(square well)                       | Square<br>(square well)                       |

5 pieces

5 pieces

5 pieces

5 pieces

## 12.6. Standard 384 block systems, microplate, glass coated, square opening (chromatography tested, non sterile)



| Part no.      | 08 05 2918   | 08 05 2919   |
|---------------|--|--|
| Description   | MicroWell microplate square opening, 384 positions | MicroWell microplate square opening, 384 positions |
| Material      | PP, glass coated                                   | PP, glass coated                                   |
| Height ( mm ) | 14.4   | 22   |
| Shape         | Square (square well)                               | Square (square well)                               |
| TFVol. (µL)   | 120  | 240  |
| UsVol. (µL)   | 90   | 180  |

Blocks, mats and tapes all solvents (incl. non-polar); for very sensitive applications; lowest sample concentrations; regulated labs; hydrophobic samples (Proteins); MSCERT level

10 pieces

| 6 pieces

## 12.6.1 Sealmat (WebSeals) block cover, non sterile (for 08 05 2918 and 08 05 2919)



| Part no.    | 08 29 2943                              | 08 29 2942                              |
|-------------|---|---|
| Description | Sealmat - Webseal (block cover)         | Sealmat - WebSeal (block cover)         |
|             | Sealmat (block cover), slit: 08 29 2950 | Sealmat (block cover), slit: 08 29 2944 |
| Color       | clear                                   | blue                                    |
| Material    | Silicone                                | Silicone/PTFE                           |
| Shape       | Square (square well)                    | Square (square well)                    |

| 5 pieces

| 5 pieces

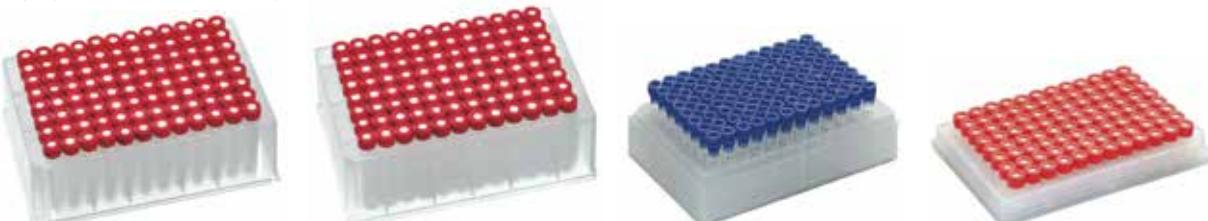
## 12.7 96 position block systems with glass inserts, sealed individually

- 96 position block systems (RITTER) with glass Inserts are used in combinatorial chemistry when the pure PP Block is not inert enough.
- These Inserts that are custom-tailored to fit a broad variety of 96 well Blocks. They can either be sealed individually with a PE cap seal or over the whole block with a sealmat block cover.
- The products can be obtained as individual components or as completely assembled, ready-to-use convenience blocks.

Blocks, mats and tapes for all solvents (incl. non-polar); for very sensitive applications; lowest sample concentrations; regulated labs; hydrophobic samples (Proteins); MSCERT level

## 12.7.1 96 position block systems with glass Inserts, sealed individually

(chromatography tested, non sterile)



| Part no.    | 08 20 0897   | 08 20 0911   | 08 20 0905                         | 08 20 0943   |
|-------------|--|--|------------------------------------|--|
| Description | Deep well block 96 position  | Square well block 96 position  | Micro-Tube-Rack-System 96 position | Microtiter-Plate 96 position   |
| Material    | PP   | PP   | PP                                 | PP   |
| Description | filled with 0.35 mL micro-insert   | filled with 1 mL micro-insert  | filled with 0.8 mL micro-insert    | filled with 0.1 mL micro-insert  |
| Material    | clear glass  | clear glass  | clear glass                        | clear glass  |
| Measure     | 42.5 x 6 mm  | 49.9 x 7.6 mm  | 40 x 7.6 mm                        | 15.5 x 5.7 mm  |
| Shape       | conical bottom   | rounded bottom   | u-shap bottom                      | flat bottom  |
| TFVol. (µL) | 410  | 1200   | 1020                               | 230  |
| UsVol. (µL) | 350  | 1000   | 800                                | 200  |
| Description | assembled with 9 mm PE cap, red, 4 mm hole, Silicone white/PTFE red, 45° shore A, 1.9 mm, slit | assembled with 9 mm PE cap, red, 4 mm hole, Silicone white/PTFE red, 45° shore A, 1.9 mm, slit | assembled with 8 mm PE-Plug blue   | assembled with 9 mm PE cap, red, 4 mm hole, Silicone white/PTFE red, 45° shore A, 1.9 mm, slit |

1 pc.

## 12.8 96 position block systems with glass Inserts, sealed with a sealmat block cover

- Sealmat block covers are made out of silicone and laminated with a deep-drawn PTFE-Film – like a septa. By laminating the cover with a PTFE-Film instead of spraying it with PTFE it is ensured that a continuous and homogeneous barrier protects the sample from any contamination before, during and after the penetration process.



| Part no.    | 08 20 1171   | 08 20 1181  |
|-------------|--|---|
| Description | Square well block 96 position  | Square well block 96 position   |
| Material    | PP   | PP  |
| Description | filled with 1 mL micro-insert  | filled with 1 mL micro-insert   |
| Material    | clear glass  | clear glass   |
| Measure     | 45 x 7.6 mm  | 45 x 7.6 mm   |
| Shape       | 8 mm top   | 8 mm top  |
| Description | assembled with sealmat block cover (welled plugs for easy penetration) | assembled with sealmat block cover (welled plugs + slit for pipettes) |

1 pc.

# 13. Syringe filters

For successful chromatography sample preparation filtration is an important step.

Thermo Fisher Scientific syringe filters ensure best sample treatment in both eliminating particulates and microorganisms and providing consistent and reliable results. State of the art assembly processes – ultrasonic welding and overmolding ring (color coding) - are used to ensure safety even for high operating pressures resulting from use of small syringes.

Standard applications for the different membranes are standard HPLC samples/solvents – Nylon (PA) and Cellulose acetate (CA), standard GC samples/solvents – PTFE, UV spectrometry – PVDF, capillary electrophoresis – PES, high particulate load – glass micro fibre (GMF, filters with GMF prefilter also available!), Protein analysis – PVDF-L, trace metals – PES.

Most filters can be used up to 100°C operating temperature White line CA only 50°C and they all can be sterilized.

**ProFill**



## 13.1 ProFill white line syringe filters

### 13.1.1 13 mm syringe filters

- For small sample volumes up to 5 mL.
- Female Luer Lock inlet, male Luer Slip outlet.
- Ultrasonic welded, print of membrane type.
- Retention volume <20 µL, operating pressure up to 12 bar.



| Part no.  | 13 16 2968 | 13 16 3651             | 13 16 2972         | 13 16 3652         | 13 16 2976           | 13 16 3653 |
|-----------|------------|------------------------|--------------------|--------------------|----------------------|------------|
| Pore size | 0.2µm      |                        |                    |                    |                      |            |
| Membrane  | Nylon (PA) | Cellulose acetate (CA) | PTFE (hydrophobic) | PTFE (hydrophilic) | PVDF-L (hydrophilic) | PES        |
| Prefilter | GMF        | PP                     | PP                 | PP                 | PP                   | PP         |

250 pcs. per PE-bag



| Part no.  | 13 16 2969 | 13 16 3654             | 13 16 2973         | 13 16 3655         | 13 16 2977           | 13 16 3656 |
|-----------|------------|------------------------|--------------------|--------------------|----------------------|------------|
| Pore size | 0.45µm     |                        |                    |                    |                      |            |
| Membrane  | Nylon (PA) | Cellulose acetate (CA) | PTFE (hydrophobic) | PTFE (hydrophilic) | PVDF-L (hydrophilic) | PES        |
| Prefilter | GMF        | PP                     | PP                 | PP                 | PP                   | PP         |

250 pcs. per PE-bag

### 13.1.2 25 mm syringe filters

- For sample volumes up to 100 mL.
- Female Luer lock inlet, male Luer slip outlet.
- Ultrasonic welded, print of membrane type.
- Retention volume <100 µL, operating pressure up to 12 bar.



| Part no.  | 25 16 2970 | 25 16 3657             | 25 16 2974         | 25 16 3658         | 25 16 2978           | 25 16 3659 |
|-----------|------------|------------------------|--------------------|--------------------|----------------------|------------|
| Pore size | 0.2µm      |                        |                    |                    |                      |            |
| Membrane  | Nylon (PA) | Cellulose acetate (CA) | PTFE (hydrophobic) | PTFE (hydrophilic) | PVDF-L (hydrophilic) | PES        |
| Prefilter | PP         | PP                     | PP                 | PP                 | PP                   | PP         |

250 pcs. per PE-bag



| Part no.  | 25 16 2971 | 25 16 3660             | 25 16 2975         | 25 16 3661         | 25 16 2979           | 25 16 3662 |
|-----------|------------|------------------------|--------------------|--------------------|----------------------|------------|
| Pore size | 0.45µm     |                        |                    |                    |                      |            |
| Membrane  | Nylon (PA) | Cellulose acetate (CA) | PTFE (hydrophobic) | PTFE (hydrophilic) | PVDF-L (hydrophilic) | PES        |
| Prefilter | PP         | PP                     | PP                 | PP                 | PP                   | PP         |

250 pcs. per PE-bag

ProFill white line syringe filters with other dimensions or membranes than above mentioned, e.g. PVDF (hydrophobic) or Polypropylene (PP) are available upon request.

## 13.2 Syringe filters with color code

### 13.2.1 17 mm syringe filters

- For small sample volumes up to 10 mL.
- Female *Luer Lock* inlet, male *Luer Slip* outlet.
- Retention volume <0.029 mL, operating pressure up to 7.9 bar.
- Injection moulded ring with color code, print of membrane type.



| Part no.   | 17 16 2076 | 17 16 2077 | 17 16 2078                 | 17 16 2079                 | 17 16 2080 | 17 16 2081 | 17 16 2082 | 17 16 2083 |
|------------|------------|------------|----------------------------|----------------------------|------------|------------|------------|------------|
| Pore size  | 0.2 µm     | 0.45 µm    | 0.2 µm                     | 0.45 µm                    | 0.2 µm     | 0.45 µm    | 0.2 µm     | 0.45 µm    |
| Membrane   | PTFE       | PTFE       | Regenerated cellulose (RC) | Regenerated cellulose (RC) | Nylon (PA) | Nylon (PA) | PVDF       | PVDF       |
| Prefilter  | no         | no         | no                         | no                         | no         | no         | yes        | yes        |
| Color code | blue       | yellow     | grey                       | brown                      | purple     | green      | black      | red        |

100 pcs. per PE-bag, add. packed in a blue PP-box

### 13.2.2 25 mm ProFill syringe filters

- Best option for laboratories using sample sizes from 1.5 mL to 100 mL.
- Retention volume >0.1 mL, operating pressure up to 5bar.
- Female *Luer Lock* inlet, male *Luer Slip* outlet.
- Ultrasonic welded housing with color code.



| Part no.   | 25 16 0346 | 25 16 0347 | 25 16 0348                 | 25 16 0349                 | 25 16 0350  | 25 16 0351   |
|------------|------------|------------|----------------------------|----------------------------|-------------|--------------|
| Pore size  | 0.2 µm     | 0.45 µm    | 0.2 µm                     | 0.45 µm                    | 0.20 µm     | 0.45 µm      |
| Membrane   | PTFE       | PTFE       | Regenerated Cellulose (RC) | Regenerated Cellulose (RC) | Nylon (PA)  | Nylon (PA)   |
| Prefilter  | no         | no         | no                         | no                         | no          | no           |
| color code | green      | natural    | blue                       | yellow                     | bright blue | bright green |

100 pcs. per PE-bag, add. packed in a blue PP-box

### 13.2.3 30 mm Syringe filters

- Retention volume <0.137 mL, operating pressure up to 6.2 bar.
- Female *Luer Lock* inlet, male *Luer slip* outlet.
- Injection moulded ring with color code, print of membrane type.
- All listed filters have a glass fibre prefilter for filtration of sample with high particulate load.



| Part no.   | 30 16 2086 | 30 16 2087 | 30 16 2088                 | 30 16 2089                 |
|------------|------------|------------|----------------------------|----------------------------|
| Pore size  | 0.2 µm     | 0.45 µm    | 0.2 µm                     | 0.45 µm                    |
| Membrane   | PTFE       | PTFE       | Regenerated Cellulose (RC) | Regenerated Cellulose (RC) |
| Prefilter  | no         | no         | no                         | no                         |
| color code | blue       | yellow     | grey                       | brown                      |

100 pcs. per PE-bag, add. packed in a blue PP-box



| Part no.   | 30 16 2090 | 30 16 2091 | 30 16 2092 | 30 16 2093 | 30 16 2094 |
|------------|------------|------------|------------|------------|------------|
| Pore size  | 0.20 µm    | 0.45 µm    | 0.2 µm     | 0.45 µm    | 1.2 µm     |
| Membrane   | Nylon (PA) | Nylon (PA) | PVDF       | PVDF       | GMF        |
| color code | purple     | green      | black      | red        | orange     |

100 pcs. per PE-bag, add. packed in a blue PP-box

# 14. HPLC certified plastic disposable syringes with *Luer Lock* and *Luer Slip*

HPLC certified, non sterile disposable syringes made of solvent robust polypropylene for all syringe filter applications

- Each manufactured batch is HPLC controlled and supplied with an appropriate certificate upon request.
- Syringes manufactured according to ISO 13485 (Medical devices).
- *Luer Lock* manufactured according to ISO 594-2/DIN EN 1707.
- *Luer Slip* manufactured according to ISO 594-1/DIN EN 20594-1.
- Free of latex, free of plasticizers, free of PVC.
- Two-part, all-plastic construction made of a chemically resistant, inert polypropylene.
- No rubber plunger seals or silicone lubricants that may cause sample contamination.
- Safe functional back-stop feature.
- Easy to read permanent graduations.
- All *Luer Lock* syringes have centered tips.
- Available with *Luer Lock* and *Luer Slip* connections.



## 14.1 Plastic disposable syringes with *Luer Lock*

Scale 1:2



| Part no.    | 02 36 2399  | 05 36 2400  | 10 36 2401   | 20 36 2402   |
|-------------|---|---|--|--|
| Description | 2 mL<br>Disposable syringe<br>non sterile<br><i>Luer Lock</i> | 5 mL<br>Disposable syringe<br>non sterile<br><i>Luer Lock</i> | 10 mL<br>Disposable syringe<br>non sterile<br><i>Luer Lock</i> | 20 mL<br>Disposable syringe<br>non sterile<br><i>Luer Lock</i> |

100 pcs. per PE-bag

## 14.2 Plastic disposable syringes with *Luer Slip*

Scale 1:2



| Part no.    | 02 36 2403  | 05 36 2404  | 10 36 2405   | 20 36 2406   |
|-------------|---|---|--|--|
| Description | 2 mL<br>Disposable syringe<br>non sterile<br><i>Luer Slip</i> | 5 mL<br>Disposable syringe<br>non sterile<br><i>Luer Slip</i> | 10 mL<br>Disposable syringe<br>non sterile<br><i>Luer Slip</i> | 20 mL<br>Disposable syringe<br>non sterile<br><i>Luer Slip</i> |

100 pcs. per PE-bag

# 15. GC injection port septa

- Good penetration and re-sealing properties (low fragmentation).
- Long lifetime.
- Ready-to-use; no further pre-treatment necessary.
- No sticking to hot surfaces, easily exchangeable.
- Standard dimensions for all common gas chromatographs.



## 15.1 High performance, low bleed septa

- Ultra low bleeding (release of siloxanes).
- Suitable for inlet temperatures of up to 275°-320°C.
- Packed with 50 pieces in a resealable clear crew neck vial.



| 07 18 3956                        | 09 18 3985   | 11 18 3957  | 12 18 3958  | 17 18 3959  |
|-----------------------------------|--|---|---|---|
| Shimadzu plug,<br>blue            | 9.5 mm<br>low bleed<br>injection port septa,<br>blue | 11 mm<br>low bleed<br>injection port septa,<br>blue | 12.5 mm<br>low bleed<br>injection port septa,<br>blue | 17 mm<br>low bleed<br>injection port septa,<br>blue |
| 50 pcs. in a clear crew neck vial |  |   |   |   |

## 15.2 Universal, long-life GC-septa

- Suitable for inlet temperatures of up to 340°C.
- Low bleeding.
- Packed with 25 pieces in a resealable amber crew neck vial.



| 07 18 0935                         | 09 18 0936   | 10 18 0937  | 11 18 0938  | 12 18 0939  | 17 18 0940  |
|------------------------------------|--|---|---|---|---|
| Shimadzu plug,<br>transparent      | 9.5 mm<br>universal HT<br>injection port septa,<br>transparent | 10 mm<br>universal HT<br>injection port septa,<br>transparent | 11 mm<br>universal HT<br>injection port septa,<br>transparent | 12.5 mm<br>universal HT<br>injection port septa,<br>transparent | 17 mm<br>universal HT<br>injection port septa,<br>transparent |
| 25 pcs. in an amber crew neck vial |  |   |   |   |   |

# 16. GC capillary connectors



| 02 17 0472  | 02 17 0473  | For precise connections of fused-silica capillary columns in GC   |
|---|---|---|
| Universal<br>capillary connector<br>for 2 columns | Universal<br>Y-capillary connector<br>for 3 columns | Universal capillary connectors connect all columns with an inner diameter of 0.20 - 0.53 mm and an outer diameter of 0.30 - 0.75 mm |

10 pcs. per PP-box

1 pc. per PP-box

# 17. Crimping tools

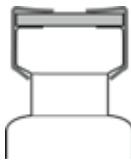
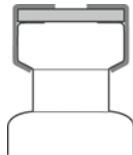
- Easy and convenient handling.
- Chemically resistant surface finish especially designed for the application in labs.
- Hardened crimping jaws made of a special alloy that guarantees long life.
- Adjustable in crimping pressure limitation by a screw in the handle.
- Additionally 11 mm, 13 mm and 20 mm crimpers are adjustable in crimping height by screwing up or down the pressure block in the crimping head with a hexagon key.
- Repair Service for crimping tools made by Thermo Fisher Scientific.



An inappropriate crimp can be recognized by:

Flat cap surface

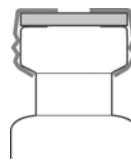
Flat septa surface



**Untight aluminum edge**



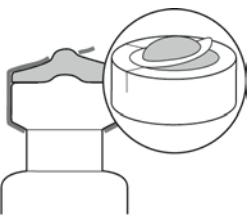
**Upward bulge of the crimp cap**



**Deformation of the crimp cap sides**



**Convex looking liner**



**Rounded edges/ upward bulge of the cap/liner**

Tight fitting of the Aluminum edge

Plain + undeformed cap sides

Adjust crimping pressure with the screw in the handle  
+  
Adjust crimping height with the hexogen key (s. below)  
*(undercrimped)*

Adjust crimping pressure with the screw in the handle  
+  
Adjust crimping height with the hexogen key (s. below)  
*(overcrimped)*

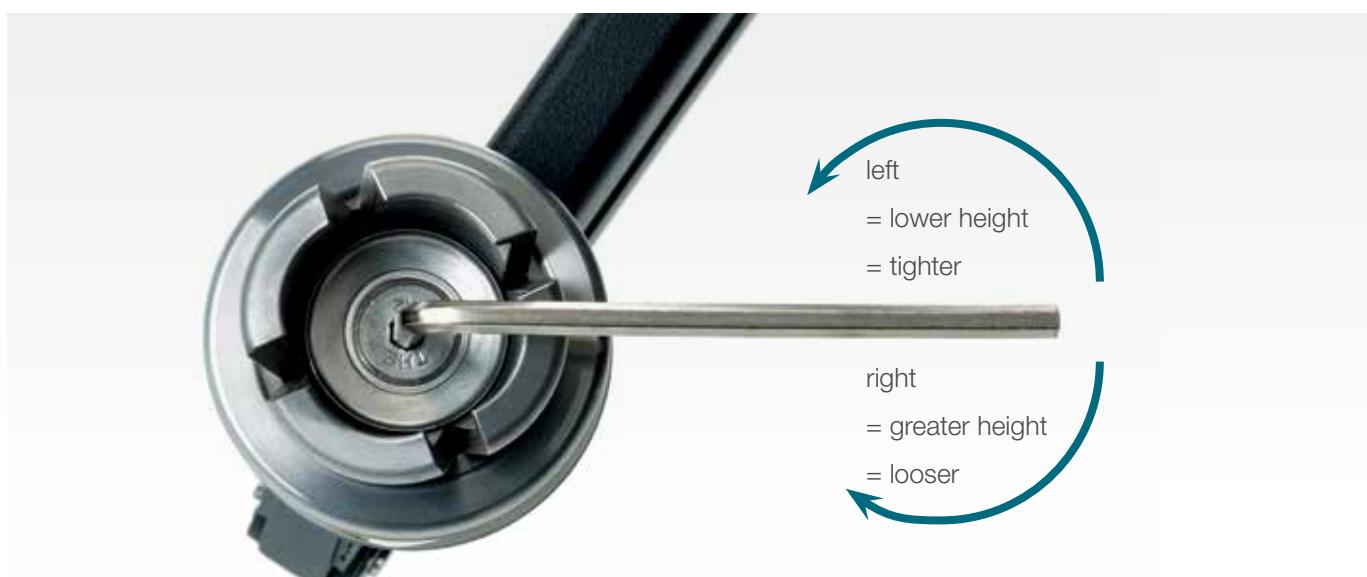
Adjust crimping height with the hexogen key (s. below)  
*(overcrimped)*

Adjust crimping pressure with the screw in the handle  
*(overcrimped)*

Especially with headspace caps it is important not to overcrimp them. If the aluminum is stretched too much under the crimp neck, the bridges of the scorelines suffer too much stress and can break open at even low pressure (below 3 bars) or - in worst case - can even tear apart beside the scorelines  
*(overcrimped)*

An inappropriate crimp cannot be recognized by trying to turn the seal, as completely PTFE-laminated liners have a very slippery surface on the glass rim, which allows anyone to turn the cap, if the right torque is used.

The turning of the cap is even easier when the liner is sitting on a headspace (bevelled top) glass rim, as it then only has very small surface to rest on.



## 17.1 Manual crimping tools

- Crimping tools provide a reproducible, secure vial closure
- Easy and convenient handling
- High quality construction for durability and long life
- Painted, plated and coated for maximum corrosion resistance
- Textured handle surface provides an assured grip



| 08 06 0005                     | 11 06 0006                      | 13 06 0007                      | 20 06 0008                      | 28 06 0320                      | 32 06 0135                      |
|--------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Crimper for 8 mm aluminum caps | Crimper for 11 mm aluminum caps | Crimper for 13 mm aluminum caps | Crimper for 20 mm aluminum caps | Crimper for 28 mm aluminum caps | Crimper for 32 mm aluminum caps |
| 1 pc. per PP-box               |                                 |                                 |                                 |                                 |                                 |

| 13 06 0069                                | 13 06 0319                           | 20 06 0043                                | 20 06 0170                           | 28 06 0190                                |   |
|---|--------------------------------------|---|--------------------------------------|---|---|
| Crimper for 13 mm flip top/flip off seals | Crimper for 13 mm flip Tear Up seals | Crimper for 20 mm flip top/flip off seals | Crimper for 20 mm flip tear up seals | Crimper for 28 mm flip top/flip off seals | Special sizes and crimpers for pump spray closures on request |
| 1 pc. per PP-box                          |                                      |   |                                      |   |   |

## 17.2 Manual decapping tools

| 08 07 0001                      | 11 07 0002                       | 13 07 0003                       | 20 07 0004                       | 28 07 0092                       | 32 07 0078                       |
|---------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Decapper for 8 mm aluminum caps | Decapper for 11 mm aluminum caps | Decapper for 13 mm aluminum caps | Decapper for 20 mm aluminum caps | Decapper for 28 mm aluminum caps | Decapper for 32 mm aluminum caps |
| 1 pc. per PP-box                |                                  |                                  |                                  |                                  |                                  |

## 17.3 Stainless steel cleanroom crimping tools

- The crimping/decapping mechanism is corrosion and heat resistant while the stainless steel construction removes the need for any protective coating on the handle or crimp head.
- Can withstand repeated sterilization for cleanroom use without the risk of damaging the tool.
- Available in 11 mm, 13 mm and 20 mm sizes.
- Crimping tools are adjustable in crimping pressure and height to offer optimal crimping results on varying vial styles.
- As no lubricant is used and the handles are from non-lacquered stainless steel, the crimpers can be used in cleanroom environments without limitation.



### 17.3.1 Manual crimping tools

| 11 06 2225   | 13 06 2227   | 20 06 2229   |
|--|--|--|
| 11 mm crimpers made of stainless steel, sterilizable, for cleanroom applications | 13 mm crimpers made of stainless steel, sterilizable, for cleanroom applications | 20 mm crimpers made of stainless steel, sterilizable, for cleanroom applications |
| 1 pc. per PP-box   |  |  |

Other sizes are available



### 17.3.2 Manual decapping tools

| 11 07 2226  | 13 07 2228  | 20 07 2230  |
|---|---|---|
| 11 mm decappers made of stainless steel, sterilizable, for cleanroom applications | 13 mm decappers made of stainless steel, sterilizable, for cleanroom applications | 20 mm decappers made of stainless steel, sterilizable, for cleanroom applications |
| 1 pc. per PP-box  |   |   |

Other sizes are available

## 17.4 Pneumatic AIRGO crimper

- Completely new designed ergonomic hand-held tool with easy push button for a completely joint-friendly work position.
- Unique ultra slim design of the crimping jaws is perfect for in-tray crimping of the vial.
- Slim jaw shape allows for the first time an optical control of the crimping process.
- Combines convenient large sample series processing with cleanroom usability.
- The weight of the new pneumatic hand-held tool generation is reduced by 50%.
- The optional balancer helps to save space on the lab bench and keeps the crimper clean and ready to use in reach.

| 00 00 3080   | 00 00 3081  | 00 00 0120                      |
|--|---|---------------------------------|
| 11 mm AIRGO crimper<br>high pressure<br>min. 5 bar/72,5 PSI<br>stable working pressure | 11 mm AIRGO crimper<br>low pressure<br>min. 3 bar/ 43,5PSI<br>stable working pressure | Hanging device<br>with balancer |
| 1 pc. per case   |   | 1 pc. per carton                |



## 17.5 Pneumatic hand-held crimping tool

- Crimping and decapping tool, operated by compressed air (6.2 bar = 90 psi minimum net pressure).
- Easy handling; just by pushing the button the vial is crimped or decapped.
- Interchangeable "C"-Heads for crimping and decapping in various sizes (pls. see chapters 17.5.1 + 17.5.2).
- Adjustable, constant and reproducible crimping pressure.
- CE mark of conformity.
- Space-saving installation with a balancer above the working bench.
- Ergonomical handling, as the balancer compensates the weight of the pneumatic crimper and facilitates steady and precise crimping.
- Inlet air supply connector G 1/4 " thread (female); connection to be provided by customer.
- The pneumatic crimping tool can be delivered with stand and foot switch or with hanging device and trigger in the handle.



| 00 00 0089  | 00 00 0120                   | 00 00 1898   |
|---|------------------------------|--|
| Pneumatic basic crimping tool, including pressure regulator, safety valve and nylon (PA) twisted hose | Hanging device with balancer | Stand with foot switch for pneumatic basic crimping tool |
| 1 pc. per carton  |                              |  |



### 17.5.1 Crimping heads for pneumatic hand-held crimping tool

| 08 06 0149                                      | 11 06 0150                                      | 13 06 0134                                 | 20 06 0088                                      | 32 06 0151                                      |
|---|---|--|---|---|
| Crimping head for 8 mm aluminum caps            | Crimping head for 11 mm aluminum caps           | Crimping head for 13 mm aluminum caps      | Crimping head for 20 mm aluminum caps           | Crimping head for 32 mm aluminum caps           |
| 1 pc. per carton                                |   |  |   |   |
| 13 06 0091                                      | 20 06 0090                                      | 20 06 0148                                 | 28 06 0191                                      | 32 06 0192                                      |
| Crimping head for 13 mm flip top/flip off seals | Crimping head for 20 mm flip top/flip off seals | Crimping head for 20 mm flip tear up seals | Crimping head for 28 mm flip top/flip off seals | Crimping head for 32 mm flip top/flip off seals |
| 1 pc. per carton                                |   |  |   |   |

For professional advice in terms of crimp heads for flip top/flip off or flip tear up seals please contact our Internal Sales team.

### 17.5.2 Decapping heads for pneumatic hand-held crimping tool

| 08 07 0153                            | 11 07 0107                             | 13 07 0154                             | 20 07 0155                             | 28 07 0156                             | 32 07 0157                             |
|---------------------------------------|--|--|--|--|--|
| Decapping head for 8 mm aluminum caps | Decapping head for 11 mm aluminum caps | Decapping head for 13 mm aluminum caps | Decapping head for 20 mm aluminum caps | Decapping head for 28 mm aluminum caps | Decapping head for 32 mm aluminum caps |
| 1 pc. per carton                      |  |  |  |  |  |

Special sizes upon request

## 17.6 Electronic crimpers and decappers

- New with LCD display for convenient crimp force adjustment, fault monitoring and different languages built in.
- Electronic crimpers and decappers provide secure, reproducible crimps and quick and easy removal of aluminum seals with the push of a button.
- Ergonomic design and push button operation eliminates wrist strain.
- Built in long life lithium ion rechargeable battery.
- New with brush-less technology for a longer lifetime and less particle emission.
- Universal 100V–240V charger includes plug adaptors for most power outlets.
- Crimpers and decappers can be operated while plugged in and recharging.
- Crimp force sensing assures consistent proper sealing.



### 17.6.1 Electronic crimping tools

| 08 00 3946                               | 11 00 3947                                | 13 00 3948                                | 20 00 3949                                |
|--|---|---|---|
| 8 mm<br>electronic crimer,<br>110 - 240V | 11 mm<br>electronic crimer,<br>110 - 240V | 13 mm<br>electronic crimer,<br>110 - 240V | 20 mm<br>electronic crimer,<br>110 - 240V |
| 1 pc. per carton                         |   |   |   |

### 17.6.2 Electronic decapping tools

| 11 00 3950                                  | 13 00 3951                                  | 20 00 3952                                  |
|---|---|---|
| 11 mm<br>electronic decapper,<br>110 - 240V | 13 mm<br>electronic decapper,<br>110 - 240V | 20 mm<br>electronic decapper,<br>110 - 240V |
| 1 pc. per carton                            |   |   |

### 17.6.3 Replacement battery for electronic crimpers and decappers

| 00 00 3217   |
|--|
| Replacement battery,<br>6.4V lithium Ion for electronic crimpers and decapper, |
| 1 pc. per carton   |

## 17.7 Electronic high power crimp station

- New with LCD display for convenient crimp force adjustment, fault monitoring and 8 different languages built in.
- High power, perfect for magnetic steel caps.
- Adjustable crimp settings for compatibility with most vial/septum/seal combinations including aluminum, steel and bi-metal seals.
- Exchangeable crimp and Decapping heads can be removed or installed in seconds.
- New with brush-less technology for a longer lifetime and less particle emission.
- New with brush-less technology for a longer lifetime and less particle emission.
- Crimp-force sensing automatically determines when a proper seal has been formed and opens the jaws to release the vial.



### 17.7.1 programmable electronic high power crimp station (basic tool)

| 00 00 3953  |
|---|
| Programmable electronic high power crimp              |
| Including the basis high power crimer and the 12 volt |
| DC supply with the power cord.                        |
| <i>(Accessory is not included)</i>                    |
| 1 pc. per carton                                      |

### 17.7.2 11 mm and 20 mm programmable electronic high power crimp station

| 00 00 3954   | 20 00 3955   |
|--|--|
| Programmable electronic high power crimp station with variable accessory base, external power supply and two exchangeable jaw sets (11 mm crimp and 11 mm decrimp), 110 - 240V | Programmable electronic high power crimp station with variable accessory base, external power supply and two exchangeable jaw sets (20 mm crimp and 20 mm decrimp), 110 - 240V |
| 1 pc. per carton   |  |

### 17.7.3 crimping heads for programmable electronic high power crimp station

| 08 06 3200                           | 11 06 3202                            | 13 06 3204                            | 20 06 3206                            |
|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Crimping head for<br>8 mm crimp caps | Crimping head for<br>11 mm crimp caps | Crimping head for<br>13 mm crimp caps | Crimping head for<br>20 mm crimp caps |
| 1 pc. per carton                     |                                       |                                       |                                       |

Further crimping and decapping heads upon request

### 17.7.4 Decapping heads for programmable electronic high power crimp station

| 08 07 3201                                  | 11 07 3203                                   | 13 07 3205                                   | 20 07 3207                                   |
|---|--|--|--|
| Decapping head for<br>8 mm aluminum<br>caps | Decapping head for<br>11 mm aluminum<br>caps | Decapping head for<br>13 mm aluminum<br>caps | Decapping head for<br>20 mm aluminum<br>caps |
| 1 pc. per carton                            |  |  |  |

# 18. Vial racks and storage boxes

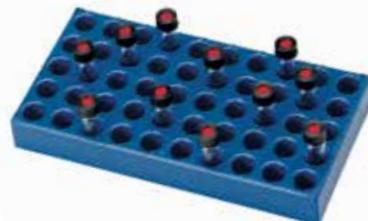
## 18.1 Vial racks

- Easy handling and transportation of sample vials.
- Filling visible because of transparent acrylic material.
- Stable standing position because of solid construction.
- Stack stability because of silicone base.
- Racks for 8 mm resp. 11 mm vials can even hold conically shaped sample vials.
- Custom-tailored vial racks can be manufactured according to customer's specifications.



| Part no.    | 08 21 1000  | 12 21 1001   | 15 21 1664   | 24 21 1002  |
|-------------|---|--|--|---|
| Description | Vial rack, acrylic, 173 x 95 x 20 mm, 50 cavities with a diameter of 8.5/3 mm | Vial rack, acrylic, 173 x 95 x 20 mm, 50 cavities with a diameter of 12 mm | Vial rack, acrylic, 175.8 x 115.5 x 20 mm 40 cavities with a diameter of 15.1 mm | Vial rack, acrylic, 160 x 160 x 30 mm, 25 cavities with a diameter of 24 mm |
|             | Conical cavity for round or conical bottom ND8 crimp vials                    | For 1.5 and 2 mL vials   | For 4 mL vials   | For EPA and storage vials   |

1 pc. shrink-wrapped



| Part no.    | 12 21 2187  | 15 21 2480  |
|-------------|---|---|
| Description | PP vial-rack, (200 x 105 x 17 mm), for 1.5 mL vials, 50 cavities, blue, stackable | PP vial-rack, (230 x 117 x 28 mm), for 4 mL vials, 50 cavities, blue, stackable |

5 pcs. shrink-wrapped

## 18.2 PP storage boxes

- Safe standing position on the laboratory table and during transport due to specific cavities related to the vial diameter.
- Ideal for space-saving storage in fridges, as the transparent lid prevents condensations on the closures and thus avoids a possible contamination in the cooling unit.
- Temperature resistant from -80 degrees up to +100 degrees.
- Alpha numeric coding (1.5 mL, 4 mL) for clear sample identification.
- Unbreakable polypropylene bottom and lid, stackable.
- Chemically resistant and fairly robust; autoclavable.



## 18.2.1 PP storage boxes for 1.5 mL sample vials



| Part no. | Blue<br>12 21 2420 | Orange<br>12 21 2421 | Pink<br>12 21 2422 | Yellow<br>12 21 2423 | Green<br>12 21 2424 | Transparent<br>12 21 2425 |
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|

Description PP storage box for 1.5 mL (1.8 mL, 2 mL) vials or 2 mL shell vials, with cover, (130 x 130 x 45 mm),  
81 cavities with alphanumeric coding of all 4 margins as well as the cavities at the bottom  
1 pc. per PE-bag



| Part no. | Blue<br>12 21 3671 | Orange<br>12 21 3672 | Pink<br>12 21 3673 | Yellow<br>12 21 3674 | Green<br>12 21 3675 | Transparent<br>12 21 3676 |
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|

Description PP storage box for 1.5 mL (1.8 mL, 2 mL) vials or 2 mL shell vials, with cover, (130 x 130 x 45 mm),  
100 cavities  
1 pc. per PE-bag



| Part no. | Blue<br>12 21 3138 | Orange<br>12 21 3139 | Pink<br>12 21 2590 | Yellow<br>12 21 3140 | Green<br>12 21 2589 | Transparent<br>12 21 3141 |
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|
|----------|--------------------|----------------------|--------------------|----------------------|---------------------|---------------------------|

Description PP storage box for 1.5 mL (1.8 mL, 2 mL) vials or 2 mL shell vials, with cover, (67 x 67 x 45 mm),  
16 cavities  
1 pc. per PE-bag

Minimum order quantity: 5 pieces per color

## 18.2.2 PP storage boxes for 4 mL sample vials



## 18.2.3 PP storage boxes for 5 mL, 10 mL and 20 mL headspace vials



| Part no. | Red<br>15 21 2426 | Blue<br>24 21 2427 |
|----------|-------------------|--------------------|
|----------|-------------------|--------------------|

Description PP storage box for 4 mL vials or 4 mL shell vials, red, with cover, (130 x 130 x 52 mm),  
49 cavities with alphanumeric coding at the cavities  
1 pc. per PE-bag

PP storage box for 5 mL, 10 mL and 20 mL headspace-vials, blue, with cover, (130 x 130 x 102 mm),  
25 cavities

## 18.2.4 PP storage boxes for 20 mL, 30 mL and 40 mL EPA-vials with cover



| Part no. | Violet<br>28 21 2428 | Violet<br>28 21 2429 |
|----------|----------------------|----------------------|
|----------|----------------------|----------------------|

Description PP storage box for 20 mL EPA-vials, violet, with cover, (130 x 130 x 80 mm),  
16 cavities  
1 pc. per PE-bag

PP storage box for 30 mL and 40 mL EPA-vials, violet, with cover, (130 x 130 x 105 mm),  
10 cavities

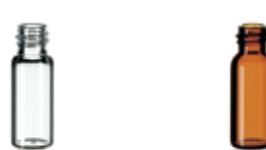


# 19. Screw neck vials for storage purposes

- Screw neck vials for storage purposes made out of 1<sup>st</sup> hydrol. class glass.
- Vials with different volumes are available.
- Clear and amber vials.
- Seals with different septa materials.
- Barcode labelling upon request.



## 19.1 Screw neck vials for storage purposes



Scale 1:2

| Part no.            | 11 09 0210  | 11 09 0259  | 13 09 0222   | 13 09 0280   | 15 09 1703<br>15 09 1774   | 15 09 1657<br>15 09 1800  |
|---------------------|---|---|--|--|--|---|
| Description         | 1.5 mL<br>screw neck vial, 8-425,<br>32 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 1.5 mL<br>screw neck vial, 8-425,<br>32 x 11.6 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 4 mL<br>screw neck vial, 13-425,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 4 mL<br>screw neck vial, 13-425,<br>45 x 14.7 mm,<br>amber glass,<br>1 <sup>st</sup> hydrol. class | 8 mL<br>screw neck vial, 15-425,<br>61 x 16.6 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class | 12 mL<br>screw neck vial, 15-425,<br>66 x 18.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class |
| TFVol. (mL)         | 1.9   | 1.9   | 5  | 5  | 8.9  | 12  |
| UsVol. (mL)         | 1.5   | 1.5   | 4.1  | 4.1  | 8  | 11  |
| MWVol. (µL)         | 200   | 200   | 800  | 800  | 1500   | 1500  |
| Res. vol. (µL)      | <110  | <110  | <400   | <400   | 800  | 800   |
| 100 pcs. per PP-box |   |   |  | 100 pcs. per carton  |  |   |

Scale 1:2



| Part no.            | 18 09 1704  | 20 09 1705  | 24 09 0589<br>24 09 0927  | 24 09 0839<br>24 09 0923  | 24 09 0402<br>24 09 0928  | 24 09 1089<br>24 09 1090   |
|---------------------|---|---|---|---|---|--|
| Description         | 16 mL<br>screw neck vial, 18-400,<br>71 x 20.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 20 mL<br>screw neck vial, 20-400,<br>86 x 22.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 20 mL<br>screw neck vial, 24-400,<br>57 x 27.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class | 30 mL<br>screw neck vial, 24-400,<br>72.5 x 27.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class | 40 mL<br>screw neck vial, 24-400,<br>95 x 27.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class | 60 mL<br>screw neck vial, 24-400,<br>140 x 27.5 mm,<br>clear/amber glass,<br>1 <sup>st</sup> hydrol. class |
| TFVol. (mL)         | 17.4  | 24.5  | 23.3  | 31.1  | 42.9  | 64.4   |
| UsVol. (mL)         | 16  | 23  | 20  | 27.4  | 40  | 60   |
| MWVol. (µL)         | 1500  | 1500  | 1   | 1.4   | 1.4   | 1.4  |
| Res. vol. (µL)      | 800   | 800   | 0.5 (mL)  | 0.7 (mL)  | 0.7 (mL)  | 0.7 (mL)   |
| 100 pcs. per carton |   |   |   | 100 pcs. per PP-box   |   |  |

## 19.2 PP screw seals for storage vials

- Corresponding centre hole versions are partially available.
- Packed with 100 pieces in tamper-proof evident zip-lock PE-bags.
- Seals with different septa material are available.

### 19.2.1 PP screw seals ND8

for 11 09 0210 and 11 09 0259



| Part no.        | 08 15 0654                             | 08 15 1653          | 08 15 1040              |
|-----------------|--|---------------------|-------------------------|
| Description cap | PP screw cap black, closed top         |                     |                         |
| Septa material  | Nat. rubber red-orange/TEF transparent | Butyl red/PTFE grey | Silicone white/PTFE red |
| Durometer       | 60° shore A                            | 55° shore A         | 45° shore A             |
| Thickness       | 1.3 mm                                 | 1.3 mm              | 1.3 mm                  |
|                 | 100 pcs. per PE-bag                    |                     |                         |

### 19.2.2 PP screw seals ND13

for 13 09 0222 and 13 09 0280



| Part no.        | 13 15 0439                             | 13 15 1638          | 13 15 0648              |
|-----------------|--|---------------------|-------------------------|
| Description cap | PP screw cap black, closed top         |                     |                         |
| Septa material  | Nat. rubber red-orange/TEF transparent | Butyl red/PTFE grey | Silicone cream/PTFE red |
| Durometer       | 60° shore A                            | 55° shore A         | 55° shore A             |
| Thickness       | 1.3 mm                                 | 1.3 mm              | 1.5 mm                  |
|                 | 100 pcs. per PE-bag                    |                     |                         |

### 19.2.3 PP screw seals ND15

for 15 09 1703, 15 09 1774, 15 09 1657, 15 09 1800



| Part no.        | 15 15 0793                             | 15 15 1748          | 15 15 1083              | 15 15 1938                             | 15 15 1932          | 15 15 1989              |
|-----------------|--|---------------------|-------------------------|--|---------------------|-------------------------|
| Description cap | PP screw cap black, closed top         |                     |                         |  |                     |                         |
| Septa material  | Nat. rubber red-orange/TEF transparent | Butyl red/PTFE grey | Silicone white/PTFE red | Nat. rubber red-orange/TEF transparent | Butyl red/PTFE grey | Silicone white/PTFE red |
| Durometer       | 60° shore A                            | 55° shore A         | 45° shore A             | 60° shore A                            | 55° shore A         | 45° shore A             |
| Thickness       | 1.3 mm                                 | 1.6 mm              | 1.3 mm                  | 1.3 mm                                 | 1.6 mm              | 1.3 mm                  |
|                 | 100 pcs. per PE-bag                    |                     |                         |  |                     |                         |

### 19.2.4 PP screw seals ND18

for 18 09 1704



| Part no.        | 18 15 1387                     | 18 15 1132                           | 18 15 2069              |
|-----------------|--------------------------------|--------------------------------------|-------------------------|
| Description cap | PP screw cap black, closed top |                                      |                         |
| Septa material  | Butyl red/PTFE grey            | Silicone blue transparent/PTFE white | Silicone white/PTFE red |
| Durometer       | 55° shore A                    | 45° shore A                          | 55° shore A             |
| Thickness       | 1.6 mm                         | 1.7 mm                               | 1.5 mm                  |
|                 | 100 pcs. per PE-bag            |                                      |                         |

### 19.2.5 PP screw seals ND20

for 20 09 1705



| Part no.        | 20 15 1803                                | 20 15 1805          | 20 15 1804              |
|-----------------|---|---------------------|-------------------------|
| Description cap | Polypropylene screw cap white, closed top |                     |                         |
| Septa material  | Nat. rubber red-orange/TEF transparent    | Butyl red/PTFE grey | Silicone white/PTFE red |
| Durometer       | 60° shore A                               | 55° shore A         | 45° shore A             |
| Thickness       | 1.3 mm                                    | 1.3 mm              | 1.3 mm                  |
|                 | 100 pcs. per PE-bag                       |                     |                         |

### 19.2.6 PP screw seals ND24

(for 24 09 0589, 24 09 0927, 24 09 0839, 24 09 0923, 24 09 0402, 24 09 0928, 24 09 1089, 24 09 1090)



| Part no.        | 24 15 1395                     | 24 15 1540                | 24 15 1007     | 24 04 0841                  |
|-----------------|--------------------------------|---------------------------|----------------|-----------------------------|
| Description cap | PP screw cap white, closed top |                           |                |                             |
| Septa material  | butyl red/PTFE grey            | Silicone white/PTFE beige | PTFE/EPDM/PTFE | Silicone natural/PTFE beige |
| Durometer       | 55° shore A                    | 45° shore A               | 65° shore A    | 45° shore A                 |
| Thickness       | 2.5 mm                         | 3.2 mm                    | 2.0 mm         | 3.2 mm                      |
|                 | 100 pcs. per PE-bag            |                           |                |                             |

# 20. Special products

- Special products may be vials, septa, seals or any other chromatography accessories.
- Special products are non-stock items and may require a minimum order quantity.
- In the vial chapter we would like to point out our cylindrical Jars ND40 for soil samples.
- In the septa chapter we would like to draw your attention to our liners for Schott screw caps.
- In the seal chapter we have a broad variety of 13 mm crimp seals.



## 20.1 Special vials



| Part no.         | 11 09 0831   | 13 09 0236  | 13 09 2574  | 40 09 0678   |
|------------------|--|---|---|--|
| Description      | 2.5 mL crimp neck vial,<br>41 x 11.6 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class,<br>wide opening | 2 mL crimp neck vial,<br>32 x 16 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 4 mL crimp neck vial,<br>45 x 14.7 mm,<br>clear glass,<br>1 <sup>st</sup> hydrol. class | 50 mL cylindrical jar,<br>69.5 x 44 mm,<br>clear glass,<br>3 <sup>rd</sup> hydrol. class<br>with screw neck ND40 |
| TFVol. (mL)      | 2.7  | 3.6   | 5   | 65.5   |
| UsVol. (mL)      | 2.4  | 3   | 4.1   | 50   |
| MWVol. (µL)      | 200  | 800   | 800   | 5  |
| Res. vol. (µL)   | <100   | <400  | <400  | 2.5  |
| 100 pcs. per box |  |   | 125 pcs. per box  |  |

## 20.2 Centrifuge tubes

- Chromatography certified.
- Made of strong, highly transparent medical grade PP.
- Flat-Top caps: made of medical grade PP; easy to write on.
- Large writing area for easy marking.
- 20°C – 121°C.
- 8400 RCF stable.



| Part no.    | 18 19 3965 | 30 19 3966          |
|-------------|------------|---------------------|
| Description | 15 mL      | 50 mL               |
|             |            | 500 pcs. per PE-bag |

Centrifuge tube with blue screw cap, transparent PP, chromatography certified, scale, writing patch.

## 20.3 Special seals



| Part no.            | 13 03 1381   | 13 03 1382  | 13 03 0307   | 13 03 0308  | 22 15 1824   | 22 15 1869   | 40 15 0674                                      |
|---------------------|--|---|--|---|--|--|---|
| Description cap     | 13 mm aluminum cap clear lacquered, 6 mm centre hole | 13 mm aluminum cap clear lacquered, complete tear off | 13 mm aluminum cap clear lacquered, 6 mm centre hole | 13 mm aluminum cap clear lacquered, centre tear off | PE-Cap, transparent, 22 x 9.1 mm, 4.3 mm centre hole | PE-Cap, transparent, 22 x 9.1 mm, 8.0 mm centre hole | 40 mm polypropylene screw cap black, closed top |
| Septa material      | Butyl red/PTFE grey                                  | Butyl red/PTFE grey                                   | Pharma-fix-septa (butyl/PTFE)                        | Pharma-fix-septa (butyl/PTFE)                       | Silicone blue transparent/PTFE white, Y-slit         | Silicone blue transparent/PTFE white, Y-slit         | PTFE virginal                                   |
| Durometer           | 55° shore A  | 55° shore A   | 50° shore A  | 50° shore A   | 45° shore A  | 45° shore A  | 53° shore D                                     |
| Thickness           | 2.0 mm   | 2.0 mm  | 2.0 mm   | 2.0 mm  | 1.3 mm   | 1.3 mm   | 0.5 mm  |
| 100 pcs. per PE-bag |  |   |  |   |  |  |   |

Further special seals may be available upon request

## 20.4 Special septa

### 20.4.1 Septa for Schott screw caps



| Part no.                  | 12 02 0468                                | 16 02 0469                                | 23 02 0470                                | 30 02 0471                                | 43 02 0413                                | 43 02 2095                          |
|---------------------------|---|---|---|---|---|-------------------------------------|
| Septa material            | 12.9 mm septa, Silicone cream/ PTFE beige | 16.8 mm septa, Silicone cream/ PTFE beige | 23.4 mm septa, Silicone cream/ PTFE beige | 30.3 mm septa, Silicone cream/ PTFE beige | 43.2 mm septa, Silicone cream/ PTFE beige | 43.2 mm septa, butyl red/ PTFE grey |
| for Schott Screw cap GL14 |   | for Schott Screw cap GL18                 | for Schott Screw cap GL25                 | for Schott Screw cap GL32                 | for Schott Screw cap GL45                 | for Schott Screw cap GL45           |
| Durometer                 | 55° shore A                               | 55° shore A                         |
| Thickness                 | 3.2 mm                                    | 2.5 mm                              |
| 1000 pcs. per PE-bag      |   |   |   | 500 pcs. per PE-bag                       |   |                                     |

Further septa in various materials and diameters upon request

### 20.4.2 Septa 13 mm



| Part no.             | 13 02 1380                       | 13 02 0261                                 |
|----------------------|----------------------------------|--|
| Septa material       | 13 mm septa, butyl red/PTFE grey | 13 mm septa, pharma-fix-septa (butyl/PTFE) |
| Durometer            | 55° shore A                      | 50° shore A                                |
| Thickness            | 2.0 mm                           | 2.0 mm                                     |
| 1000 pcs. per PE-bag |                                  |  |

# 21. Special services



## Pre-screwed/pre-crimped vials

Sometimes customers wish to obtain vials which are already crimped or screwed with a seal of their choice. For example the tobacco industry analyses the smoke of a cigarette which is injected into an already crimped vial. Also a lot of EPA vials are bought with the appropriate closure already screwed on top of the vial. Thermo Fisher Scientific can provide you with any type of pre-sealed vial.



## 2in1 kits

To carry out an analysis, the user always needs two components at the same time: vial and closure. To fulfill this need in a convenient way Thermo Fisher Scientific offers 2in1 kits containing 100 vials and 100 seals in a blue, reclosable PP-box. All advantages of the individual items (CleanPack packaging of the vials, tamper-proof evident packaging of vials and seals, traceability through a batch numbering system, etc.) still remain. Furthermore the customer only has to reorder one article instead of two, which makes life easier. The following product lines can be obtained as a 2in1 kit:

- Screw neck vials/seals ND8
- Short thread vials/seals ND9
- Screw neck vials/seals ND10
- Crimp neck vials/seals ND11
- Snap ring vials/seals ND11
- Screw neck vials/seals ND13
- Shell vials ND8, ND11 + ND15 with PE-plugs
- 20 mL headspace vials/seals ND20 + ND18



## Special production runs

We make special production runs for:

- Vials: special diameters, special designs (different threads, necks, bottoms, etc.), vials with logos printed on the glass, different glass classes, etc.  
Minimum order quantities depend very much on availability of the glass tubing, possibly necessary extra tooling and set up time for the machinery.
- Vial racks: special outer dimensions, sizes of the cavities, number of cavities, distance between each cavity  
Minimum order quantity: approx. 20 pieces
- Septa: special diameter, thickness or material, special form  
Minimum order quantity depends very much on availability of the material, punching tool and set up time for the machinery; however, normally we are fairly flexible here even for smaller order quantities
- Seals: special caps or liners  
Minimum order quantity depends very much on availability of the requested cap and liner
- Crimpers: for special design caps (like Pump Spray closures, for caps with special size, etc.) If technically realizable, minimum order quantity is 1 piece, however design costs may occur



### Special packaging

Our standard packaging unit for seals is 100 pieces per PE-bag and for liners 1,000 pieces per PE-bag. However, our automatic counting and packaging machines are also capable to pack in any quantity a customer may request, e.g. 144 or 200 pieces per PE-bag.

Our vials are packed with 100 pieces per PP-box by standard. However, we also offer for 1.5 mL vials to additionally pack 10 boxes of 100 pieces each into an additional PP-box as a pack of 1,000 pieces.



### Barcode labelling of vials

In cases of high sample throughput often barcoded vials are requested. Through the barcode the sample can be traced from sample preparation through the whole process of analysis and identification at any point in time. sample mix-ups should not occur and administration of the analysis data is kept down to a minimum.

We can provide you with barcode-labelled vials. The labels withstand temperatures of approx. -40°C up to 140°C and have a high chemical resistance.

Recommended is the so-called back side print, as the barcode is protected by the polyester film and thereby is scratch and wiping resistant.

Furthermore the labels stand out by a high UV-stability.

Further information on length of a possible barcode (readability by the barcode reader), etc. can be obtained any time from us.



### Repair service for crimping tools

As an additional service for our customers we offer a repair service for crimping tools bought from Thermo Fisher Scientific.

# Product names, abbreviations, explanations, structure article description

## Product and brand names

### UltraBond

Thermo Fisher Scientific have enlarged their range of well-known and established UltraBond closures for EPA vials by various 9 mm UltraBond closures for short thread vials, among others also those in an instrument manufacturer quality. Comparable systems are offered by Agilent and Waters as so-called Interseal respectively Lectrabond closures.

The peculiarity of the UltraBond seal system is that the screw cap and the liner form an inseparable unit. Through a patented processing technique the molecular structure of the contact areas of the PP screw cap and the liner are changed in such a way that without usage of any glue or adhesive the components form a firm unit. Reasons for making such a seal instead of a just assembled cap/liner combination seal could be:

- For instruments with very thick and dull needles, in order to avoid the risk of pushing the liner into the vial (9 mm UltraBond seals for short thread vials).
- For screw caps with a wide diameter, where a liner cannot achieve any press-fit in the cap (24 mm UltraBond seals for EPA-Vials).

### Pharma-fix

A pharma-fix-septa is a moulded butyl/PTFE liner. Its PTFE lamination is only in the centre of the liner where the sample can get into contact with it. However, on the glass rims the very elastic butyl achieves a very tight seal which is essential especially in headspace analysis. A completely laminated butyl/PTFE septa has a much more slippery surface on the glass rims, so that the tightness is not as good as with a pharma-fix-septa.

### RedRubber

RedRubber/PTFE is a synthetic rubber which is softer than natural rubber/TEF and also shows less fragmentation. Furthermore it has a better cleanliness, even though it is not comparable with the analytical purity of silicone. RedRubber is a cost-effective septa material for routine analysis in GC + HPLC with a temperature resistance of -40°C up to 110°C. However, due to a different molecular structure it doesn't have the outstanding resealability properties like natural rubber for multiple injections.

### Riplate

"riplate" is the brand name of the 96 well plates of Messrs. RITTER GmbH for which Thermo Fisher Scientific offer suitable glass micro-inserts.

## Explanations

### Cleanroom packed products

There are different standards of cleanroom classes globally established. When stated, our products are packed in clean rooms of the class ISO 7 or ISO 8 (acc. to ISO 14644-1) which is identical to the class 10.000 or 100K (acc. to US FED STD 209E) for particles  $\geq 0.5 \mu\text{m}$ . Cleanroom classes represent a hygienic standard often found in the pharmaceutical industry. These special rooms have certified conditions for maximum particles per ft<sup>3</sup> or m<sup>3</sup> air. To have a comparison: The environment in a normal room contains billions of particles. The Cleanrooms are regularly measured by external authorities to guarantee the specifications. Such rooms have no windows (air-conditioned) and only material with low particle abrasion is allowed there (Plastic instead of wood or cardboard, etc.). The people have to wear special clothing.

### Headspace cap

A headspace cap is a safety cap for headspace analysis, which should avoid explosion of the vial in case of too much internal pressure. The headspace cap has special score-lines with bridges that break open at an inner pressure of  $3.0 \pm 0.5$  bar. Thus the excess pressure escapes and the risk of vial explosion is avoided.

### Micro-insert

A micro-insert in contrast to a micro-vial cannot be sealed on its own. It is neckless and always has to be used within a vial. The diameter of the micro-insert is depending on the size of the vial opening. A micro-insert reduces the volume, so that a needle is capable of picking up even smallest sample quantities. The longer the top of an Insert the more the volume can be reduced.

### Pre-cut septa

With slit liners used in HPLC the complete septa is cut through, in order to offer a penetration aid to the needle. In contrast to that pre-cut septa are only cut through the silicone layer, but not through the PTFE giving the same support to the needle without the risk of concentration changes due to solvent loss or contaminations from the environment.

### Seal

A seal is an already assembled closure consisting of a cap and a liner.

### Durometer

Durometer is the hardness of a liner and is expressed in ° shore. The higher the grade the harder the liner; the lower the grade, the softer the liner. The softest liner is 45° shore A and the hardest 70° shore A. Besides the thickness of a liner the hardness is an essential indication when deciding which liner is suitable for the penetration of a certain type of needle (fragile needles, thin or thick needles, sharp or dull needles, etc.)

### Headspace neck (bevelled top)

A headspace neck or headspace vial with bevelled top has a crimp neck whose outer edges are bevelled. In contrast to a flat DIN crimp neck the liner only has a very small surface to sit on which is a disadvantage regarding tightness (except for Pharma-Fix septa). headspace necks or bevelled crimp necks are only necessary when using the patented PerkinElmer Pressure Release seal consisting of an aluminum cap with a slit, a metal star washer plate and a liner with ears. This system only releases excess pressure reliably when using a vial with such a top.

### Micro-vial

Micro-vials can be sealed, but often need an adapter to run in the autosampler. In case they have a conical bottom, they cannot stand by themselves.

### Silanized

Silanized vials are used to reduce the adsorption of polar compounds onto the normally polar surface of the glass container. Some compounds like amino-acids, proteins or phenols tend to react with the OH-groups of the glass, even if – as is common for chromatography – 1<sup>st</sup> hydrolytic class glass is used. Through the silanization process the glass surface is deactivated and so possible reactions between the polar compounds and the glass are eliminated.

### Virginal (PTFE)

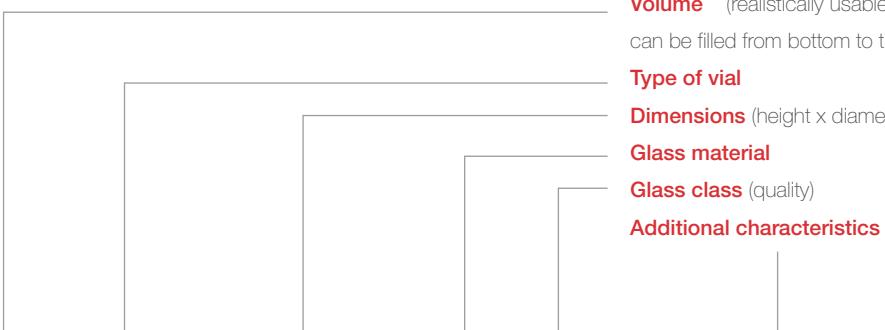
Untreated PTFE

## Abbreviations

|      |  |      |  |
|------|--|------|--|
| DW   | Deep well (Type of 96 Position Block with round inlet holes)   | ND   | Nominal Diameter   |
| EPA  | Environmental Protection Association (American regulatory authority that sets up certain standards and regulations for environmental analysis) | NR   | Natural rubber   |
| EPDM | Ethylene Propylene Diene Monomer   | PE   | Polyethylene   |
| EVA  | Ethylene-vinyl acetate   | PP   | Polypropylene  |
| GC   | Gas Chromatography   | PTFE | PolyTetraFluorEthylene   |
| GMF  | Glass Microfibre   | PVDF | Polyvinylidenefluoride   |
| HPLC | High performance liquid Chromatography   | RR   | RedRubber  |
| HS   | Headspace  | SPME | Solid Phase micro Extraction                                     |
| MTP  | Microtiter (Type of 96 Position Block which is very flat and has a low volume)   | SQW  | Square well (Type of 96 Position Block with square inlets)       |
| MTRS | Micro-Tube-Rack-System (Type of 96 Position Block with cover that is more a kind of rack with round inlet holes)                               | TEF  | Tefzel (special type of PTFE which is a very thin casted Teflon) |
|      |  | TPX  | TPX (Brand name of a Methylpentene Copolymer)                    |

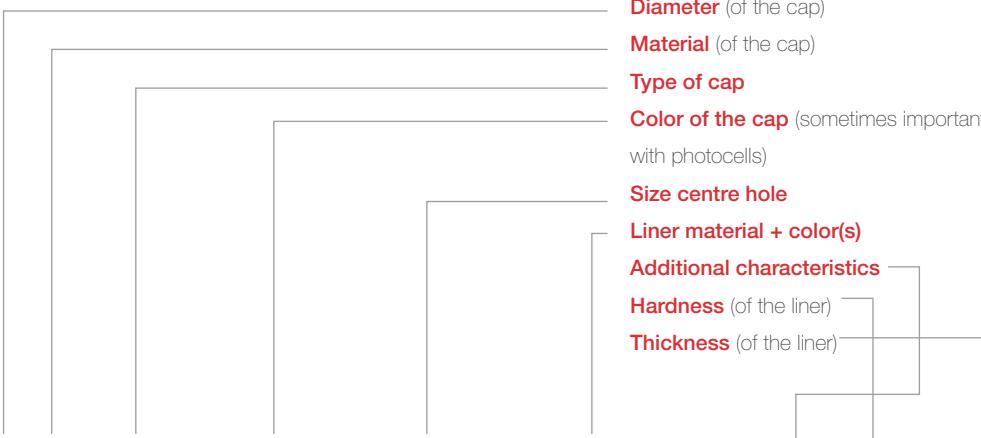
## Structure article descriptions

### Vials



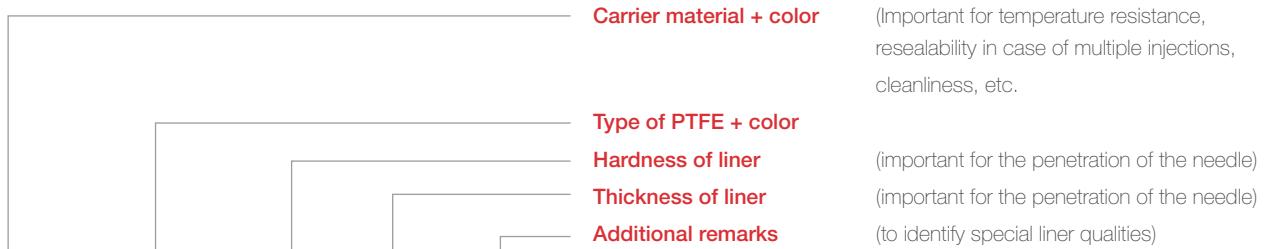
e.g.: 1.5 mL short threadvial, 32 x 11.6 mm, clear glass, 1<sup>st</sup> hydrol. class, with label and filling lines

### Seals



e.g.: 11 mm PE snap ring cap transparent, 6 mm centre hole, silicone white/PTFE blue, cross-slit, 55° shore A, 1.0 mm

### Septa



e.g.: silicone white/PTFE beige, 45° shore A, 3.2 mm (HT quality)

# Alphabetical index

|   |                            |
|---|----------------------------|
| 1:1 Drawings, vials .....   | 5, 95, 96, 97, 98, 99, 100 |
| 17 mm HPLC syringe filters .....  | 65                         |
| 25 mm HPLC syringe filters .....  | 64, 65                     |
| 2in1 kits .....   | 21, 28, 30, 37, 41, 78     |
| 2in1 kits for Varian autosampler (1.5 mL) .....                                       | 21                         |
| 2in1 kits for Waters (PP vials) .....   | 28                         |
| 2in1 kits with short thread vials .....   | 28, 30                     |
| 2in1 kits, 20 mL .....  | 78                         |
| 2in1 kits, other (4 mL crew neck vials) .....   | 41                         |
| 30 mm HPLC syringe filters .....  | 65                         |
| 384 position block systems .....  | 61, 63,                    |
| 3in1 kits for VWR (Merck)/Hitachi + Waters autosampler .....                          | 41                         |
| 3in1 kits for VWR (Merck)/Hitachi autosampler (1.5 mL) .....                          | 21                         |
| 4 mL crew neck vials .....  | 40                         |
| 96 position block systems .....   | 60, 61, 62, 63             |
| 96 position block systems with glass inserts .....                                    | 63                         |
| 96 position block systems with glass inserts, sealed with a sealmat block cover ..... | 63                         |
| Abbreviations .....   | 80, 81                     |
| Actual size drawings, vials .....   | 5, 95, 96, 97, 98, 99, 100 |
| Airgo crimp (Pneumatic crimping tool) .....   | 70                         |
| Alphabetical index .....  | 82, 83                     |
| Aluminum crimp seals ND11 .....   | 35, 36                     |
| Aluminum crimp seals ND13 .....   | 77                         |
| Aluminum crimp seals ND20 .....   | 50, 51, 52                 |
| Aluminum crimp seals ND8 .....  | 17                         |
| Article number system .....   | 5, 71                      |
| Assembled EPA vials .....   | 57                         |
| Assembled crew neck vials ND8 .....   | 20                         |
| Assembled crew neck vials ND9 .....   | 30                         |
| Autosampler compatibility chart .....   | 5, 86, 87, 88, 89, 90, 91  |
| Barcode labelled vials .....  | 79                         |
| Base bonded vial, crimp neck ND11 .....   | 34                         |
| Base bonded vial, short thread ND11 .....   | 24                         |
| Base bonded vial, snap ring ND11 .....  | 38                         |
| Bimetal cap .....   | 12, 49, 50, 51, 52         |
| Brand names .....   | 80                         |
| Butyl crimp seals ND20 .....  | 50, 51                     |
| Butyl/PTFE crimp seals ND11 .....   | 36                         |
| Butyl/PTFE crimp seals ND20 .....   | 50, 51                     |
| Butyl/PTFE screw seals ND13 .....   | 40, 75                     |
| Butyl/PTFE screw seals ND15 .....   | 75                         |
| Butyl/PTFE screw seals ND18 .....   | 54, 75                     |
| Butyl/PTFE screw seals ND20 .....   | 75                         |
| Butyl/PTFE screw seals ND24 .....   | 57, 75                     |
| Butyl/PTFE screw seals ND8 .....  | 19, 75                     |
| Capillary connectors .....  | 67                         |
| Centrifuge tubes .....  | 76                         |
| Certified 96 and 384 position block systems .....                                     | 61, 62                     |
| Certified vial kit .....  | 10, 29                     |
| Combination seals for crimp neck ND11 (other) .....                                   | 36                         |
| Combination seals for crimp neck ND20 (other) .....                                   | 52                         |
| Combination seals for crimp neck ND8 (other) .....                                    | 17                         |
| Company profile .....   | 6, 7                       |
| Contacts .....  | 6                          |
| Content .....   | 2, 3                       |
| Crimp neck micro-vial ND11 .....  | 34                         |
| Crimp neck micro-vial ND8 .....   | 16                         |
| Crimp neck vial ND11 .....  | 34                         |
| Crimp neck vial ND8 .....   | 16                         |
| Crimp neck vials ND11 (other) .....   | 76                         |
| Crimp neck vials ND20 (other) .....   | 53                         |
| Crimp seals ND11 (other) .....  | 36                         |
| Crimp seals ND8 (other) .....   | 17                         |
| Crimpers .....  | 68, 69                     |
| Crimping heads .....  | 71                         |
| Decappers .....   | 69                         |
| Decapping heads .....   | 71                         |
| Electronic crimpers and dcrimpers .....   | 71                         |
| Electronic high power crimp station (programmable) .....                              | 71                         |
| EPA-vials .....   | 56                         |
| Explanations .....  | 5, 80, 81                  |
| Filters, nylon, PTFE, PVDF .....  | 64, 65                     |
| Filters, regenerated cellulose .....  | 64, 65                     |
| Freeze drying stopper .....   | 53                         |
| GC-septa .....  | 67                         |
| General organisational matters .....  | 4                          |
| General terms and conditions .....  | 4                          |
| Glass coated 96 and 384 position block systems .....                                  | 62, 63                     |
| Handling of the catalogue .....   | 5                          |
| Headspace compatibility chart .....   | 5, 48, 49                  |
| Headspace crew neck vials ND18 .....  | 47, 48, 49                 |
| Headspace vials ND20 .....  | 47, 48, 49, 50             |
| High performance 96 and 384 position block systems .....                              | 60, 61, 62, 63             |
| How to find the right product .....   | 5                          |
| HPLC certified syringes .....   | 66                         |
| HPLC syringe filters 17 mm .....  | 65                         |
| HPLC syringe filters 25 mm .....  | 64, 65                     |
| HPLC/GC certified vial kit .....  | 29                         |
| Injection port septa (GC) .....   | 67                         |
| Lamella plugs shell vial kit .....  | 42                         |
| LC/MS and GC/MS certified kits .....  | 29                         |
| Magnetic bimetal crimp seal ND20 .....  | 50, 51, 52                 |
| Magnetic crimp seals for SPME-Vial ND20 .....   | 52                         |
| Magnetic crimp seals ND11 .....   | 36                         |
| Magnetic crimp seals ND20 .....   | 50, 51, 52                 |
| Magnetic screw seals ND18 .....   | 54                         |
| Magnetic short thread seal ND9 .....  | 27                         |
| Manual crimping tools .....   | 68, 69                     |
| Manual decapping tools .....  | 69                         |
| Metall crimp seal ND20 (UHT seal) .....   | 52                         |
| Micro centrifuge tubes .....  | 55                         |
| Micro-inserts for crimp neck vials ND11 .....   | 35                         |
| Micro-inserts for crew neck vials ND10 .....  | 31                         |
| Micro-inserts for crew neck vials ND13 .....  | 40                         |
| Micro-inserts for crew neck vials ND8 .....   | 18                         |
| Micro-inserts for shell vials .....   | 42, 43                     |
| Micro-inserts for short thread vials ND9 .....  | 25                         |
| Micro-inserts for snap ring vials ND11 .....  | 35                         |
| Micro-inserts for vials with small opening .....                                      | 18                         |
| Micro-inserts for vials with wide opening .....                                       | 25, 31, 35                 |
| Microliter vial, crimp neck ND11 .....  | 34                         |
| Microliter vial, short thread ND9 .....   | 24                         |
| Mid height well plate .....   | 60, 61                     |
| MS cap 9 mm .....   | 27                         |
| Natural rubber/butyl/TEF crimp seals ND11 .....                                       | 35                         |
| Natural rubber/TEF crimp seals ND11 .....   | 35                         |
| Natural rubber/TEF crimp seals ND8 .....  | 17                         |
| Natural rubber/TEF screw seals ND10 .....   | 31                         |
| Natural rubber/TEF screw seals ND13 .....   | 40                         |
| Natural rubber/TEF screw seals ND15 .....   | 75                         |
| Natural rubber/TEF screw seals ND20 .....   | 75                         |
| Natural rubber/TEF screw seals ND8 .....  | 19                         |
| Natural rubber/TEF short thread seals ND9 .....                                       | 26, 27                     |
| Natural rubber/TEF snap ring seals ND11 .....   | 39                         |
| New products .....  | 8, 9                       |
| Numerical index .....   | 84, 85                     |
| PE vial ND9 .....   | 25                         |
| PE vial snap ring ND11 .....  | 38                         |
| PE-caps for crimp neck ND11 .....   | 36                         |
| PE-caps for crimp neck ND20 .....   | 53                         |
| PE-caps for crimp neck ND8 .....  | 17                         |
| Pharma-fix seals ND13 (butyl/PTFE) .....  | 77                         |
| Pharma-fix seals ND20 (butyl/PTFE) .....  | 51                         |
| Phthalate free seal .....   | 52                         |

|  |                    |  |                    |
|--|--------------------|--|--------------------|
| Plastic micro Insert with spring .....                               | 35                 | Silanized micro-insert .....                               | 25, 31, 35, 43     |
| Plastic micro-vials with glass Inserts (TopSert) .....               | 24, 34, 38         | Silanized short thread vials .....                         | 24                 |
| Plastic micro-vials, PP .....  | 25, 34, 38         | Silicone/aluminum seals ND18 .....                         | 49                 |
| Plastic micro-vials, short thread ND9 .....                          | 25                 | Silicone/aluminum seals ND20 .....                         | 49, 52, 53, 57     |
| Plastic micro-vials, snap ring ND11 .....                            | 38                 | Silicone/PTFE crimp seals ND11 .....                       | 36                 |
| Plastic micro-vials, TPX .....                                       | 25, 38             | Silicone/PTFE crimp seals ND20 .....                       | 49, 51, 52, 53     |
| Plastic vials .....  | 25, 34, 38         | Silicone/PTFE crimp seals ND8 .....                        | 17                 |
| Pneumatic crimping tool .....  | 70                 | Silicone/PTFE screw seals ND10 .....                       | 31                 |
| Pneumatic crimping tool (Airgo crimper) .....                        | 70                 | Silicone/PTFE screw seals ND13 .....                       | 40                 |
| PP centrifuge tubes .....  | 76                 | Silicone/PTFE screw seals ND15 .....                       | 75                 |
| PP micro centrifuge tubes .....                                      | 55                 | Silicone/PTFE screw seals ND18 .....                       | 54, 75             |
| PP short thread vials ND9 .....                                      | 25                 | Silicone/PTFE screw seals ND20 .....                       | 75                 |
| PP storage boxes .....   | 72, 73             | Silicone/PTFE screw seals ND24 .....                       | 57, 75             |
| PP syringes .....  | 66                 | Silicone/PTFE screw seals ND8 .....                        | 19                 |
| Pre-assembled micro-inserts .....                                    | 20, 21, 37         | Silicone/PTFE seals ND20 .....                             | 75                 |
| Pre-crimped vials ND11 .....   | 37, 78             | Silicone/PTFE short thread seals ND9 .....                 | 26, 27, 28         |
| Pre-cut septa for HPLC application .....                             | 26, 39, 54, 80     | Silicone/PTFE snap ring seals ND11 .....                   | 39                 |
| Pre-cut septa for SPME .....   | 54                 | Snap cap vials ND18 + ND22 .....                           | 55                 |
| Preface .....  | 1                  | Snap caps .....  | 55                 |
| Pre-screwed vials ND24 .....   | 57                 | Snap ring micro-vial ND11 .....                            | 38                 |
| Pre-screwed vials ND8 .....  | 20, 21             | Snap ring seals ND11 (PE hard and soft) .....              | 39                 |
| Pre-screwed vials ND9 .....  | 28, 30             | Snap ring vial ND11 .....                                  | 38                 |
| Product names .....  | 80, 81             | Special Packaging .....                                    | 79                 |
| ProFill HPLC syringe filters .....                                   | 64, 65             | Special Production Runs .....                              | 78                 |
| Programmable electronic high power crimp station .....               | 71                 | Special seals .....  | 77                 |
| Push-on cap (PE) ND11 .....  | 39                 | Special septa (for Schott screw caps) .....                | 77                 |
| Push-on cap (PE) ND8 .....   | 17                 | Special vials .....  | 76                 |
| RedRubber/PTFE crimp seals ND11 .....                                | 35                 | SPME closures .....  | 52, 54             |
| RedRubber/PTFE crimp seals ND8 .....                                 | 17                 | SPME septa .....   | 52, 54             |
| RedRubber/PTFE screw seals ND8 .....                                 | 19                 | SPME-Vial ND20 .....                                       | 47                 |
| RedRubber/PTFE short thread seals ND9 .....                          | 26, 27             | Springs .....  | 18, 40             |
| RedRubber/PTFE snap ring seals ND11 .....                            | 35                 | Stainless steel cleanroom crimper .....                    | 69                 |
| Repair Service for crimping tools .....                              | 79                 | Stainless steel cleanroom decapper .....                   | 69                 |
| Screw caps ND10 (PP) .....   | 31                 | Standard 96 and 384 position block systems .....           | 60, 61, 62, 63     |
| Screw caps ND13 (PP) .....   | 40, 41             | Stoppers 20 mm .....                                       | 53                 |
| Screw caps ND24 (PP) .....   | 57                 | Storage boxes .....  | 73                 |
| Screw caps ND8 (PP) .....  | 19, 20             | Storage vials and closures .....                           | 74, 75             |
| Screw neck micro-vials ND8 .....                                     | 18                 | SureStop vials ND9 .....                                   | 25                 |
| Screw neck vials for storage purposes .....                          | 74                 | Syringe filters .....                                      | 64, 65             |
| Screw neck vials ND10 .....  | 31                 | Syringes .....   | 66                 |
| Screw neck vials ND13 .....  | 40, 74             | Technical information, seals .....                         | 12                 |
| Screw neck vials ND15 .....  | 74                 | Technical information, septa .....                         | 13                 |
| Screw neck vials ND18 .....  | 47, 48, 49         | Technical information, vials .....                         | 10, 11             |
| Screw neck vials ND20 .....  | 74                 | Top bonded vial, crimp neck ND11 .....                     | 28                 |
| Screw neck vials ND24 .....  | 56, 74             | Top bonded vial, short thread ND9 .....                    | 24, 34             |
| Screw neck vials ND8 .....   | 18, 74             | TopSert .....  | 24, 34, 38         |
| Screw seals ND10 (PP) .....  | 31                 | TopSert, short thread ND9 .....                            | 24                 |
| Screw seals ND13 (PP) .....  | 40                 | TopSert, silanized, short thread ND9 .....                 | 24                 |
| Screw seals ND15 (PP) .....  | 75                 | TopSert, silanized, snap ring ND11 .....                   | 38                 |
| Screw seals ND18 (PP) .....  | 54, 75             | TopSert, snap ring ND11 .....                              | 38                 |
| Screw seals ND20 (PP) .....  | 75                 | Total microliter vial, crimp neck ND11 .....               | 34                 |
| Screw seals ND24 (PP) .....  | 57, 75             | Total microliter vial, short thread ND9 .....              | 24                 |
| Screw seals ND8 (PP) .....   | 19                 | Total microliter vial, snap ring ND11 .....                | 38                 |
| Sealmat .....  | 60, 61, 62, 63     | Total Phthalate free seal ND11 .....                       | 36                 |
| Seals for plastic micro-vials .....                                  | 26, 27, 35, 36, 39 | TPF seal ND11 .....  | 36                 |
| Septa 12 mm(for 13-425 screw caps) .....                             | 41                 | TPF seal ND9 .....   | 26                 |
| Septa 13 mm(for 13 mm crimp caps) .....                              | 77                 | UHPLC well plate .....                                     | 61                 |
| Septa 16 mm(for 18-400 screw caps) .....                             | 54                 | Ultra high Temperature seal ND20 (UHT) .....               | 52                 |
| Septa 17.5 mm (for magnetic screw caps ND18) .....                   | 54                 | UltraBond .....  | 28, 30, 57, 75, 80 |
| Septa 19.5 mm(for 22 mm PE caps) .....                               | 53                 | Universal screw caps ND18 .....                            | 54                 |
| Septa 20 mm(for 20 mm crimp caps) .....                              | 49, 53             | Vial racks .....   | 72                 |
| Septa 22 mm(for 24-400 screw caps) .....                             | 57                 | Vials with integrated micro-insert, crimp neck ND11 .....  | 34                 |
| Septa 8 mm (for 8-425 screw caps) .....                              | 20                 | Vials with integrated micro-insert, short thread ND9 ..... | 24                 |
| Shell vials .....  | 42, 43             | Wash kit .....   | 53                 |
| Short thread micro-vials ND9 .....                                   | 24, 25             | WebSeals .....   | 60, 61, 62, 63     |
| Short thread seals ND9 (Magnetic) .....                              | 27                 | White Line syringe filter .....                            | 64                 |
| Short thread seals ND9 (PP), black cap .....                         | 26, 27             |  |                    |
| Short thread seals ND9 (PP), blue cap with Phthalate free seal ..... | 26                 |  |                    |
| Short thread UltraBond seal ND9 .....                                | 28, 80             |  |                    |
| Short thread vial ND9 with sure stop function .....                  | 25                 |  |                    |
| Short thread vials ND9 .....   | 24, 25             |  |                    |
| Short thread vials ND9 (PP) .....                                    | 25                 |  |                    |

# Numerical index

|            |                |            |                    |            |                    |            |                    |            |                    |
|------------|----------------|------------|--------------------|------------|--------------------|------------|--------------------|------------|--------------------|
| 00 00 0089 | 70             | 08 08 0435 | 20                 | 09 15 1332 | 27                 | 11 09 0356 | 34, 37             | 11 15 1556 | 39                 |
| 00 00 0120 | 70             | 08 08 0436 | 20                 | 09 15 1337 | 26                 | 11 09 0382 | 18, 21             | 11 15 1677 | 39                 |
| 00 00 1898 | 70             | 08 08 1675 | 17                 | 09 15 1356 | 27                 | 11 09 0415 | 34                 | 11 15 1793 | 39                 |
| 00 00 3080 | 70             | 08 09 0258 | 16                 | 09 15 1485 | 27                 | 11 09 0417 | 18                 | 11 15 1794 | 39                 |
| 00 00 3081 | 70             | 08 09 0276 | 16                 | 09 15 1486 | 27                 | 11 09 0419 | 18, 21             | 11 15 1817 | 39                 |
| 00 00 3217 | 71             | 08 09 0284 | 16                 | 09 15 1527 | 27                 | 11 09 0476 | 15, 23, 32, 34, 37 | 11 15 1850 | 39                 |
| 00 00 3953 | 71             | 08 09 0305 | 16                 | 09 15 1539 | 27                 | 45         |                    | 11 15 1851 | 39                 |
| 00 00 3954 | 71             | 08 09 0405 | 16                 | 09 15 1542 | 27                 | 11 09 0477 | 15, 23, 32, 34, 37 | 11 15 1852 | 39                 |
| 02 17 0472 | 67             | 08 09 0406 | 16                 | 09 15 1570 | 27                 | 45         |                    | 11 15 1853 | 39                 |
| 02 17 0473 | 67             | 08 09 0606 | 16                 | 09 15 1571 | 27                 | 11 09 0486 | 34                 | 11 15 1854 | 39                 |
| 02 36 2399 | 66             | 08 09 0845 | 16                 | 09 15 1572 | 27                 | 11 09 0500 | 24, 28, 30         | 11 15 1856 | 39                 |
| 02 36 2403 | 66             | 08 09 0953 | 16                 | 09 15 1668 | 27                 | 11 09 0519 | 14, 24, 28, 30, 33 | 11 15 1857 | 39                 |
| 05 09 0129 | 18             | 08 09 1080 | 16                 | 09 15 1669 | 27, 30             | 44,        |                    | 11 15 1858 | 39                 |
| 05 09 0269 | 18             | 08 14 0513 | 42                 | 09 15 1745 | 27                 |            | 58                 | 11 15 1886 | 39                 |
| 05 09 0279 | 18             | 08 14 0595 | 42                 | 09 15 1746 | 27                 | 11 09 0520 | 14, 24, 28, 30, 33 | 11 15 1983 | 39                 |
| 05 09 0706 | 42             | 08 14 0641 | 42                 | 09 15 1799 | 26                 | 44,        |                    | 11 15 2017 | 39                 |
| 05 09 0968 | 18             | 08 14 1168 | 42                 | 09 15 1819 | 14, 26, 33, 44, 58 |            | 58                 | 11 15 2018 | 39                 |
| 05 09 1674 | 18             | 08 14 1169 | 42                 | 09 15 1828 | 26                 | 11 09 0619 | 34                 | 11 15 2045 | 39                 |
| 05 13 0426 | 18             | 08 14 3963 | 42                 | 09 15 1887 | 26                 | 11 09 0620 | 15, 23, 24, 59     | 11 15 2046 | 39                 |
| 05 36 2400 | 66             | 08 14 3964 | 42                 | 09 15 1907 | 27                 | 11 09 0627 | 38                 | 11 15 2047 | 39                 |
| 05 36 2404 | 66             | 08 15 0293 | 19, 20, 21         | 09 15 1911 | 27                 | 11 09 0644 | 38, 59             | 11 15 2048 | 39                 |
| 06 09 0357 | 25, 31, 35, 43 | 08 15 0294 | 19                 | 09 15 2011 | 26                 | 11 09 0645 | 38, 59             | 11 15 2106 | 39                 |
| 06 09 0651 | 42             | 08 15 0427 | 19                 | 09 15 2012 | 26                 | 11 09 0831 | 76                 | 11 15 2107 | 39, 59             |
| 06 09 0669 | 25, 31, 35, 43 | 08 15 0460 | 18, 19, 21         | 09 15 2013 | 27                 | 11 09 0921 | 34                 | 11 18 0938 | 67                 |
| 06 09 0865 | 25, 31, 35     | 08 15 0654 | 19, 75             | 09 15 2014 | 27                 | 11 09 0999 | 24                 | 11 18 3957 | 67                 |
| 06 09 0866 | 25, 31, 35, 43 | 08 15 0886 | 19                 | 09 15 2015 | 27                 | 11 09 1241 | 24                 | 11 19 0932 | 15, 25, 45, 59     |
| 06 09 1240 | 25, 31, 35, 43 | 08 15 1040 | 19, 21, 75         | 09 15 2016 | 26, 30             | 11 09 1242 | 24                 | 11 19 0933 | 38                 |
| 06 09 1343 | 25, 31, 35     | 08 15 1449 | 19, 20             | 09 15 2021 | 26, 30             | 11 09 1767 | 34                 | 11 19 1021 | 25                 |
| 06 09 1792 | 25, 35, 43     | 08 15 1637 | 19                 | 09 15 2487 | 26                 | 11 09 1956 | 34                 | 11 19 1022 | 38                 |
| 06 19 2240 | 25             | 08 15 1653 | 19, 75             | 09 18 0936 | 67                 | 11 09 1957 | 24                 | 11 19 1205 | 15, 25, 45, 59     |
| 06 19 2241 | 25             | 08 15 1965 | 19                 | 09 18 3985 | 67                 | 11 09 2085 | 34                 | 11 19 1216 | 25                 |
| 06 19 2242 | 25             | 08 15 2105 | 19                 | 10 08 0742 | 31                 | 11 09 2131 | 24                 | 11 19 1217 | 38                 |
| 06 19 3973 | 35             | 08 19 3967 | 55                 | 10 08 1899 | 31                 | 11 09 2172 | 34                 | 11 19 1516 | 25                 |
| 07 18 0935 | 67             | 08 20 0897 | 63                 | 10 09 0743 | 31                 | 11 09 2173 | 38                 | 11 19 1706 | 15, 25, 45, 59     |
| 07 18 3956 | 67             | 08 20 0905 | 63                 | 10 09 1196 | 31                 | 11 09 2174 | 38                 | 11 19 1707 | 38                 |
| 08 00 3946 | 71             | 08 20 0911 | 63                 | 10 09 1197 | 31                 | 11 09 2175 | 18                 | 11 19 3597 | 34, 38             |
| 08 02 0005 | 20             | 08 20 0943 | 63                 | 10 15 0744 | 31                 | 11 09 2177 | 34                 | 11 19 3598 | 25                 |
| 08 02 0009 | 20             | 08 20 1171 | 63                 | 10 15 1256 | 31                 | 11 09 2178 | 24                 | 11 19 3647 | 25                 |
| 08 02 0039 | 13, 18, 20, 21 | 08 20 1181 | 63                 | 10 15 1257 | 31                 | 11 09 2189 | 38                 | 11 19 3968 | 55                 |
| 08 02 0103 | 20             | 08 21 1000 | 72                 | 10 15 1258 | 31                 | 11 09 2190 | 18                 | 11 19 3969 | 55                 |
| 08 02 0177 | 18, 20, 21     | 08 29 2929 | 60                 | 10 15 1328 | 31                 | 11 09 2275 | 24                 | 11 23 1045 | 21                 |
| 08 02 0232 | 20             | 08 29 2930 | 60                 | 10 15 1905 | 31                 | 11 09 2276 | 34, 38             | 11 23 1046 | 21                 |
| 08 02 0355 | 20             | 08 29 2931 | 60                 | 10 18 0937 | 67                 | 11 09 2353 | 34, 38             | 11 23 1047 | 21                 |
| 08 02 0881 | 20             | 08 29 2932 | 62                 | 10 36 2401 | 66                 | 11 09 2357 | 15, 23, 24, 59     | 11 23 1085 | 21                 |
| 08 02 1633 | 20             | 08 29 2933 | 22, 59, 61         | 10 36 2405 | 66                 | 11 09 2656 | 15, 23, 24, 59     | 11 23 1098 | 21                 |
| 08 02 1966 | 20             | 08 29 2934 | 61                 | 11 00 3947 | 71                 | 11 09 2671 | 34                 | 11 23 1100 | 21                 |
| 08 03 0113 | 17             | 08 29 2935 | 61                 | 11 00 3950 | 71                 | 11 09 2746 | 14, 25, 33, 44, 58 | 11 23 1144 | 21                 |
| 08 03 0165 | 17             | 08 29 2936 | 62                 | 11 03 0196 | 36                 | 11 09 2747 | 25                 | 11 23 1280 | 21                 |
| 08 03 0249 | 17             | 08 29 2937 | 62                 | 11 03 0209 | 15, 23, 32, 35, 37 | 11 09 2748 | 25                 | 11 23 1499 | 21                 |
| 08 03 0268 | 17             | 08 29 2938 | 22, 59, 61, 62     | 45         | 11 09 2786         | 34, 38     | 11 23 1614         | 21         |                    |
| 08 03 0451 | 17             | 08 29 2939 | 22, 59, 61, 62     | 11 03 0247 | 15, 23, 32, 36, 45 | 11 09 2873 | 24                 | 11 24 1050 | 30                 |
| 08 03 0884 | 17             | 08 29 2940 | 61, 62             | 11 03 0300 | 35, 37             | 11 09 3404 | 24                 | 11 24 1051 | 30                 |
| 08 03 1156 | 17             | 08 29 2941 | 61, 62             | 11 03 0301 | 35                 | 11 09 3405 | 38                 | 11 24 1091 | 30                 |
| 08 03 1935 | 17             | 08 29 2942 | 62, 63             | 11 03 0302 | 35                 | 11 09 3406 | 38                 | 11 24 1141 | 30                 |
| 08 03 2042 | 17             | 08 29 2943 | 61, 62, 63         | 11 03 0303 | 35, 37             | 11 09 3451 | 34                 | 11 24 1622 | 28                 |
| 08 05 2898 | 60             | 08 29 2944 | 62, 63             | 11 03 0304 | 35                 | 11 09 3563 | 24                 | 11 24 1628 | 28                 |
| 08 05 2899 | 60             | 08 29 2949 | 22, 59, 61         | 11 03 0318 | 36                 | 11 09 3564 | 34, 38             | 11 24 1696 | 28                 |
| 08 05 2900 | 60             | 08 29 2950 | 61, 62, 63         | 11 03 0332 | 36                 | 11 14 0544 | 42, 43             | 11 24 1859 | 28                 |
| 08 05 2901 | 60             | 08 29 3213 | 62                 | 11 03 0339 | 36                 | 11 14 0545 | 42, 43             | 11 24 1860 | 28                 |
| 08 05 2902 | 60             | 08 29 3637 | 60                 | 11 03 0362 | 36                 | 11 14 1189 | 24                 | 11 24 1861 | 28                 |
| 08 05 2903 | 61             | 08 29 3639 | 60                 | 11 03 0464 | 36                 | 11 14 1190 | 34, 38             | 11 24 2391 | 30                 |
| 08 05 2904 | 61             | 08 29 3640 | 60, 61             | 11 03 0535 | 35, 37             | 11 14 1265 | 24                 | 11 25 1053 | 37                 |
| 08 05 2905 | 61             | 08 29 3641 | 61, 62             | 11 03 0666 | 36                 | 11 14 1266 | 34, 38             | 11 25 1054 | 37                 |
| 08 05 2906 | 61             | 08 29 3642 | 61                 | 11 03 0667 | 36                 | 11 14 1468 | 21                 | 11 25 1097 | 37                 |
| 08 05 2914 | 62             | 08 29 3813 | 61                 | 11 03 0885 | 36                 | 11 14 1655 | 24                 | 11 25 1287 | 37                 |
| 08 05 2915 | 62             | 08 34 2194 | 43                 | 11 03 0900 | 37                 | 11 14 1656 | 34, 38             | 11 25 2263 | 37                 |
| 08 05 2916 | 62             | 09 04 1220 | 28                 | 11 03 1624 | 36                 | 11 14 1694 | 24                 | 11 25 2281 | 37                 |
| 08 05 2917 | 62             | 09 04 1533 | 28                 | 11 03 1625 | 36                 | 11 14 1695 | 34, 38             | 11 31 1221 | 37                 |
| 08 05 2918 | 63             | 09 04 1534 | 28, 30             | 11 03 1641 | 36                 | 11 14 1716 | 20                 | 11 31 1469 | 37                 |
| 08 05 2919 | 63             | 09 08 2000 | 27                 | 11 03 1663 | 36                 | 11 14 1739 | 20                 | 11 31 1596 | 37                 |
| 08 05 2920 | 22, 59, 61     | 09 08 2771 | 27                 | 11 03 1875 | 15, 23, 32, 35, 45 | 11 14 1763 | 20                 | 11 31 1730 | 37                 |
| 08 05 2921 | 22, 59, 61     | 09 08 2772 | 27                 | 11 03 1984 | 35                 | 11 14 1838 | 21                 | 11 31 1968 | 37                 |
| 08 05 2922 | 62             | 09 15 0478 | 26                 | 11 03 1985 | 35                 | 11 14 1841 | 30                 | 11 40 2556 | 14, 22, 29, 44, 58 |
| 08 05 2923 | 62             | 09 15 0480 | 26                 | 11 03 1986 | 35                 | 11 14 1867 | 30                 | 11 40 2557 | 14, 22, 29, 44, 58 |
| 08 05 2924 | 61             | 09 15 0481 | 26, 30             | 11 03 1987 | 35                 | 11 14 1963 | 30                 | 11 40 3196 | 14, 22, 29, 58     |
| 08 05 2925 | 61             | 09 15 0753 | 17                 | 11 03 2519 | 36                 | 11 14 2319 | 21                 | 11 40 3197 | 14, 22, 29, 58     |
| 08 05 2926 | 22, 59, 61     | 09 15 0756 | 17                 | 11 03 2578 | 36                 | 11 14 2551 | 30                 | 12 02 0143 | 41                 |
| 08 05 2927 | 62             | 09 15 0838 | 14, 26, 30, 33, 44 | 11 06 0006 | 69                 | 11 15 0635 | 39                 | 12 02 0168 | 41                 |
| 08 05 3643 | 60             | 58         | 11 06 0150         | 70         | 11 15 0636         | 39         | 12 02 0223         | 41         |                    |
| 08 05 3644 | 60             | 09 15 0852 | 26                 | 11 06 2225 | 69                 | 11 15 0637 | 39                 | 12 02 0322 | 41                 |
| 08 05 3645 | 61             | 09 15 0867 | 26                 | 11 06 3202 | 71                 | 11 15 0650 | 39                 | 12 02 0463 | 41                 |
| 08 05 3646 | 61             | 09 15 0868 | 26                 | 11 07 0002 | 69                 | 11 15 1151 | 39, 59             | 12 02 0468 | 77                 |
| 08 06 0005 | 69             | 09 15 0869 | 14, 26, 30, 33, 44 | 11 07 0107 | 70                 | 11 15 1267 | 39                 | 12 02 1635 | 41                 |
| 08 06 0149 | 70             | 58         | 11 07 2226         | 69         | 11 15 1268         | 39         | 12 18 0939         | 67         |                    |
| 08 06 3200 | 71             | 09 15 0981 | 26                 | 11 07 3203 | 71                 | 11 15 1269 | 39, 59             | 12 18 3958 | 67                 |
| 08 07 0001 | 69             | 09 15 0982 | 26                 | 11 08 1676 | 39                 | 11 15 1323 | 39                 | 12 21 1001 | 72                 |
| 08 07 0153 | 70             | 09 15 1176 | 26                 | 11 08 3960 | 39                 | 11 15 1324 | 39                 | 12 21 2187 | 72                 |
| 08 07 3201 | 71             | 09 15 1177 | 26                 | 11 08 3961 | 39                 |            |                    |            |                    |

|                 |                |                                  |                 |                                  |                 |                                  |                 |                 |            |
|-----------------|----------------|----------------------------------|-----------------|----------------------------------|-----------------|----------------------------------|-----------------|-----------------|------------|
| 12 21 2423..... | 73             | 13 19 3423.....                  | 40              | 18 09 1704.....                  | 74, 75          | 20 06 0148.....                  | 70              | 24 14 0976..... | 57         |
| 12 21 2424..... | 73             | 13 28 1067.....                  | 41              | 18 15 0871.....                  | 54              | 20 06 0170.....                  | 69              | 24 14 1094..... | 57         |
| 12 21 2425..... | 73             | 13 28 1069.....                  | 41              | 18 15 1132.....                  | 75              | 20 06 2229.....                  | 69              | 24 14 1278..... | 57         |
| 12 21 2589..... | 73             | 13 28 1070.....                  | 41              | 18 15 1386.....                  | 54              | 20 06 3206.....                  | 71              | 24 14 1354..... | 57         |
| 12 21 2590..... | 73             | 13 28 1071.....                  | 41              | 18 15 1387.....                  | 54, 75          | 20 07 0004.....                  | 69              | 24 14 1513..... | 57         |
| 12 21 3138..... | 73             | 13 28 1074.....                  | 41              | 18 15 1398.....                  | 54              | 20 07 0155.....                  | 70              | 24 14 1538..... | 57         |
| 12 21 3139..... | 73             | 13 28 1076.....                  | 41              | 18 15 1544.....                  | 54              | 20 07 2230.....                  | 69              | 24 14 1621..... | 57         |
| 12 21 3140..... | 73             | 13 28 1541.....                  | 41              | 18 15 2069.....                  | 54, 75          | 20 07 3207.....                  | 71              | 24 15 1007..... | 57, 75     |
| 12 21 3141..... | 73             | 15 09 1657.....                  | 74, 75          | 18 15 2102.....                  | 54              | 20 09 0289.....                  | 50, 53          | 24 15 1163..... | 15, 45, 57 |
| 12 21 3671..... | 73             | 15 09 1703.....                  | 74, 75          | 18 19 3965.....                  | 76              | 20 09 0297.....                  | 46, 47, 48, 53  | 24 15 1394..... | 57         |
| 12 21 3672..... | 73             | 15 09 1774.....                  | 74, 75          | 19 02 0245.....                  | 53              | 20 09 0342.....                  | 47, 48, 53      | 24 15 1395..... | 57, 75     |
| 12 21 3673..... | 73             | 15 09 1800.....                  | 74, 75          | 19 02 0693.....                  | 53              | 20 09 0343.....                  | 50, 53          | 24 15 1540..... | 57, 75     |
| 12 21 3674..... | 73             | 15 14 0548.....                  | 42              | 19 02 1636.....                  | 53              | 20 09 0440.....                  | 47, 48, 53      | 24 21 1002..... | 72         |
| 12 21 3675..... | 73             | 15 14 0562.....                  | 42              | 20 00 3949.....                  | 71              | 20 09 0784.....                  | 55              | 24 21 2427..... | 73         |
| 12 21 3676..... | 73             | 15 15 0793.....                  | 75              | 20 00 3952.....                  | 71              | 20 09 0795.....                  | 47, 48, 53      | 25 16 0346..... | 65         |
| 13 00 3948..... | 71             | 15 15 1083.....                  | 75              | 20 00 3955.....                  | 71              | 20 09 0796.....                  | 47, 48, 53      | 25 16 0347..... | 65         |
| 13 00 3951..... | 71             | 15 15 1748.....                  | 75              | 20 02 0035.....                  | 49, 53          | 20 09 0801.....                  | 47, 48, 53      | 25 16 0348..... | 65         |
| 13 02 0261..... | 77             | 15 15 1932.....                  | 75              | 20 02 0057.....                  | 49, 53          | 20 09 0802.....                  | 47, 48, 53      | 25 16 0349..... | 65         |
| 13 02 1380..... | 77             | 15 15 1938.....                  | 75              | 20 02 0122.....                  | 49, 53          | 20 09 0873...15, 23, 32, 45, 47, | 25 16 0350..... | 65              |            |
| 13 03 0307..... | 77             | 15 15 1989.....                  | 75              | 20 02 0141.....                  | 49, 53          | 48,                              | 25 16 0351..... | 65              |            |
| 13 03 0308..... | 77             | 15 21 1664.....                  | 72              | 20 02 0335.....                  | 49, 53          | .....                            | 53              | 25 16 2970..... | 64         |
| 13 03 1381..... | 77             | 15 21 2426.....                  | 73              | 20 02 0638.....                  | 49, 53          | 20 09 1222.....                  | 47, 48, 53      | 25 16 2971..... | 64         |
| 13 03 1382..... | 77             | 15 21 2480.....                  | 72              | 20 02 2054.....                  | 49, 53          | 20 09 1223.....                  | 47, 48, 53      | 25 16 2974..... | 64         |
| 13 06 0007..... | 69             | 15 34 2197.....                  | 43              | 20 03 0030.....                  | 48, 49, 51      | 20 09 1405.....                  | 47, 48, 53      | 25 16 2975..... | 64         |
| 13 06 0069..... | 69             | 15 34 2199.....                  | 43              | 20 03 0059.....                  | 48, 49, 51      | 20 09 1690.....                  | 47, 48, 53      | 25 16 2978..... | 64         |
| 13 06 0091..... | 70             | 16 02 0469.....                  | 77              | 20 03 0060.....                  | 51              | 20 09 1691.....                  | 47, 48, 53      | 25 16 2979..... | 64         |
| 13 06 0134..... | 70             | 16 02 0653.....                  | 54              | 20 03 0061.....                  | 51              | 20 09 1705.....                  | 74, 75          | 25 16 3657..... | 64         |
| 13 06 0319..... | 69             | 16 02 0705.....                  | 54              | 20 03 0112.....                  | 48, 49, 51      | 20 09 3175.....                  | 47, 48          | 25 16 3658..... | 64         |
| 13 06 2227..... | 69             | 16 02 0870.....                  | 54              | 20 03 0126.....                  | 48, 49, 50      | 20 10 0290.....                  | 49, 53          | 25 16 3659..... | 64         |
| 13 06 3204..... | 71             | 16 02 1384.....                  | 54              | 20 03 0127.....                  | 48, 49, 50      | 20 10 3962.....                  | 53              | 25 16 3660..... | 64         |
| 13 07 0003..... | 69             | 16 02 1385.....                  | 54              | 20 03 0142...15, 23, 32, 45, 48, | 50              | 20 10 3972.....                  | 53              | 25 16 3661..... | 64         |
| 13 07 0154..... | 70             | 16 02 2068.....                  | 54              | 49, 51                           | 20 15 1803..... | 75                               | 25 16 3662..... | 64              |            |
| 13 07 2228..... | 69             | 17 02 1318.....                  | 49, 54          | 20 03 0163.....                  | 48, 49, 51      | 20 15 1804.....                  | 75              | 28 06 0190..... | 69         |
| 13 07 3205..... | 71             | 17 02 1415.....                  | 49, 54          | 20 03 0186.....                  | 51              | 20 15 1805.....                  | 75              | 28 06 0191..... | 70         |
| 13 08 0166..... | 41             | 17 02 1417.....                  | 49, 54          | 20 03 0194.....                  | 51              | 20 33 3392.....                  | 53              | 28 06 0320..... | 69         |
| 13 08 0336..... | 41             | 17 02 1580.....                  | 49, 54          | 20 03 0195.....                  | 50              | 20 36 2402.....                  | 66              | 28 07 0092..... | 69         |
| 13 08 0452..... | 41             | 17 02 1873.....                  | 49              | 20 03 0212.....                  | 50              | 20 36 2406.....                  | 66              | 28 07 0156..... | 70         |
| 13 08 0639..... | 41             | 17 16 2076.....                  | 65              | 20 03 0226.....                  | 51              | 22 02 0409.....                  | 57              | 28 21 2428..... | 73         |
| 13 08 3971..... | 40             | 17 16 2077.....                  | 65              | 20 03 0227.....                  | 51              | 22 02 0487.....                  | 57              | 28 21 2429..... | 73         |
| 13 09 0222..... | 40, 41, 74, 75 | 17 16 2078.....                  | 65              | 20 03 0264.....                  | 48, 49, 51      | 22 02 1108.....                  | 57              | 30 02 0471..... | 77         |
| 13 09 0236..... | 76             | 17 16 2079.....                  | 65              | 20 03 0326.....                  | 48, 49, 52      | 22 02 1390.....                  | 57              | 30 16 2086..... | 65         |
| 13 09 0280..... | 40, 41, 74, 75 | 17 16 2080.....                  | 65              | 20 03 0327.....                  | 48, 49, 52      | 22 02 1393.....                  | 57              | 30 16 2087..... | 65         |
| 13 09 1335..... | 40             | 17 16 2081.....                  | 65              | 20 03 0665.....                  | 48, 51          | 22 08 0794.....                  | 55              | 30 16 2088..... | 65         |
| 13 09 1336..... | 40             | 17 16 2082.....                  | 65              | 20 03 0670.....                  | 52              | 22 09 0908.....                  | 55              | 30 16 2089..... | 65         |
| 13 09 2574..... | 76             | 17 16 2083.....                  | 65              | 20 03 0698.....                  | 51              | 22 15 0321.....                  | 53              | 30 16 2090..... | 65         |
| 13 15 0292..... | 40, 41         | 17 18 0940.....                  | 67              | 20 03 0710.....                  | 48, 51          | 22 15 0712.....                  | 53              | 30 16 2091..... | 65         |
| 13 15 0439..... | 40, 75         | 17 18 3959.....                  | 67              | 20 03 0711.....                  | 48, 50          | 22 15 0863.....                  | 53              | 30 16 2092..... | 65         |
| 13 15 0456..... | 40, 41         | 18 03 1309...15, 23, 32, 45, 48, | 20 03 0828..... | 48, 49, 51                       | 22 15 1334..... | 53                               | 30 16 2093..... | 65              |            |
| 13 15 0648..... | 40, 75         | 49,                              | 20 03 0901..... | 48, 49, 51                       | 22 15 1646..... | 53                               | 30 16 2094..... | 65              |            |
| 13 15 0815..... | 40, 41         | .....                            | 54              | 20 03 0975...15, 23, 32, 45, 48, | 50              | 22 15 1697.....                  | 53              | 30 19 3966..... | 76         |
| 13 15 0887..... | 40             | 18 03 1414.....                  | 48, 49, 54      | 49,                              | 22 15 1824..... | 53, 77                           | 31 38 3211..... | 67              |            |
| 13 15 0996..... | 36             | 18 03 1416.....                  | 48, 49, 54      | .....                            | 51              | 22 15 1869.....                  | 53, 77          | 32 06 0135..... | 69         |
| 13 15 1293..... | 40, 41         | 18 03 1578.....                  | 48, 49, 54      | 20 03 1157.....                  | 50              | 23 02 0470.....                  | 77              | 32 06 0151..... | 70         |
| 13 15 1638..... | 40, 75         | 18 03 1666.....                  | 54              | 20 03 1186.....                  | 51              | 24 04 0841.....                  | 57, 75          | 32 06 0192..... | 70         |
| 13 15 1639..... | 40             | 18 03 1667.....                  | 54              | 20 03 1200.....                  | 51              | 24 04 0842.....                  | 57              | 32 07 0078..... | 69         |
| 13 16 2968..... | 64             | 18 03 1874.....                  | 48, 49          | 20 03 1246.....                  | 48, 49, 52      | 24 08 0403.....                  | 57              | 32 07 0157..... | 70         |
| 13 16 2969..... | 64             | 18 03 2063.....                  | 48, 49, 54      | 20 03 1264.....                  | 48, 49          | 24 08 0592.....                  | 57              | 40 09 0146..... | 40         |
| 13 16 2972..... | 64             | 18 03 3469.....                  | 54              | 20 03 1536.....                  | 48, 49, 51      | 24 09 0402...15, 45, 56, 57, 74, | 40 09 0678..... | 76              |            |
| 13 16 2973..... | 64             | 18 08 0913.....                  | 55              | 20 03 1604.....                  | 51              | 75                               | 40 09 3970..... | 40              |            |
| 13 16 2976..... | 64             | 18 09 0864.....                  | 50, 54          | 20 03 1623.....                  | 51              | 24 09 0589...15, 45, 56, 57, 74, | 40 15 0674..... | 77              |            |
| 13 16 2977..... | 64             | 18 09 0906.....                  | 55              | 20 03 1785.....                  | 51              | 75                               | 43 02 0413..... | 77              |            |
| 13 16 3651..... | 64             | 18 09 0907.....                  | 55              | 20 03 3056.....                  | 52              | 24 09 0839.....                  | 56, 74, 75      | 43 02 2095..... | 77         |
| 13 16 3652..... | 64             | 18 09 1306.....                  | 47, 48, 54      | 20 03 3468.....                  | 52              | 24 09 0923.....                  | 56, 74, 75      | 50 13 0147..... | 40         |
| 13 16 3653..... | 64             | 18 09 1307...15, 23, 32, 45, 47, | 20 06 0008..... | 69                               | 24 09 0927..... | 56, 74, 75                       |                 |                 |            |
| 13 16 3654..... | 64             | 48, 54                           | 20 06 0043..... | 69                               | 24 09 0928..... | 56, 57, 74, 75                   |                 |                 |            |
| 13 16 3655..... | 64             | 18 09 1310.....                  | 47, 48, 54      | 20 06 0088.....                  | 70              | 24 09 1089.....                  | 56, 57, 74, 75  |                 |            |
| 13 16 3656..... | 64             | 18 09 1311.....                  | 47, 48, 54      | 20 06 0090.....                  | 70              | 24 09 1090.....                  | 56, 74, 75      |                 |            |

### A list of our article groups is shown below

|    |   |    |   |    |   |
|----|---|----|---|----|---|
| 01 | Metal crimp and screw caps (no liner)             | 15 | Assembled seals of plastic caps and septa   | 29 | Block covers (Sealmat)  |
| 02 | Septa   | 16 | Syringe filters   | 31 | Combination of glass and metal articles (already crimped vials) |
| 03 | Assembled seals of metal caps and septa           | 17 | Capillary connectors  | 32 | 2in1 kits 1.5 mL screw neck ND10                                |
| 04 | UltraBond seals                                   | 18 | GC injection port septa   | 33 | 2in1 kits 20 mL headspace ND20 + ND18                           |
| 05 | 96 position blocks and plates (empty)             | 19 | Plastic vials + micro-inserts   | 34 | Plastic-/plastic combinations                                   |
| 06 | Crimping tools + crimping heads                   | 20 | 96 position blocks and plates filled with suitable inserts + seals or with inserts + block covers | 36 | Syringes  |
| 07 | Decapping tools + decapping heads                 | 21 | Vial racks + storage boxes  | 40 | Certified vial kits   |
| 08 | Plastic caps (no liner)                           | 23 | 2in1 kits 1.5 mL screw neck ND8   | 44 | Assembly (tolling)  |
| 09 | Glass articles                                    | 24 | 2in1 kits 1.5 mL short thread ND9   | 99 | Others  |
| 10 | Stoppers  | 25 | 2in1 kits 1.5 mL crimp neck ND11  |    |   |
| 11 | Flip top/flip off seals (only on special request) | 26 | 2in1 kits 1.5 mL snap ring ND11   |    |   |
| 12 | Flip tear up seals (only on special request)      | 27 | 2in1 kits 1 mL, 2 mL and 4 mL shell vials   |    |   |
| 13 | Springs   | 28 | 2in1 kits 4 mL screw neck ND13  |    |   |
| 14 | Combination of glass and plastic articles         |    |   |    |   |

## Autosampler compatibility chart

|  |   | Crimp neck ND8 |         |         | Crimp neck ND8 and 1 mL shell vials |            |            | Crimp neck ND8 |            |            | Screw neck ND8 and 2 mL shell vials |          |          | Short thread ND9 |          |            | Screw neck ND10 |  |  | Crimp or Snap Ring neck ND11 |  |  | Screw neck ND13 and 4 mL shell vials |  |  | Headspace ND20 (ND18) |  |  | Headspace ND20 (ND18) |  |  | Screw neck ND24 (EPA) |   |   | Well Plates |   |
|--|---|----------------|---------|---------|-------------------------------------|------------|------------|----------------|------------|------------|-------------------------------------|----------|----------|------------------|----------|------------|-----------------|--|--|------------------------------|--|--|--------------------------------------|--|--|-----------------------|--|--|-----------------------|--|--|-----------------------|---|---|-------------|---|
|  |   | 7 mm OD        | 8 mm OD | 6 mm OD | 11.6 mm OD                          | 11.6 mm OD | 11.6 mm OD | 11.6 mm OD     | 11.6 mm OD | 11.6 mm OD | 14.7 mm OD                          | 22 mm OD | 23 mm OD | 22.5 mm OD       | 20 mm OD | 27.5 mm OD |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 1100/1200/ 1290 Infinity  |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  | X                     |   |   |             |   |
| Agilent                                  | 1260 Infinity   |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | G1888A/ HS7694/ HS7694  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 7673A   |                |         | X       |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 7683A   |                | X       |         | X                                   |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 7695A/ Tekmar SOLATEk72 / Archon Pluge + Trap / AQUATEk 70  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X |   |             |   |
| Agilent                                  | 79855(A)/ 5880/ 5890/ 6850 (27 Pos. Tray)/ 6890   |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | CTC HTS+HTC PAL+CTC GC PAL  | X              |         | X       |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   | X |             |   |
| Agilent                                  | CTC Combi PAL   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X | X |             |   |
| Agilent                                  | 7693A   |                | X       |         | X                                   |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 7697A   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Agilent                                  | 7650A   |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Analytik Jena                            | multi N/C 3000 (TOC)  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   | X |             |   |
| Antec Leyden                             | Alexys  |                |         |         |                                     |            |            | X              | X          |            | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Antec Leyden                             | AS 100/AS 110   |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Antek                                    | 736 Unisampler/ 738   |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| GL Sciences/ATAS                         | Focus (PAL)   |                |         |         |                                     |            |            | X              | X          |            | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Beckman                                  | 501/ 502/ 502e/ 507/ 507e   |                |         |         |                                     | X          | X          | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Beckman                                  | 504/ Triathlon, Micro-Tray  | X              |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Beckman                                  | 508 (System Gold)   |                |         |         |                                     |            |            |                |            |            | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   | X           |   |
| Beckman                                  | Marathon/ Promis  |                |         |         |                                     |            |            | X              | X          |            | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Beckman                                  | Triathlon,Standard Tray   |                |         |         |                                     |            |            | X              | X          |            | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  | X                     |   |   |             |   |
| Beckman                                  | Triathlon, LSV Tray   |                |         |         |                                     |            |            | X              |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   | X |             |   |
| Beckman                                  | Triathlon, Super-LSV Tray   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Bruker                                   | LC51  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Bruker                                   | Map1  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   | X           |   |
| Ellutia/Cambridge Scientific Instruments | 205 Series  |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Ellutia/Cambridge Scientific Instruments | 300 Series/ EL280T  |                |         |         |                                     |            |            |                | X          | X          | X                                   | X        |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Ellutia/Cambridge Scientific Instruments | EL2000H   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X | X | X           | X |
| Ellutia/Cambridge Scientific Instruments | EL3000A/ EL3100A/ EL3200A/ 500 Series   |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | AS100/ AS300  | X              |         | X       |                                     | X          |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | AS200/ A200LC/ AS200S   | X              |         |         |                                     | X          |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | AS800, 42 vial tray   |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | AS800, 60 vial tray   |                | X       | X       |                                     | X          |            | X              |            | X          |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | HS250/ HS500/ HS800/ HS850  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   | X           |   |
| CE Instruments/ Cora Erba                | HT3000A/ HT4000L/ HT1500L   |                |         |         |                                     |            |            | X              |            | X          |                                     | X        |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CE Instruments/ Cora Erba                | HT2000H   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  | X                     | X | X | X           |   |
| Cecil Instruments                        | CE4800  |                |         |         |                                     |            |            | X              |            | X          |                                     | X        |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| Cecil Instruments                        | AutoQuest   |                |         | X       |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CTC (LEAP)                               | LC PAL (216 Pos.)   |                |         |         |                                     |            |            | X              |            | X          |                                     | X        |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   | X           |   |
| CTC (LEAP)                               | HTX PAL, HTC PAL, HTS PAL (200 Pos. Tray)/ Combi PAL (200 Pos. Tray), GC PAL (200 Pos. Tray)                                  | X              |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             |   |
| CTC (LEAP)                               | HTX PAL, HTC PAL, HTS PAL (54/98 Pos. Tray)   |                |         |         |                                     |            |            | X              | X          | X          | X                                   |          | X        |                  | X        |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   | X |             |   |
| CTC (LEAP)                               | HTX PAL, HTC PAL, HTS PAL (32 Pos. Tray)/ Combi PAL (32 Pos. Tray), GC PAL (32 Pos. Tray)/ Combi PAL SPME Mode (32 Pos. Tray) |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             | X |
| CTC (LEAP)                               | Combi PAL (98 Pos. Tray), GC PAL (98 Pos. Tray)   |                |         |         |                                     |            |            | X              |            |            | X                                   |          |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             | X |
| CTC (LEAP)                               | Combi PAL SPME Mode (98 Pos. Tray)  |                |         |         |                                     |            |            |                |            |            | X                                   |          |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   | X           |   |
| CTC                                      | PAL HPLC-Systems/ PAL Combi-xt Liquid Mode/ PAL HTC-xt  | X              |         |         |                                     |            |            | X              |            | X          |                                     | X        |          | X                |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |   |             | X |

## Autosampler compatibility chart

## Autosampler compatibility chart

|                          |   | Crimp neck ND8 |         |         | Crimp neck ND8 and 1 mL shell vials |            |            | Crimp neck ND8 |          |          | Screw neck ND8 and 2 mL shell vials |          |            | Short thread ND9 |   |   | Screw neck ND10 |   |   | Crimp or Snap Ring neck ND11 |   |   | Screw neck ND13 and 4 mL shell vials |   |   | Headspace ND20 (ND18) |   |   | Headspace ND20 (ND18) |   |   | Screw neck ND24 (EPA) |  |  | Well Plates |  |
|--------------------------|---|----------------|---------|---------|-------------------------------------|------------|------------|----------------|----------|----------|-------------------------------------|----------|------------|------------------|---|---|-----------------|---|---|------------------------------|---|---|--------------------------------------|---|---|-----------------------|---|---|-----------------------|---|---|-----------------------|--|--|-------------|--|
|                          |   | 7 mm OD        | 8 mm OD | 6 mm OD | 11.6 mm OD                          | 11.6 mm OD | 11.6 mm OD | 14.7 mm OD     | 22 mm OD | 23 mm OD | 22.5 mm OD                          | 20 mm OD | 27.5 mm OD |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | HS40/HS100/101  |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | TurboMatrix HS16/HS40/HS40 XL/ HS40 Trap/HS110/ HS110 Trap  |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | Integral 4000/ ISS-100, 100 vial tray/ ISS-200, 100 vial tray/ ISS-225, 100 vial tray + 80 vial tray/ LC 600, 60 vial tray  |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | ISS-100, 85 vial tray/ ISS-200, 85 vial tray/ ISS-225, 100 vial tray + 80 vial tray   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | ISS-200, 145 vial tray  |                |         | X       |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | LC 600, 42 vial tray  |                | X       |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | Clarus 400, 500, 600/ 590 GC, 690 GC  |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| PerkinElmer              | Flexar FX-20 UHPLC;LC   |                |         |         |                                     | X          | X          | X              | X        |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Pharmacia                | LKB 2157-010, 2 mL, 11 mm crimp-Top   |                |         |         |                                     |            | X          | X              |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Pharmacia                | Alta A-900, 1.5 mL  |                |         |         |                                     |            |            | X              |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Pharmacia                | LKB 2157-020  | X              |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Polymer Laboratories     | GPC 110/210/ PL-AS RT   |                |         |         |                                     |            |            | X              | X        | X        | X                                   | X        | X          |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Quma Elektronik          | QHSS-40   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   | X                     |   |   |                       |   |   |                       |  |  |             |  |
| Selerity                 | 3100  |                |         |         |                                     |            |            | X              |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Sedere                   |   |                |         |         |                                     |            |            |                | X        |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Sepiatec                 |   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   | X |                       |  |  |             |  |
| SGE                      | LS-3200   | X              |         | X       |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | AOC-5000  | X              |         | X       |                                     |            |            |                | X        |          |                                     | X        |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       | X |   |                       |  |  |             |  |
| Shimadzu                 | AOC-14/1400 / AOC-17 / AOC-20/20/20s 150 Pos. Tray  |                |         |         |                                     |            |            | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | AOC-20/20/20s 96 Pos. Tray/ SIL-10A/SIL-10AF/SIL-10AP/SIL-10A/ SIL-10AxL/Rack L 80 Pos. /SIL-10HTA/ SIL-10HTC 100 Pos. Tray/ SIL-20A/ Sil-20AC (Prominence) 50 vial tray, LC2010C/LC2010A 100 Pos. Tray |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | LC-20A/ SIL-6B/SIL-7A/SIL-8A/SIL-9A/ X2 UHPLC System (Nexera) 324 - 1.5 mL vials / SIL-30ACMP/ Nexera MP (6 -1.5 vial trays)  |                |         |         |                                     |            |            | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-2AS/ SIL-6A   |                |         |         |                                     | X          | X          | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-10A/SIL-10AF/SIL-10AP/SIL-10A/ SIL-10AxL/Rack S 100 Pos. /SIL-20A (Prominence) 105 vial tray/SIL-20AC (Prominence) 70 vial tray   |                |         |         |                                     | X          | X          | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-10A/SIL-10AF/SIL-10AP/SIL-10A/ 5 mL/SIL-10AxL/Rack MTP2 192 Pos. /SIL-10HTA/SIL-10HTC 350 pos. Tray/ SIL-20A/Sil-20AC (Prominence) 175 vial tray LC2010C + LC2010A 350 Pos. Tray                    |                | X       |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-10HTA/SIL-10HTC 140 Pos. Tray/ LC2010C + LC2010A 140 Pos. Tray  |                |         |         |                                     |            | X          |                | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-10ADvp  |                | X       |         |                                     |            |            | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      | X |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | HTA 200 H/ HSS-2B   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   | X |                       |  |  |             |  |
| Shimadzu                 | LC2010C + LC2010A 100 Pos. Tray   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | ASI-V   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   | X                     |  |  |             |  |
| Shimadzu                 | SIL 30-ACMP   |                |         |         |                                     |            |            | X              | X        | X        | X                                   | X        | X          | X                |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-20AXR/SIL-20ACXR (Prominence) 175 (1- mL vials), 70 (1.5- mL vials), 50 (4- mL vials)/SIL-30AC(Nexera) 175 (1- mL vials), 105 (1.5- mL vials), 50 (4- mL vials)                                     |                |         | X       |                                     |            |            | X              | X        |          |                                     |          |            |                  | X | X |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Shimadzu                 | SIL-20AHT, SIL-20AHT  | X              | X       | X       | X                                   | X          | X          | X              | X        | X        | X                                   | X        | X          | X                | X | X | X               | X | X | X                            | X | X | X                                    | X | X | X                     | X | X | X                     |   |   |                       |  |  |             |  |
| Sievers (GE Instruments) | Sievers 900   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   | X                     |  |  |             |  |
| Spark                    | Marathon Basic, Standard 96 Pos. Tray/ Triathlon, Standard 96 Tray/ Endurance 48 Pos. Tray/ Dried Blood Spot (DBS)/ Integrity/ Optimas/ Promis  |                |         |         |                                     |            |            | X              | X        |          |                                     |          |            |                  | X |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Spark                    | Marathon Basic Prp King size 48 Pos. Tray   |                |         |         |                                     |            |            |                |          |          |                                     |          |            |                  |   |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |
| Spark                    | Midas, Standard 84 Pos. Tray/ Optimas 96 Pos.(2 mL) 24 Pos.(10 mL)/ Alias   |                |         |         |                                     |            |            | X              | X        |          |                                     |          |            |                  | X |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   | X |                       |  |  |             |  |
| Spark                    | Midas, Large capacity 96 Pos. Tray  |                |         |         |                                     |            |            | X              | X        |          |                                     |          |            |                  | X |   |                 |   |   |                              |   |   |                                      |   |   |                       |   |   |                       |   |   |                       |  |  |             |  |

## Autosampler compatibility chart

|                   | Crimp neck ND8  | Crimp neck ND8 and 1 mL shell vials | Crimp neck ND8 | Screw neck ND8 and 2 mL shell vials | Short thread ND9 | Screw neck ND10 | Crimp or Snap Ring neck ND11 | Screw neck ND13 and 4 mL shell vials | Headspace ND20 (ND18) | Headspace ND20 (ND18) | Headspace ND20 (ND18) | Headspace ND20 (ND18) | Screw neck ND24 (EPA) | Well Plates |
|-------------------|---|-------------------------------------|----------------|-------------------------------------|------------------|-----------------|------------------------------|--------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------|
| Spark             | Midas, Large Volume 24 Pos. Tray/ Triathlon, Super-LSV 32 Pos. Tray                                       |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       |                       |                       |             |
| Spark             | Alias   |                                     |                | X                                   | X                |                 | X                            |                                      |                       | X                     |                       |                       |                       |             |
| Spark             | SPH 125/ Integrity  |                                     |                |                                     | X                |                 | X                            |                                      |                       |                       |                       |                       |                       |             |
| Spark             | Triathlon, LSV 72 Pos. Tray   |                                     |                |                                     |                  |                 |                              | X                                    |                       |                       |                       |                       |                       |             |
| Spark             | Triathlon, micro 160 Pos. Tray  | X                                   |                |                                     |                  |                 |                              |                                      |                       |                       |                       |                       |                       |             |
| Spark             | Reliance 48 Pos. Tray/ Integrity 108 Pos. (2 mL) 2 x Plates, IntegrityPlus 2 x 108 Pos. (2 mL) 4 x Plates |                                     |                | X                                   | X                |                 | X                            |                                      |                       |                       |                       |                       |                       | X           |
| Spark             | Prospekt 2  |                                     |                |                                     |                  |                 |                              | X                                    |                       |                       |                       |                       |                       |             |
| Spark             | Reliance/Symbiosis Pharma   |                                     |                |                                     |                  |                 |                              | X                                    |                       |                       |                       |                       |                       | X           |
| Spectra-Physics   | 8875/ 8880  |                                     |                | X                                   | X                | X               | X                            |                                      |                       |                       |                       |                       |                       |             |
| Spectra-Physics   | SpectraSYSTEM AS1000/ SpectraSYSTEM AS 3500   | X                                   | X              | X                                   | X                | X               | X                            |                                      |                       |                       |                       |                       |                       |             |
| Spectra-Physics   | SpectraSYSTEM AS 3000   | X                                   | X              | X                                   | X                | X               | X                            |                                      |                       |                       |                       |                       |                       |             |
| Sykam             | S 5200/S 5300/ S 5250   |                                     |                |                                     |                  | X               |                              |                                      |                       |                       |                       |                       |                       |             |
| Talbot            |   |                                     |                |                                     |                  | X               | X                            |                                      |                       |                       |                       |                       |                       |             |
| Teledyne Tekmar   | 7000/7000HT/7050/ AS™ F1884-04  |                                     |                |                                     |                  |                 |                              |                                      |                       | X                     |                       |                       |                       |             |
| Teledyne Tekmar   | AQUATek 70/SOLATek 72™/ STS 8000 TOC  |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Teledyne Tekmar   | HT3   |                                     |                |                                     |                  |                 |                              |                                      |                       | X                     | X                     |                       |                       |             |
| Thermo Scientific | Su mmit ASI 100, Micro-Tray (192 Pos.)  | X                                   |                |                                     |                  |                 |                              |                                      |                       |                       |                       |                       |                       |             |
| Thermo Scientific | Su mmit ASI 100, Analytical-Tray (117 Pos.)   |                                     |                | X                                   | X                |                 | X                            |                                      |                       |                       |                       |                       |                       |             |
| Thermo Scientific | Su mmit ASI 100, Semiprep.-Tray (63 Pos.)   |                                     |                |                                     |                  |                 |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | Famos (LC Packings/Dionex)/ UltiMate Analytical, cylindrical, WPS-3000 SL, 120 Pos. rack (2 mL)           |                                     |                | X                                   | X                | X               | X                            |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | UltiMate Analytical, conical, WPS-3000 SL, 120 (3x40) Pos. rack (1.1 mL=2 mL) Inserts)                    |                                     |                |                                     |                  |                 |                              | X                                    |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | UltiMate Micro, conical, WPS-3000 SL, 120 (3x40) Pos. rack (250µL)  |                                     | X              |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | UltiMate Semipreparative, WPS-3000 SL, 66 (3x22) Pos. rack (4 mL)   |                                     |                |                                     |                  |                 |                              |                                      | X                     |                       |                       | X                     |                       |             |
| Thermo Scientific | UltiMate Nano/Cap/Micro, WPS-3000 SL, 216 (3x72) Pos. rack (1.2 mL)                                       | X                                   |                |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | ASE 200   |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       |                       | X                     |             |
| Thermo Scientific | AS 40   |                                     | X              |                                     |                  |                 |                              |                                      | X                     |                       |                       |                       |                       |             |
| Thermo Scientific | HS-HV   |                                     |                |                                     | X                |                 |                              |                                      |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AS-AP (120 Pos. 1.5 mL) (3 x Plates)  |                                     |                | X                                   | X                | X               | X                            | X                                    | X                     |                       |                       |                       |                       | X           |
| Thermo Scientific | AS-DV (50 x 0.5 mL and 50 x 5.0 mL)   | X                                   | X              | X                                   | X                | X               | X                            | X                                    | X                     |                       |                       | X                     |                       |             |
| Thermo Scientific | AS1000 (Trace GC)/ AS300  | X                                   |                | X                                   | X                | X               |                              |                                      |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AS200   | X                                   |                |                                     | X                | X               | X                            |                                      |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AS2000 30 vial tray/ HS250 / HS500 / HS800 / HS2000   |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | AS2000 90 vial tray (Trace GC)  |                                     | X              |                                     | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AI3000 (II)/AS3000 (II) AS3500 (Trace GC + Focus GC)  | X                                   |                | X                                   |                  | X               |                              | X                                    |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | A200LC/ Accela Open Autosampler   | X                                   |                |                                     | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | SpectraSYSTEM AS 1000 / AS 3500/ AS100/ Accela high Speed LC Autosampler (200 Pos.)                       | X                                   |                | X                                   | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | SpectraSYSTEM AS 3000   | X                                   | X              | X                                   | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | A200S   | X                                   |                |                                     | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AS800, 42 vial tray   |                                     |                |                                     | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | AS800, 60 vial tray   |                                     | X              | X                                   | X                | X               |                              | X                                    |                       |                       |                       |                       |                       |             |
| Thermo Scientific | Dionex AS-AP  |                                     |                |                                     | X                | X               | X                            | X                                    |                       | X                     |                       |                       |                       |             |
| Thermo Scientific | Dionex UltiMate WPS-3000  | X                                   | X              |                                     | X                | X               | X                            | X                                    | X                     | X                     |                       |                       |                       |             |
| Thermo Scientific | Dionex AS 40  |                                     |                |                                     |                  |                 |                              |                                      |                       | X                     |                       |                       |                       |             |
| Thermo Scientific | TriPlus (=GC PAL) (AS+ Duo)   | X                                   | X              | X                                   | X                | X               |                              | X                                    |                       |                       |                       | X                     |                       | X           |
| Thermo Scientific | TriPlus HS / SPME   |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | TriPlus RSH/ Surveyor (Surveyor Plus)   | X                                   |                | X                                   | X                | X               |                              | X                                    |                       |                       |                       | X                     |                       | X           |
| Thermo Scientific | TriPlus 300   |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       | X                     |                       |             |
| Thermo Scientific | HiPerTOC  |                                     |                |                                     |                  |                 |                              |                                      |                       |                       |                       |                       | X                     |             |
| Thermo Scientific | Trace 1300 Series/ Trace 1310 Series/ AI/AS 1310 Series/ TriPlus 100 LS                                   |                                     |                | X                                   | X                | X               | X                            |                                      | X                     | X                     | X                     |                       |                       |             |

## Autosampler compatibility chart

|                     |  | Crimp neck ND8 |         |         | Crimp neck ND8 and 1 mL shell vials |            |            | Crimp neck ND8 |            |            | Screw neck ND8 and 2 mL shell vials |          |          | Short thread ND9 |          |            | Screw neck ND10 |   |   | Crimp or Snap Ring neck ND11 |  |  | Screw neck ND13 and 4 mL shell vials |   |  | Headspace ND20 (ND18) |  |  | Headspace ND20 (ND18) |   |   | Screw neck ND24 (EPA) |   |   | Well Plates |  |  |  |  |  |
|---------------------|--|----------------|---------|---------|-------------------------------------|------------|------------|----------------|------------|------------|-------------------------------------|----------|----------|------------------|----------|------------|-----------------|---|---|------------------------------|--|--|--------------------------------------|---|--|-----------------------|--|--|-----------------------|---|---|-----------------------|---|---|-------------|--|--|--|--|--|
|                     |  | 7 mm OD        | 8 mm OD | 6 mm OD | 11.6 mm OD                          | 11.6 mm OD | 11.6 mm OD | 11.6 mm OD     | 11.6 mm OD | 11.6 mm OD | 14.7 mm OD                          | 22 mm OD | 23 mm OD | 22.5 mm OD       | 20 mm OD | 27.5 mm OD |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Thermo Scientific   | Vanquish Split/ Vanquish Dual Split  |                |         |         |                                     | X          | X          | X              |            | X          |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   | X                     |   |   |             |  |  |  |  |  |
| Thermo Scientific   | UltiMate WPS-3000RS/TRS / UltiMate WPS-3000TFC/TBFC / UltiMate OAS-3000TXRS/ UltiMate WPS-3000TXRS/ UltiMate WPS-3000TBRs                                      |                |         | X       | X                                   | X          | X          | X              | X          | X          |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   | X |                       |   |   |             |  |  |  |  |  |
| Tosoh               | AS 8010 / TSK-6080   |                |         |         |                                     |            |            |                | X          |            |                                     |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Tracon              | 770/771/772  |                |         |         |                                     |            |            |                |            | X          | X                                   |          |          |                  |          |            |                 |   | X |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Unicam              | 4247/ 4710   |                |         |         |                                     |            |            |                |            | X          | X                                   |          |          |                  |          |            |                 |   | X |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Unicam              | 4700 (GC)/ S4/S8   | X              |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Unicam              | 4700 (LC)  | X              |         |         |                                     |            |            |                |            | X          | X                                   |          |          |                  |          |            |                 |   | X | X                            |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Unicam              | LC-XP  |                |         |         |                                     |            |            |                |            | X          | X                                   |          |          |                  |          |            |                 |   | X |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 400, Standard 96 Pos. Tray / ProStar 410, Large capacity 96 Pos. Tray/ ProStar 420, Standard 96 Pos. Tray  |                |         |         |                                     |            |            | X              |            | X          |                                     | X        |          | X                |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 400, King size 48 Pos. Tray/ Marathon Basic, Prep, King size 48 Pos. Tray  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  | X                                    |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 410, Standard 84 Pos. Tray   |                |         |         |                                     |            |            |                | X          |            | X                                   |          | X        |                  | X        |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       | X |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 410, Large Volume 24 Pos. Tray/ CP-9020/CP-9025/ CP-9060 / Genesis/ COMBI PAL (32 Pos. Tray) GC PAL (32 Pos. Tray)/ COMBI PAL SPME mode (32 Pos. Tray) |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   | X                     |   |   |             |  |  |  |  |  |
| Varian              | ProStar 420, LSV 72 Pos. Tray  |                |         |         |                                     | X          |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 420, Super-LSV 32 Pos. Tray  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      | X |  |                       |  |  | X                     |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 420, micro 160 Pos. Tray   | X              |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | ProStar 430, 48 Pos. Tray/ 8000/ 8100/ CP-910, 911, 912  |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | 8035/ Marathon Basic, Standard 96 Pos. Tray/ Vista   |                |         |         |                                     |            |            |                | X          |            | X                                   |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | 8400 (100 Pos.)/ 8410-Autoinjector (10 x 2 mL; 6 x 5 mL; 5 x 10 mL)  |                |         |         |                                     |            |            |                | X          |            | X                                   |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       | X |   |             |  |  |  |  |  |
| Varian              | 8200   |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          | X                |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | LC 9100/LC 9095/LC 9090  |                |         |         |                                     |            |            |                |            |            |                                     | X        |          |                  |          |            |                 |   | X |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | Archon   |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   | X |             |  |  |  |  |  |
| Varian              | COMBI PAL (200 Pos. Tray) GC PAL (200 pos. Tray)   | X              |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   | X |                       |   | X |             |  |  |  |  |  |
| Varian              | COMBI PAL (98 Pos. Tray) GC PAL (98 Pos. Tray)   |                |         |         |                                     | X          |            |                |            |            |                                     | X        |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       | X |   |                       | X |   |             |  |  |  |  |  |
| Varian              | COMBI PAL SPME mode (98 Pos. Tray)   |                |         |         |                                     |            |            |                |            |            |                                     | X        |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       | X |   |                       | X |   |             |  |  |  |  |  |
| Varian              | Marathon Basic, Standard 96 Pos. Tray/ CP-9010   |                |         |         |                                     |            |            | X              |            | X          |                                     |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | 920-LC/940-LC  |                |         |         |                                     |            |            |                | X          |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Varian              | CP-8410/8034/8035/8100/8200  |                |         |         |                                     |            |            |                | X          |            |                                     |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Viscotek            | Vortex™  |                |         |         |                                     |            |            |                |            |            |                                     | X        |          | X                |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Viscotek            | GPC Autosampler  |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          | X                |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Viscotek            | GPC max, 120 vials   |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          | X                |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | Hitachi Chromaster   |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | HPLC-System Primaide   |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          | X                |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | L2200 (LaChrom Elite)/L2200-U (LaChrom Ultra) (200 Pos. Tray)/ L7200 (LaChrom) (80 Pos. Tray)/ L7250(LaChrom) (120 Pos. Tray)/ 655-A40 (108 Pos. Tray)/ L-9100 |                |         |         |                                     |            |            |                |            | X          |                                     | X        |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | L2200 (LaChrom Elite) (128 Pos. Tray)  |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | L7250 (LaChrom) (Rack Holder for combination racks)  |                |         |         |                                     | X          |            |                | X          |            | X                                   |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | AS 2000 (50 Pos. Tray)/ AS 4000 (150 Pos. Tray)  |                |         |         |                                     |            |            |                | X          |            | X                                   |          |          |                  |          |            |                 | X |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | AS 4000 (198 Pos. Tray)  |                |         |         |                                     |            | X          |                |            |            |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | 5210 (Chromaster) 195 Pos (1 mL), 120 Pos 1.5 mL (Standard), 72 Pos. (4 mL), 2 x MTP (96,384)  |                | X       |         |                                     |            |            |                | X          |            | X                                   |          |          |                  |          |            |                 | X |   | X                            |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| WWR(Merck)/ Hitachi | AS 6000  |                |         |         |                                     |            | X          |                | X          |            | X                                   |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Waters              | ACQUITY™ UPLC Systeme  |                |         |         |                                     |            |            |                |            |            |                                     | X        |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Waters              | Wisp 48 position   |                |         |         |                                     |            |            |                |            | X          |                                     |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |
| Waters              | Wisp 96 position/ 717, 96 Position Carousel  |                |         |         |                                     |            |            |                |            |            | X                                   |          |          |                  |          |            |                 |   |   |                              |  |  |                                      |   |  |                       |  |  |                       |   |   |                       |   |   |             |  |  |  |  |  |

## Autosampler compatibility chart

|        |  | Crimp neck ND8 |         |         | Crimp neck ND8 and 1 mL shell vials |            |            | Crimp neck ND8 |            |            | Screw neck ND8 and 2 mL shell vials |          |          | Short thread ND9 |          |            | Screw neck ND10 |  |  | Crimp or Snap Ring neck ND11 |  |  | Screw neck ND13 and 4 mL shell vials |  |  | Headspace ND20 (ND18) |  |  | Headspace ND20 (ND18) |  |  | Headspace ND20 (ND18) |   |  | Headspace ND20 (ND18) |  |  | Screw neck ND24 (EPA) |  |  | Well Plates |  |  |
|--------|--|----------------|---------|---------|-------------------------------------|------------|------------|----------------|------------|------------|-------------------------------------|----------|----------|------------------|----------|------------|-----------------|--|--|------------------------------|--|--|--------------------------------------|--|--|-----------------------|--|--|-----------------------|--|--|-----------------------|---|--|-----------------------|--|--|-----------------------|--|--|-------------|--|--|
|        |  | 7 mm OD        | 8 mm OD | 6 mm OD | 11.6 mm OD                          | 11.6 mm OD | 11.6 mm OD | 11.6 mm OD     | 11.6 mm OD | 11.6 mm OD | 14.7 mm OD                          | 22 mm OD | 23 mm OD | 22.5 mm OD       | 20 mm OD | 27.5 mm OD |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |  |                       |  |  |                       |  |  |             |  |  |
| Waters | 717 plus   | X              | X       | X       | X                                   | X          | X          | X              | X          | X          | X                                   |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |  |                       |  |  |                       |  |  |             |  |  |
| Waters | 717, 48 Position Carousel                                    |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Alliance   |                |         |         |                                     | X          | X          | X              |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Alliance GPC 2000  |                |         |         |                                     |            |            |                |            |            |                                     | X        |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Alliance HT Syst./ Alliance 2790/2795/ Alliance 2690/2695    |                |         |         |                                     | X          | X          | X              |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       |   |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Acquity sample Organizer/ Acquity/ CapLC/Waters/Nano Acquity |                |         |         |                                     | X          |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Acquity H-Class/ Alliance HTS                                |                |         |         |                                     |            |            |                |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X |  |                       |  |  |                       |  |  |             |  |  |
| Waters | Model 2767/ Model 2707/ Model 2777                           |                |         |         |                                     | X          |            | X              |            |            |                                     |          |          |                  |          |            |                 |  |  |                              |  |  |                                      |  |  |                       |  |  |                       |  |  |                       | X |  |                       |  |  |                       |  |  |             |  |  |

X\*\*: for 24 Position Plate

# Chemical resistance reference chart

This chart provides a guideline for the chemical resistance of materials used for vials and closures. Because so many factors can affect chemical resistance, it may be necessary to test your product under your actual conditions of use.

| Plastic resin code | Description               | Appearance    | Temp. max °C | Temp. min °C | Autoclavable | Dry heat | Ga mma | Microwavable | Ethylene oxide | Analytical purity | Fragmentation* | Hardness†             | Resealability‡    |
|--------------------|---------------------------|---------------|--------------|--------------|--------------|----------|--------|--------------|----------------|-------------------|----------------|-----------------------|-------------------|
| HDPE               | High-density polyethylene | Opaque        | 120          | -35          | No           | No       | Yes    | Yes          | Yes            | Method dependent  | Medium         | Hard                  | No resealability  |
| EVA                | Ethylene-vinyl acetate    | Translucent   | 75           | -75          | No           | No       | Yes    | No           | Yes            | Medium high       | Low            | Hard                  |                   |
| LDPE               | Low-density polyethylene  | Translucent   | 100          | -40          | No           | No       | Yes    | Yes          | Yes            | Method dependent  | Low            | Medium hard           | No resealability  |
| TPX                | Polymethylpentene         | Transparent   | 175          | 0            | Yes          | No       | Yes    | Yes          | Yes            | Method dependent  | Low            | Very hard             | N/A               |
| PP                 | Polypropylene             | Translucent   | 135          | -20          | Yes          | No       | No     | Yes          | Yes            | Method dependent  | Low            | Medium hard           | No resealability  |
| PTFE               | Polytetra-fluoroethylene  | White         | 260          | -200         | Yes          | Yes      | Yes    | Yes          | Yes            | Very high         | Low            | Very hard (Very thin) | No resealability  |
| RR                 | RedRubber/PTFE            | Red/beige     | 110          | -30          | No           | No       | No     | No           | No             | Medium            | Medium         | Medium hard           | Medium            |
| Butyl              | Grey butyl                | Opaque grey   | 125          | -20          | Yes          | No       | Yes    | Yes          | Yes            | Method dependent  | Low to medium  | Soft to medium        | Highly resealable |
| T/S                | Silicone/PTFE             | White/red     | 200          | -60          | Yes          | Yes      | Yes    | Yes          | Yes            | High              | Low to medium  | Soft                  | Highly resealable |
| T/S/T              | PTFE/silicone/PTFE        | Red/white/red | 200          | -60          | Yes          | Yes      | Yes    | Yes          | Yes            | High              | Very low       | Medium hard           | Good              |
|                    | Viton                     | Black         | 230          | -30          | Yes          | Yes      | Yes    | Yes          | Yes            | Medium            | Medium         | Hard                  | Low to medium     |

## Key to chart

E – No damage after 30 days of constant exposure.

G – Little or no damage after 30 days of constant exposure.

F – Some effect after 7 days of constant exposure.

N – Immediate damage may occur. Not recommended for continuous use.

S – Surface.

\* Due to hardness and molecular structure (coring)

† Needle penetration

‡ In case of multiple injections

The first letter of each pair applies to minimum temperature conditions;  
the second to maximum temperature conditions.

| Chemical                  | LDPE | HDPE | PP | PTFE | TPX | Glass |
|---------------------------|------|------|----|------|-----|-------|
| 1,2-Dichloroethane        | NN   | NN   | NN | EE   | NN  | EE    |
| 1,2,4-Trichlorobenzene    | NN   | NN   | NN | EE   | GF  | EE    |
| 1,4-Dioxane               | GF   | GG   | GF | EE   | GF  | EE    |
| 2,2,4-Trimethylpentane    | FN   | FN   | FN | EE   | FN  | EE    |
| 2,4-Dichlorophenol        | NN   | NN   | NN | EE   | FN  | EE    |
| 2-Butanol                 | EE   | EE   | EE | EE   | EG  | EE    |
| 2-Methoxyethanol          | EG   | EE   | EE | EE   | EE  | EE    |
| 2-Propanol                | EE   | EE   | EE | EE   | EE  | EE    |
| Acetaldehyde              | GN   | GF   | GN | EE   | GN  | EE    |
| Acetamide, sat.           | EE   | EE   | EE | EE   | EE  | EE    |
| Acetic acid, 5%           | EE   | EE   | EE | EE   | EE  | EE    |
| Acetic acid, 50%          | EE   | EE   | EE | EE   | EE  | EE    |
| Acetic acid, glacial      | EG   | EE   | EG | EE   | EG  | EE    |
| Acetic anhydride          | NN   | FF   | GF | EE   | EG  | EE    |
| Acetone                   | NN   | NN   | EG | EE   | EE  | EE    |
| Acetonitrile              | EE   | EE   | FN | EE   | FN  | EE    |
| Acetophenone              | NN   | FF   | FF | EE   | GN  | EE    |
| Acrylonitrile             | EE   | EE   | FN | EE   | FN  | EE    |
| Adipic acid               | EG   | EE   | EE | EE   | EE  | EE    |
| Allyl alcohol             | EE   | EE   | EE | EE   | EG  | EE    |
| Aluminum hydroxide        | EG   | EE   | EG | EE   | EG  | SS    |
| Amino acids               | EE   | EE   | EE | EE   | EE  | EE    |
| A ammonia                 | EE   | EE   | EE | EE   | EE  | SS    |
| A ammonia, 25%            | EE   | EE   | EE | EE   | EE  | SS    |
| A ammonium glycolate      | EG   | EE   | EG | EE   | EG  | EE    |
| A ammonium hydroxide, 30% | EG   | EE   | EG | EE   | EG  | SS    |
| A ammonium hydroxide, 5%  | EE   | EE   | EE | EE   | EE  | SS    |
| A ammonium oxalate        | EG   | EE   | EG | EE   | EG  | EE    |
| A ammonium salts          | EE   | EE   | EE | EE   | EE  | EE    |
| Amyl alcohol              | EE   | EE   | EE | EE   | EE  | EE    |
| Amyl chloride             | NN   | FN   | NN | EE   | NN  | EE    |
| Aniline                   | EG   | EG   | GF | EE   | GF  | EE    |
| Aqua Regia                | NN   | NN   | NN | EE   | NN  | SS    |
| Arsenic acid              | GF   | EG   | EE | EE   | EE  | EE    |
| Benzaldehyde              | EG   | GN   | EG | EE   | EG  | EE    |
| Benzamine                 | EG   | EG   | GF | EE   | GF  | EE    |
| Benzene                   | NN   | NN   | NN | EE   | GF  | EE    |
| Benzoic acid, sat.        | EE   | EE   | EG | EE   | EG  | EE    |
| Benzyl acetate            | EG   | EE   | EG | EE   | EE  | EE    |
| Benzyl alcohol            | NN   | FN   | NN | EE   | NN  | EE    |

| Chemical                           | LDPE | HDPE | PP | PTFE | TPX | Glass |
|------------------------------------|------|------|----|------|-----|-------|
| Boric acid                         | EE   | EE   | EE | EE   | EE  | EE    |
| Bromine                            | NN   | FN   | NN | EE   | NN  | EE    |
| Bromobenzene                       | NN   | NN   | NN | EE   | NN  | EE    |
| Bromoform                          | NN   | NN   | NN | EE   | NN  | EE    |
| Butadiene                          | NN   | FN   | NN | EE   | NN  | EE    |
| Butyl acetate                      | NN   | FF   | FF | EE   | GF  | EE    |
| Butyl chloride                     | NN   | NN   | NN | EE   | FN  | EE    |
| Butyric acid                       | NN   | FN   | NN | EE   | NN  | EE    |
| Calcium hydroxide                  | EE   | EE   | EE | EE   | EE  | SS    |
| Calcium hypochlorite               | EE   | EE   | EE | EE   | EG  | EE    |
| Carbazole                          | EE   | EE   | EE | EE   | EE  | EE    |
| Carbon disulphide                  | NN   | NN   | NN | EE   | NN  | EE    |
| Carbon tetrachloride               | FN   | GF   | GF | EE   | NN  | EE    |
| Cellosolve acetate                 | EG   | EE   | EG | EE   | EG  | EE    |
| Chlorine water                     | GN   | GF   | FN | EE   | GF  | EE    |
| Chlorine, 10% (moist)              | GN   | GF   | FN | EE   | GN  | EE    |
| Chlorine, 10% in air               | GN   | EF   | GN | EE   | GN  | EE    |
| Chlorine, wet gas                  | GN   | GF   | FN | EE   | GN  | EE    |
| Chloro acetic acid                 | EE   | EE   | EG | EE   | EG  | EE    |
| Chlorobenzene                      | NN   | NN   | NN | EE   | FN  | EE    |
| Chloroform                         | FN   | FN   | NN | EE   | NN  | EE    |
| Chromic acid, 10%                  | EE   | EE   | EE | EE   | EE  | EE    |
| Chromic acid, 20%                  | EE   | EE   | GG | EE   | EE  | EE    |
| Chromic acid, 50%                  | EE   | EE   | GF | EE   | GF  | EE    |
| Chromic:Surfuric acid Mixture, 96% | NN   | NN   | NN | EE   | NN  | EE    |
| Citric acid, 10%                   | EE   | EE   | EE | EE   | EE  | EE    |
| Cresol                             | NN   | FN   | GF | EE   | NN  | EE    |
| Cyclohexane                        | FN   | FN   | FN | EE   | NN  | EE    |
| Cyclohexanone                      | NN   | FN   | FN | EE   | GF  | EE    |
| Cyclopentane                       | NN   | FN   | FN | EE   | FN  | EE    |
| Decahydronaphthalene               | GF   | EG   | GF | EE   | FN  | EE    |
| Diacetone                          | NN   | NN   | GF | EE   | FF  | EE    |
| Diacetone alcohol                  | FN   | EE   | EF | EE   | EE  | EE    |
| Di butylphthalate                  | --   | -N   | NN | EE   | GG  | EE    |
| Diethyl benzene                    | NN   | FN   | NN | EE   | NN  | EE    |
| Diethyl ether                      | NN   | FN   | NN | EE   | NN  | EE    |
| Diethyl ketone                     | NN   | NN   | GG | EE   | GF  | EE    |
| Diethyl malonate                   | EE   | EE   | EE | EE   | EG  | EE    |
| Diethylamine                       | NN   | FN   | GN | EE   | FF  | EE    |

| Chemical                  | LDPE | HDPE | PP | PTFE | TPX | Glass |
|---------------------------|------|------|----|------|-----|-------|
| Diethylene dioxide        | GF   | GG   | GF | EE   | FN  | EE    |
| Diethylene glycol         | EE   | EE   | EE | EE   | EE  | EE    |
| Dimethyl acetamide        | FN   | EE   | EE | EE   | FG  | EE    |
| Dimethyl formamide        | EE   | EE   | EE | EE   | EE  | EE    |
| Dimethylsulphoxide (DMSO) | EE   | EE   | EE | EE   | EE  | EE    |
| Dioxane                   | GF   | GG   | GF | EE   | FN  | EE    |
| Dipropylene glycol        | EE   | EE   | EE | EE   | EE  | EE    |
| Ethanol, 40%              | EG   | EE   | EG | EE   | EG  | EE    |
| Ether                     | NN   | FN   | NN | EE   | NN  | EE    |
| Ethyl acetate             | EE   | EE   | EG | EE   | FN  | EE    |
| Ethyl alcohol (absolute)  | EG   | EE   | EG | EE   | EG  | EE    |
| Ethyl alcohol, 40%        | EG   | EE   | EE | EE   | EG  | EE    |
| Ethyl alcohol, 96%        | EG   | EG   | EE | EE   | EG  | EE    |
| Ethyl benzene             | NN   | NN   | NN | EE   | NN  | EE    |
| Ethyl Benzoate            | FF   | GG   | GF | EE   | GF  | EE    |
| Ethyl Butyrate            | GN   | GF   | GN | EE   | FN  | EE    |
| Ethyl chloride            | FN   | FF   | FN | EE   | FN  | EE    |
| Ethyl chloride, liquid    | FN   | FF   | FN | EE   | FN  | EE    |
| Ethyl cyanoacetate        | EE   | EE   | EE | EE   | EE  | EE    |
| Ethyl lactate             | EE   | EE   | EE | EE   | EE  | EE    |
| Ethylene chloride         | GN   | GF   | FN | EE   | NN  | EE    |
| Ethylene glycol           | EE   | EE   | EE | EE   | EE  | EE    |
| Ethylene oxide gas        | FF   | GF   | FF | EE   | FN  | EE    |
| Ethylene oxide, 100%      | FF   | GF   | FF | EE   | FN  | EE    |
| Fatty acids               | EG   | EE   | EG | EE   | EG  | EE    |
| Fluorine                  | FN   | GN   | FN | EG   | FN  | EE    |
| Formaldehyde, 10%         | EE   | EE   | EE | EE   | EG  | EE    |
| Formaldehyde, 40%         | EG   | EE   | EG | EE   | EG  | EE    |
| Formalin, 10%             | EE   | EE   | EE | EE   | EG  | EE    |
| Formalin, 40%             | EG   | EE   | EG | EE   | EG  | EE    |
| Formic acid               | EG   | EE   | EG | EE   | EF  | EE    |
| Formic acid, 100%         | EG   | EE   | EG | EE   | EF  | EE    |
| Formic acid, 3%           | EG   | EE   | EG | EE   | EG  | EE    |
| Formic acid, 50%          | EG   | EE   | EG | EE   | EG  | EE    |
| Formic acid, 85%          | EE   | EE   | EG | EE   | EF  | EE    |
| Freon TF                  | EG   | EG   | EG | EE   | FN  | EE    |
| Glutaraldehyde            | EG   | EE   | EE | EE   | FF  | EE    |
| Glycerine (glycerol)      | EE   | EE   | EE | EE   | EE  | EE    |
| Hexane                    | NN   | GF   | GF | EE   | FN  | EE    |
| Hydrazine                 | NN   | NN   | NN | EE   | NN  | EE    |
| Hydrobromic acid, 4%      | EG   | EE   | EG | EE   | EG  | EE    |
| Hydrobromic acid, 48%     | EE   | EE   | EE | EE   | EE  | EE    |
| Hydrobromic acid, 69%     | --   | -N   | EG | EE   | EE  | EE    |
| Hydrochloric acid, 20%    | EE   | EE   | EE | EE   | EG  | EE    |
| Hydrochloric acid, 35%    | EE   | EE   | EG | EE   | EG  | EE    |
| Hydrochloric acid, 5%     | EE   | EE   | EE | EE   | EG  | EE    |
| Hydrogen peroxide, 3%     | EE   | EE   | EE | EE   | EE  | EE    |
| Hydrogen peroxide, 30%    | EG   | EE   | EG | EE   | EG  | EE    |
| Hydrogen peroxide, 90%    | EG   | EE   | EG | EE   | EG  | EE    |
| Isobutanol                | EE   | EE   | EE | EE   | EG  | EE    |
| Isopropanol, 100%         | EE   | EE   | EE | EE   | EE  | EE    |
| Isopropyl acetate         | GF   | EG   | GF | EE   | GF  | EE    |
| Isopropyl benzene         | FN   | GF   | FN | EE   | NN  | EE    |
| Isopropyl ether           | NN   | NN   | NN | EE   | EE  | EE    |
| Lactic acid, 3%           | EG   | EE   | EG | EE   | EG  | EE    |
| Lactic acid, 85%          | EG   | EE   | EG | EE   | EG  | EE    |
| Lodine crystals           | NN   | NN   | FN | EE   | GN  | EE    |
| Mercury                   | EE   | EE   | EE | EE   | EE  | EE    |
| Methanol, 100%            | EE   | EE   | EE | EE   | EE  | EE    |
| Methoxyethyl oleate       | EG   | EE   | EG | EE   | EG  | EE    |
| Methyl acetate            | FN   | FF   | GF | EE   | EE  | EE    |
| Methyl ethyl ketone       | NN   | NN   | EG | EE   | NN  | EE    |
| Methyl iso butyl ketone   | NN   | NN   | GF | EE   | FF  | EE    |
| Methyl propyl ketone      | GF   | EG   | GF | EE   | FF  | EE    |
| Methylene chloride        | FN   | FN   | FN | EE   | FN  | EE    |
| Methyl-t- butyl ether     | NN   | FN   | FN | EE   | EE  | EE    |
| n-Amyl acetate            | GF   | EG   | GF | EE   | GF  | EE    |
| n-Butanol                 | EE   | EE   | EE | EE   | EG  | EE    |
| n-Butyl acetate           | GF   | EG   | GF | EE   | GF  | EE    |
| n-Decane                  | FN   | FN   | FN | EE   | FN  | EE    |
| n-Heptane                 | FN   | GF   | FF | EE   | FF  | EE    |
| Nitric acid, 10%          | EE   | EE   | EE | EE   | EE  | EE    |
| Nitric acid, 20%          | EG   | GF   | FF | EE   | GF  | EE    |
| Nitric acid, 50%          | GN   | GN   | FN | EE   | FN  | EE    |
| Nitric acid, 70%          | FN   | GN   | NN | EE   | FN  | EE    |
| Nitrobenzene              | NN   | FN   | NN | EE   | NN  | EE    |
| Nitromethane              | NN   | FN   | FN | EE   | EF  | EE    |
| n-Octane                  | EE   | EE   | EE | EE   | EE  | EE    |
| o-Dichlorobenzene         | FN   | FF   | FN | EE   | FN  | EE    |
| Oil, mineral              | GN   | EE   | EE | EE   | EG  | EE    |

| Chemical                    | LDPE | HDPE | PP | PTFE | TPX | Glass |
|-----------------------------|------|------|----|------|-----|-------|
| Oxalic acid, 10%            | EE   | EE   | EE | EE   | EE  | EE    |
| Ozone                       | EG   | EE   | EG | EE   | EE  | EE    |
| p-Chloroacetophenone        | EE   | EE   | EE | EE   | EE  | EE    |
| p-Dichlorobenzene           | FN   | GF   | GF | EE   | GF  | EE    |
| Perchloric acid             | GN   | GN   | GN | GF   | GN  | EE    |
| Perchloric acid, 70%        | GN   | GN   | GN | GF   | GN  | EE    |
| Perchloroethylene           | NN   | NN   | NN | EE   | NN  | EE    |
| Phenol, 100%                | NN   | NN   | NN | EE   | NN  | EE    |
| Phenol, 50%                 | NN   | NN   | NN | EE   | NN  | EE    |
| Phenol, crystals            | GN   | GF   | GN | EE   | FG  | EE    |
| Phenol, liquid              | NN   | NN   | NN | EE   | NN  | EE    |
| Phosphoric acid, 5%         | EE   | EE   | EE | EE   | EE  | EE    |
| Phosphoric acid, 85%        | EE   | EE   | EG | EE   | EG  | EE    |
| Picric acid                 | NN   | NN   | NN | EE   | EE  | EE    |
| Potassium hydroxide, 1%     | EE   | EE   | EE | EE   | EE  | SS    |
| Potassium hydroxide, 30%    | EE   | EE   | EE | EE   | EE  | SS    |
| Potassium permanganate      | EE   | EE   | EE | EE   | EE  | EE    |
| Propane gas                 | NN   | FN   | NN | EE   | NN  | EE    |
| Propionic acid              | FN   | EF   | EG | EE   | EF  | EE    |
| Propylene glycol            | EE   | EE   | EE | EE   | EE  | EE    |
| Propylene oxide             | EG   | EE   | EG | EE   | EG  | EE    |
| Pyridine                    | NN   | NN   | NN | EE   | NN  | EE    |
| Resorcinol, 5%              | EE   | EE   | EE | EE   | EE  | EE    |
| Resorcinol, sat.            | EE   | EE   | EE | EE   | EE  | EE    |
| Salicylaldehyde             | EG   | EE   | EG | EE   | EG  | EE    |
| Salicylic acid, sat.        | EE   | EE   | EE | EE   | EE  | EE    |
| Salt solutions, metallic    | EE   | EE   | EE | EE   | EE  | SS    |
| Silicone oil                | EG   | EE   | EE | EE   | EE  | EE    |
| Silver nitrate              | EG   | EE   | EG | EE   | EE  | EE    |
| Sodium dichromate           | EE   | EE   | EE | EE   | EE  | EE    |
| Sodium hydroxide, 50%       | GG   | GF   | EE | EE   | EE  | SS    |
| Sodium hydroxide, 1%        | EE   | GF   | EE | EE   | EE  | SS    |
| Sodium hydroxide, 10%       | EE   | GF   | EE | EE   | EE  | SS    |
| Sodium hypochlorite, 15%    | EE   | EE   | GF | EE   | EE  | EE    |
| Stearic acid                | EE   | EE   | EE | EE   | EE  | EE    |
| Sulfur dioxide              | NN   | FN   | NN | EE   | NN  | EE    |
| Sulfur dioxide, wet or dry  | EE   | EE   | EE | EE   | EE  | EE    |
| Sulfur salts                | FN   | GF   | FN | EE   | FN  | EE    |
| Sulfuric acid, (96%)        | GG   | GG   | FN | EE   | GG  | EE    |
| Sulfuric acid, 20%          | EE   | EE   | EG | EE   | EG  | EE    |
| Sulfuric acid, 30%          | EE   | EE   | GG | EE   | EG  | EE    |
| Sulfuric acid, 6%           | EE   | EE   | EE | EE   | EE  | EE    |
| Sulfuric acid, 60%          | EG   | EE   | EG | EE   | EG  | EE    |
| Sulfuric acid, 98%          | GG   | GG   | FN | EE   | GG  | EE    |
| Tartaric acid               | EE   | EE   | EE | EE   | EE  | EE    |
| Tetrahydrofuran             | FN   | GF   | GF | EE   | FF  | EE    |
| Thionyl chloride            | NN   | NN   | NN | EE   | NN  | EE    |
| Tincture of iodine          | EG   | EG   | GG | EE   | NN  | EE    |
| Toluene                     | FN   | FN   | FN | EE   | FF  | EE    |
| Tri butyl citrate           | GF   | EG   | GF | EE   | GF  | EE    |
| Trichloro acetic acid (TCA) | FN   | FF   | FN | EE   | EE  | EE    |
| Trichloroethane             | NN   | FN   | NN | EG   | NN  | EE    |
| Trichloroethylene           | NN   | FN   | NN | EE   | NN  | EE    |
| Triethylene glycol          | EE   | EE   | EE | EE   | EE  | EE    |
| Tripropylene glycol         | EE   | EE   | EE | EE   | EE  | EE    |
| Tris buffer, solution       | EG   | EG   | EG | EE   | EG  | EE    |
| Urea                        | EE   | EE   | EE | EE   | EE  | EE    |
| Xylene                      | GN   | GF   | FN | EE   | NN  | EE    |

# Chemical compatibility chart for ProFill filter

| Chemicals                |                                    | CA | GMF | NY | PES | PP | PTFE | PVDF | RC |
|--------------------------|------------------------------------|----|-----|----|-----|----|------|------|----|
| Acids                    | Acetic, glacial                    | IC | C   | LC | C   | C  | C    | C    | C  |
|                          | Acetic, 25%                        | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Hydrochloric, concentrated         | IC | C   | IC | C   | C  | C    | C    | IC |
|                          | Hydrochloric, 25%                  | IC | C   | IC | C   | C  | C    | C    | IC |
|                          | Sulfuric, concentrated             | IC | C   | IC | IC  | C  | C    | IC   | IC |
|                          | Sulfuric, 25%                      | IC | C   | IC | C   | C  | C    | C    | LC |
|                          | Nitric, concentrated               | IC | LC  | IC | IC  | C  | C    | C    | IC |
|                          | Nitric, 25%                        | IC | LC  | IC | C   | C  | C    | C    | IC |
|                          | Phosphoric, 25%                    | C  | ND  | IC | ND  | C  | C    | ND   | LC |
|                          | Formic, 25%                        | LC | C   | IC | ND  | C  | C    | ND   | C  |
| Alcohols                 | Trichloroacetic, 10%               | C  | ND  | IC | ND  | C  | C    | ND   | C  |
|                          | Methanol, 98%                      | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Ethanol, 98%                       | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Ethanol, 70%                       | C  | C   | LC | C   | C  | C    | C    | C  |
|                          | Isopropanol                        | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | n-Propanol                         | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Amyl alcohol (butanol)             | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Benzyl alcohol                     | LC | IC  | C  | ND  | C  | C    | C    | C  |
|                          | Ethylene glycol                    | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Propylene glycol                   | LC | C   | C  | C   | C  | C    | C    | C  |
| Amines and amides        | Glycerol                           | C  | C   | C  | C   | C  | C    | C    | C  |
|                          | Dimethyl formamide                 | IC | C   | LC | IC  | C  | C    | IC   | LC |
|                          | Diethylacetamide                   | IC | C   | C  | ND  | ND | C    | ND   | C  |
|                          | Triethanolamine                    | C  | ND  | C  | ND  | ND | C    | ND   | C  |
|                          | Aniline                            | IC | ND  | ND | ND  | ND | C    | ND   | C  |
|                          | Pyridine                           | IC | C   | C  | IC  | IC | C    | IC   | C  |
|                          | Acetonitrile                       | IC | C   | C  | LC  | C  | C    | C    | C  |
|                          | Ethyl acetate/methyl acetate       | IC | C   | C  | IC  | LC | C    | C    | C  |
|                          | Amyl acetate/butyl acetate         | LC | C   | C  | IC  | LC | C    | IC   | C  |
|                          | Propyl acetate                     | LC | ND  | C  | IC  | LC | C    | IC   | C  |
| Esters                   | Propylene glycol acetate           | IC | ND  | ND | IC  | C  | C    | ND   | C  |
|                          | 2-Ethoxyethyl acetate              | LC | ND  | ND | IC  | ND | C    | ND   | C  |
|                          | Methyl cellosolve                  | IC | C   | ND | IC  | C  | C    | ND   | C  |
|                          | Benzyl benzoate                    | C  | ND  | C  | IC  | ND | C    | ND   | C  |
|                          | Isopropyl myristate                | C  | ND  | C  | IC  | ND | C    | ND   | C  |
|                          | Tricresyl phosphate                | C  | ND  | ND | IC  | ND | C    | ND   | C  |
|                          | Methylene chloride                 | IC | C   | LC | IC  | LC | C    | C    | C  |
|                          | Chloroform                         | IC | C   | C  | IC  | LC | C    | C    | C  |
|                          | Trichloroethylene                  | C  | C   | C  | IC  | C  | C    | C    | C  |
|                          | Chlorobenzene                      | C  | C   | C  | LC  | C  | C    | C    | C  |
| Halogenated hydrocarbons | Freon                              | C  | C   | C  | LC  | C  | C    | C    | C  |
|                          | Carbon tetrachloride               | LC | C   | C  | IC  | LC | C    | C    | C  |
|                          | Hexane/xylene                      | C  | C   | C  | IC  | IC | C    | C    | C  |
|                          | Toluene/benzene                    | C  | C   | C  | IC  | IC | C    | C    | C  |
|                          | Kerosene/gasoline                  | C  | ND  | C  | LC  | LC | C    | C    | C  |
| Hydrocarbons             | Tetralin/decalin                   | C  | ND  | ND | ND  | ND | C    | C    | C  |
|                          | Acetone                            | IC | C   | C  | IC  | C  | C    | IC   | C  |
|                          | Cyclohexanone                      | IC | C   | C  | IC  | C  | C    | IC   | C  |
|                          | Methyl ethyl ketone                | LC | C   | C  | IC  | LC | C    | LC   | C  |
|                          | Isopropylacetone                   | C  | C   | C  | IC  | ND | C    | IC   | C  |
| Ketones                  | Methyl Iso butyl ketone            | ND | C   | ND | IC  | LC | C    | LC   | C  |
|                          | Ethyl ether                        | C  | ND  | C  | C   | LC | C    | C    | C  |
|                          | Dioxane                            | IC | C   | C  | IC  | C  | C    | LC   | C  |
|                          | Tetrahydrofuran                    | IC | C   | C  | IC  | C  | C    | LC   | C  |
|                          | Triethanolamine                    | C  | ND  | C  | ND  | ND | C    | ND   | C  |
| Organic oxides           | Dimethylsulfoxide (DMSO)           | IC | C   | C  | IC  | C  | C    | IC   | C  |
|                          | Isopropyl ether                    | C  | ND  | ND | C   | C  | C    | C    | C  |
|                          | Phenol, aqueous solution, 10%      | IC | C   | ND | IC  | C  | C    | LC   | IC |
|                          | Formaldehyde aqueous solution, 30% | C  | C   | C  | C   | C  | C    | C    | LC |
|                          | Hydrogen peroxide, 30%             | C  | ND  | C  | ND  | ND | C    | ND   | C  |
| Misc.                    | Silicone oil/Mineral oil           | C  | C   | ND | C   | C  | C    | C    | C  |
|                          | A ammonium hydroxide, 25%          | C  | C   | C  | C   | C  | C    | LC   | LC |
|                          | Sodium hydroxide, 3N               | IC | IC  | C  | C   | C  | C    | C    | LC |

C - compatible

LC - limited compatible

IC - incompatible

ND - no data available



# Overview on 1:1 drawings

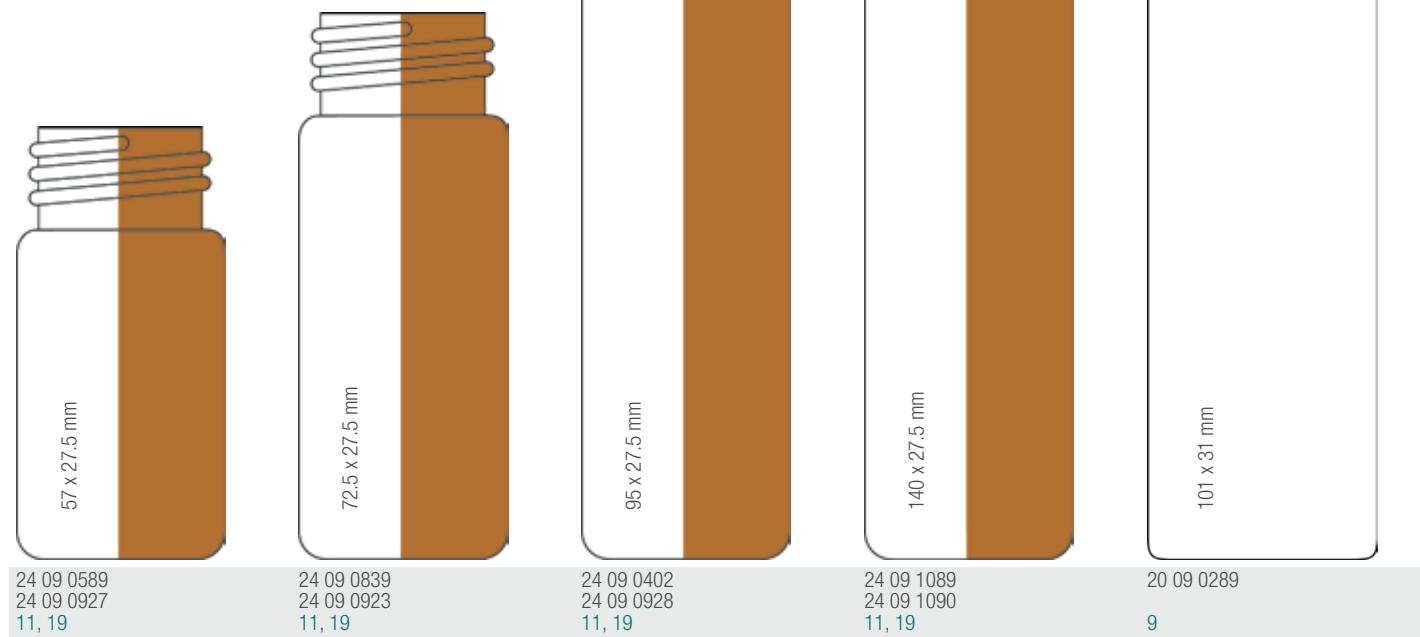
Crimp neck ND20

## EPA-vials ND24

On this section you will find actual size drawings of all standard glass articles and on pages 99-100 drawings of all cap types.

All drawings of the glass articles are marked with our article number and the chapter where you can find the respective product.

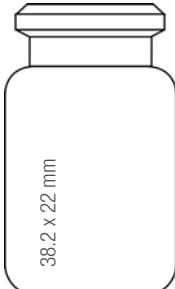
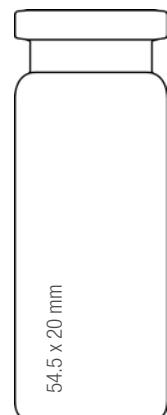
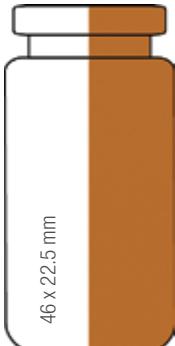
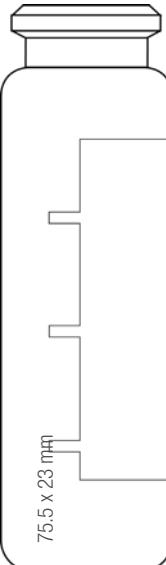
The drawings of the caps are not actual size. They should only visualize the special features of certain types of caps.



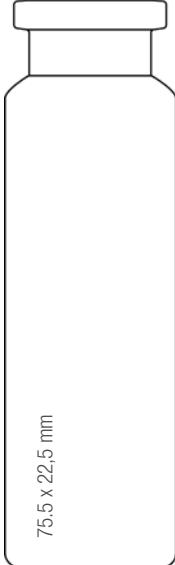
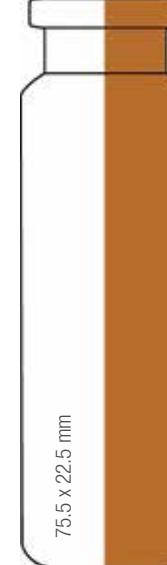
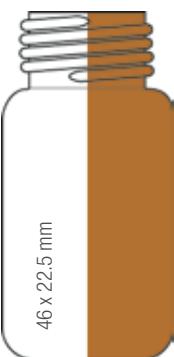
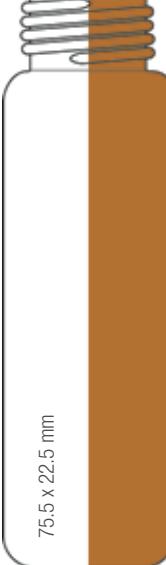
## Storage vials



## Headspace ND20

|  |   |   |   |  |  |  |
|--|---|---|---|--|--|--|
|  |  |  |  |  |  |  |
| 38,2 x 22 mm   | 38 x 20 mm  | 54,5 x 20 mm  | 46 x 22,5 mm  | 46 x 22,5 mm   | 75,5 x 23 mm   | 75,5 x 23 mm   |
| 20 09 0342<br>9  | 20 09 0801<br>9   | 20 09 0802<br>9   | 20 09 1405<br>9<br>20 09 1691   | 20 09 0795<br>9  | 20 09 0297<br>9<br>20 09 1223  | 20 09 0440<br>9  |

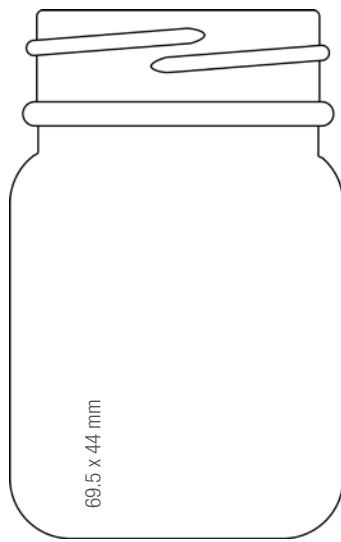
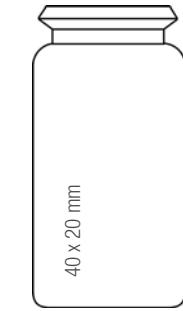
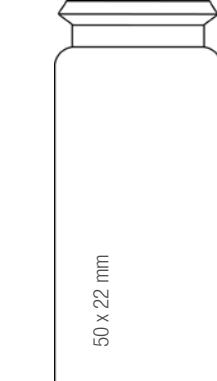
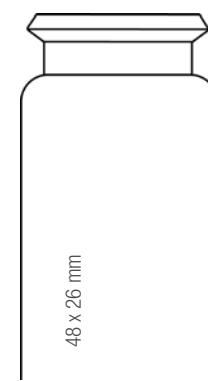
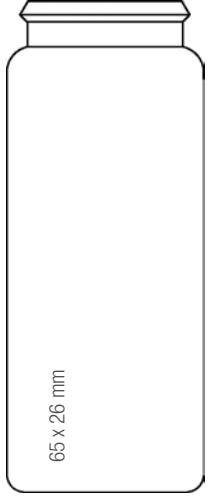
## Headspace ND20

|   |  |  |  |   |   |  |
|---|--|--|--|---|---|--|
|  |  |  |  |  |  |  |
| 75,5 x 22,5 mm  | 75,5 x 22,75 mm  | 75,5 x 22,5 mm   | 75,5 x 22,5 mm   | 75,5 x 23 mm  | 46 x 22,5 mm  | 75,5 x 22,5 mm   |
| 20 09 0796<br>9   | 20 09 3175<br>9  | 20 09 0873<br>9<br>20 09 1690  | 20 09 1222<br>9  | 18 09 0864<br>9   | 18 09 1306<br>9<br>18 09 1310   | 18 09 1307<br>9<br>18 09 1311  |

## Headspace ND18

Overview on 1:1 drawings of all standard sample vials/drawings of caps

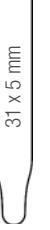
## Snapcap vials

|  |   |   |  |   |
|--|---|---|--|---|
|  |  |  |  |  |
| 69,5 x 44 mm   | 40 x 20 mm  | 50 x 22 mm  | 48 x 26 mm   | 65 x 26 mm  |
| 40 09 0678<br>20   | 18 09 0906<br>10  | 18 09 0907<br>10  | 20 09 0784<br>10   | 22 09 0908<br>10  |

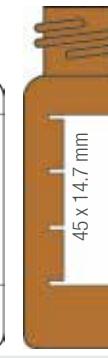
## Micro-inserts for wide opening

|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  |  |
| 06 09 0357  | 06 09 0669  | 06 09 0865  | 06 19 3973  | 06 09 0866  |
| 06 09 1240  |   | 06 09 1343  |   |   |
| 3, 4, 5, 6, 8   | 3, 4, 5, 6, 8   | 3, 4, 5, 6  | 3, 4, 5, 6  | 3, 4, 5, 6, 8   |
|   |   |   |   |   |

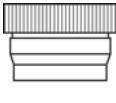
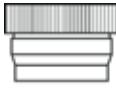
## Micro-inserts for small opening

|   |  |   |   |   |
|---|--|---|---|---|
|  |  |  |  |  |
| 05 09 0129  | 05 09 0269   | 05 09 1674  | 05 09 0279  | 05 09 0968  |
| 2   | 2  | 2   | 2   | 2   |
|   |  |   |   |   |

## Screw neck ND13

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
| 45 x 14.7 mm   | 38 x 8 mm  |
| 13 09 0222   | 13 09 0280   | 13 09 1335   | 13 09 1336   | 40 x 6 mm  |
| 13 19 3423   | 7, 19  | 7  | 7  | 40 09 0146<br>40 09 3970   |
| 7, 19  | 7, 19  | 7  | 7  | 8  |
|  |  |  |  | 8  |

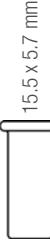
## Shell vials, 4 mL (insert)

|   |  |  |  |  |
|---|--|--|--|--|
|  |  |  |  |  |
| 44.6 x 14.65 mm   | 44.6 x 14.65 mm  | 43.45 x 6 mm   | 44.6 x 14.65 mm  | 44.6 x 14.65 mm  |
| 15 14 0548  | 15 14 0562   | 06 09 0651   | 15 34 2199   | 15 34 2197   |
| 8   | 8  | 8  | 8  | 8  |
|   |  |  |  |  |

## Crimp neck ND8

|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  |  |
| 31.5 x 5.5 mm   | 31.5 x 5.5 mm   | 30 x 8.2 mm   | 40 x 8.2 mm   | 40 x 8.2 mm   |
| 08 09 0276  | 08 09 0606  | 08 09 0284  | 08 09 0845  | 08 09 0953  |
| 1   | 1   | 1   | 1   | 1   |
|   |   |   |   | 1   |

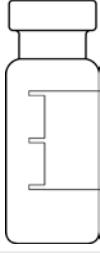
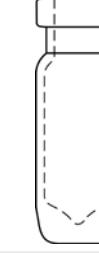
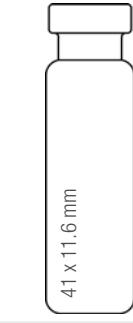
## Inserts for 96 position blocksystems (RITTER)

|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  |  |
| 15.5 x 5.7 mm   | 42.5 x 6 mm   | 45.9 x 7.6 mm   | 40 x 7.6 mm   | 45 x 7.6 mm   |
| 08 09 0875<br>(MT-Plate)  | 08 09 0888<br>(DW-Block)  | 08 09 0909<br>(SQW-Block)   | 08 09 0903<br>(MTRS)  | 08 09 1081<br>(SQW/Sealmat)   |
| 12  | 12  | 12  | 12  | 12  |
|   |   |   |   |   |

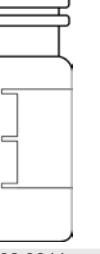
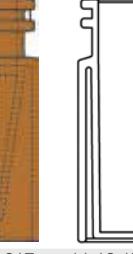
## Shell vials, 1 mL (insert)

|   |  |   |   |
|---|--|---|---|
|  |  |  |  |
| 35 x 7.8 mm   | 40 x 8.2 mm  | 34 x 5 mm   | 40 x 8 mm   |
| 08 14 0641  | 08 14 1168<br>08 14 3963   | 08 14 1169<br>08 14 3964  | 05 09 0706  |
| 8   | 8  | 8   | 8   |
|   |  |   |   |

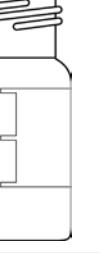
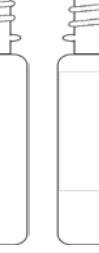
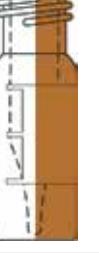
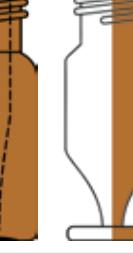
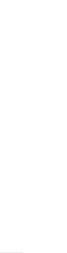
## Crimp neck nD11

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
| 32 x 11.6 mm  |   |   |   |   |   |   |   | 41 x 11.6 mm  |
| 11 09 0356<br>11 09 2085<br>5   | 11 09 0476<br>5   | 11 09 0477<br>11 09 1767<br>5   | 11 09 3451<br>11 09 2671<br>5   | 11 09 0415<br>5   | 11 09 0486<br>5   | 11 09 0619<br>11 09 2177<br>5   | 11 09 0921<br>11 09 1956<br>5   | 11 09 0831<br>20  |

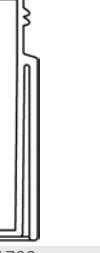
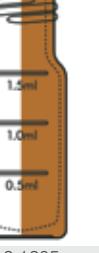
## Snap ring ND11

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |  |
| 32 x 11.6 mm  |   |   |   |   |   |   |   |   |   |
| 11 09 0627<br>11 09 2173<br>6   | 11 09 0644<br>6   | 11 09 0645<br>11 09 2189<br>6   | 11 09 3405<br>11 09 3406<br>6   | 11 09 2276<br>11 09 3564<br>5, 6  | 11 09 2353<br>11 09 2786<br>6   | 11 14 1190<br>11 14 1266<br>5, 6  | 11 14 1656<br>11 14 1695<br>5, 6  | 11 19 0933<br>11 19 1022<br>6   | 11 19 1217<br>11 19 1707<br>6   |

## Short thread ND9

|   |   |   |   |   |   |   |   |   |   |                               |
|---|---|---|---|---|---|---|---|---|---|-------------------------------|
|  |  |  |  |  |  |  |  |  |  |                               |
| 32 x 11.6 mm  |   |   |   |   |   |   |   |   |   |                               |
| 11 09 0500<br>11 09 1241<br>3   | 11 09 0519<br>3   | 11 09 0520<br>11 09 1242<br>3   | 11 09 2746<br>3   | 11 09 2747<br>3   | 11 09 2748<br>3   | 11 09 0620<br>3   | 11 09 0999<br>11 09 1957<br>3   | 11 09 2275<br>11 09 3563<br>3   | 11 09 2357<br>11 09 2656<br>3   | 11 09 2873<br>11 09 3404<br>3 |

## Shell vials, 2ml

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
| 32 x 11.6 mm  |   |   |   |   |   |   |   |   |
| 11 14 1189<br>11 14 1265<br>3   | 11 14 1655<br>11 14 1694<br>3   | 11 19 0932<br>11 19 1021<br>3   | 11 19 1216<br>3   | 11 19 1706<br>11 19 3598<br>3   | 11 19 1205<br>11 19 1516<br>3   | 11 14 0544<br>8   | 11 14 0545<br>8   |   |

## Screw neck ND8, small opening

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
| 32 x 11.6 mm  |   |   |   |   |   |   |   |   |
| 11 09 0210<br>11 09 2175<br>2, 19   | 11 09 0259<br>2, 19   | 11 09 0419<br>2   | 11 09 0382<br>11 09 2190<br>2   | 11 09 0417<br>2   | 10 09 0743<br>4   | 10 09 1196<br>4   | 10 09 1197<br>4   |   |

## Screw neck ND10, wide opening

## Aluminum crimp caps, centre hole



| Size             | 8 mm             | 11 mm                         | 13 mm                         | 20 mm                         |
|------------------|------------------|-------------------------------|-------------------------------|-------------------------------|
| Size centre hole | 4 mm centre hole | 5.5 mm centre hole            | 6 mm centre hole              | 10 mm centre hole             |
| Material         | Aluminum         | Aluminum                      | Aluminum                      | Aluminum                      |
| Lacquer          | Clear            | Clear, red, blue, green, gold | Clear, red, blue, green, gold | Plain, red, blue, green, gold |

## Special aluminum crimp caps



| Size        | 11 mm           | 13 mm                         | 13 mm                         | 20 mm                         | 20 mm                         | 20 mm          |
|-------------|-----------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|----------------|
| Type of cap | Centre hole cap | Centre tear off cap           | Complete tear off cap         | Centre tear off cap           | Complete tear off cap         | Headspace cap* |
| Material    | Aluminum        | Aluminum                      | Aluminum                      | Aluminum                      | Aluminum                      | Aluminum       |
| Lacquer     | clear           | clear, red, blue, green, gold | clear          |

\*Headspace cap: This cap has the function of a pressure release cap and is designed with special scorelines whose bridges break open at an internal vial pressure of  $3.0 \pm 0.5$  bar to let the excess pressure escape. It is comparable with the three component PerkinElmer headspace closure (Aluminum crimp cap with slits, metal star washer, liner with ears) which offers the same effect with a different technical design.

## Magnetic caps, centre hole



| Size             | 9 mm screw cap                        | 11 mm crimp cap           | 20 mm crimp cap       | 20mm crimp cap        | 20 mm bimetal crimp cap | 18 mm screw cap              | 18 mm screw cap     |
|------------------|---------------------------------------|---------------------------|-----------------------|-----------------------|-------------------------|------------------------------|---------------------|
| Size centre hole | 6 mm centre hole (GC)                 | 5 mm centre hole (GC)     | 5 mm centre hole (HS) | 8 mm centre hole (HS) | 8 mm centre hole (HS)   | 8 mm centre hole (Universal) | Closed top          |
| Application      | PP screw cap blue/ magn. overcap gold | magnetic gold             | magnetic gold         | magnetic gold         | Alu/magnetic red        | (Headspace/SPME)             | Universal screw cap |
| Material         | GC PAL                                | GC PAL,                   | CE HS250/500/         | CTC Combi PAL         | CTC Combi PAL           | magnetic silver              | silver              |
| Lacquer          | Thermo Scientific TriPlus             | Thermo Scientific TriPlus | HS800, CTC 500        |                       |                         | CTC Combi PAL                | PerkinElmer         |
|                  |                                       |                           | Fisons HS250/500/     |                       |                         | Agilent G1888A               |                     |
|                  |                                       |                           | HS800                 |                       |                         |                              |                     |

## PE-caps for crimp necks



| Size             | 8 mm                                | 9 mm                       | 9 mm                      | 11 mm                                | 13 mm                         | 22 mm                                  | 22 mm  |
|------------------|-------------------------------------|----------------------------|---------------------------|--------------------------------------|-------------------------------|--|--|
| Approp. vial     | For crimp neck ND8                  | For 96 block Inserts       | For crimp neck ND8        | For crimp neck and snap ring ND11    | For crimp neck ND11           | For HS neck ND20                       | For crimp neck ND20                                |
| Size cap         |                                     |                            |                           |                                      |                               |  |  |
| Size centre hole | 8 mm with thinned penetration point | 9 x 5.9 mm 4mm centre hole | 9 x 5.9mm 4mm centre hole | 11 mm with thinned penetration point | 13 x 7.5 mm 4.5mm centre hole | 22 x 8.4mm 4.3 mm centre hole          | 22 x 9.1 mm 4.3 mm centre hole or 8 mm centre hole |
| Material, color  | PE, blue                            | PE, red                    | PE, transparent           | PE, blue                             | PE, transparent               | PE, transparent only for bevelled tops | PE, transparent only for flat DIN Crimp Necks!     |

## Screw caps



| Size             | 8 mm                         | 9 mm   | 10 mm                         | 13 mm                         | 15 mm                         | 18 mm                         | 20 mm                      | 24 mm                         |
|------------------|------------------------------|--|-------------------------------|-------------------------------|-------------------------------|-------------------------------|----------------------------|-------------------------------|
| Approp. vial     | Screw neck vials ND8         | Short thread vials ND9                                 | Screw neck vials ND10         | Screw neck vials ND13         | Screw neck vials ND15         | Screw neck vials ND18         | Screw neck vials ND20      | Screw neck vials ND24         |
| Thread           | 8-425 thread, closed or open | Short thread, closed or open                           | 10-425 thread, closed or open | 13-425 thread, closed or open | 15-425 thread, closed or open | 18-400 thread, closed or open | 20-400 thread, closed top, | 24-400 thread, closed or open |
| Cap design       |                              |  |                               |                               |                               |                               |                            |                               |
| Size centre hole | 5.5 mm centre hole           | 6 mm centre hole                                       | 7 mm centre hole              | 8.5 mm centre hole            | 9 mm centre hole              | 12 mm centre hole             | 12.5 mm centre hole        | 12.5 mm centre hole           |
| Material, color  | PP, black or white, pink     | PP, black, transparent, blue, red, yellow, green, pink | PP, black                     | PP, black                     | PP, black                     | PP, black                     | PP, white                  | PP, white                     |

## PE-plugs for shell vials



| Size                  | 8 mm               | 8 mm               | 8 mm                                     | 8 mm   | 8 mm  | 12 mm                            | 15 mm                            |
|-----------------------|--------------------|--------------------|--|--|---|----------------------------------|----------------------------------|
| Vial/plug combination | Plug of 08 14 0641 | Plug of 08 14 0904 | Lamella Plug of 08 14 3963 or 08 14 3964 | Plug of 08 14 0513 or 08 14 0595                         | Plug of 08 14 1168 or 08 14 1169                            | Plug of 11 14 0544 or 11 14 0545 | Plug of 15 14 0548 or 15 14 0562 |
| Plug size             | 6 mm               | 8 mm               | 8 mm PE, transparent                     | 8 mm   | 8 mm  | 12 mm                            | 15 mm                            |
| Material, color       | PE, transparent    | PE, blue           |  | PE, transparent with insertion barrier for micro-inserts | PE, transparent without insertion barrier for micro-inserts | PE, transparent                  | PE, transparent                  |
| Special features      |                    |                    |  |  |   |                                  |                                  |

## Snap ring caps



| Size         | 11mm  |
|--------------|---|
| Approp. vial | Snap ring vials ND11                          |
| Cap design   | open top                                      |
| Size         | 6 mm centre hole                              |
| Material     | PE  |
| Color        | transparent*, blue*, red, yellow, green, pink |

## Snap caps



| Size         | 18 mm               | 22 mm               |
|--------------|---------------------|---------------------|
| Approp. vial | Snap cap vials ND18 | Snap cap vials ND22 |
| Cap design   | closed top          | closed top          |
| Size cap     | 19.8 x 5.2 mm       | 23.5 x 5.5 mm       |
| Material     | PE                  | PE                  |
| Color        | transparent         | transparent         |

\*Available as a hard or soft PE caps

Hard cap: tighter, but not so easy to push on or to remove

Soft cap: convenient in handling, but not as tight

# Resources for chromatographers



## Chromatography resource center

Our web-based resource centers provide technical support, applications, technical tips and literature to help move your separations forward.

For more information visit [thermofisher.com/chromatography](https://thermofisher.com/chromatography)



## Technical support

For support, please visit [thermofisher.com/chromexpert](https://thermofisher.com/chromexpert)



## How to order

### Order processing

(for orders, delivery times of open orders, etc.):

Telephone: +49 (0) 24 23 / 94 31

Email: [order.led.delan@thermofisher.com](mailto:order.led.delan@thermofisher.com)

### Accounts department

(for payments, reminders, etc.):

Telephone: +49 (0) 24 23 / 94 31-14

+49 (0) 24 23 / 94 31-420

+49 (0) 24 23 / 94 31-313

Email: [accounting.lpp@thermofisher.com](mailto:accounting.lpp@thermofisher.com)

### Minimum delivery quantities

Vials/seals/septa: 1,000 pieces

Filters/syringes: 100 pieces

GC injection port septa: 25 pieces

Capillary connectors: 10 pieces

(for connectors for 2 columns)

1 piece

(for connectors for 3 columns)

Crimpers/decappers: 1 piece

2in1 kits: 10 pieces

Vial racks/storage boxes: 1 piece

Storage boxes (16 cavities): 5 pieces per color

The minimum order quantities are independent from the packaging units indicated underneath all products.

Minimum order value: 250.00 €

Our goods are excluded from exchange, legal regulations remain unaffected hereof.

### Pricing and quotation

Pricing and quotation can be provided by your local commercial manager.



Learn more at [thermofisher.com/chromatographyconsumables](https://thermofisher.com/chromatographyconsumables)