SGE Analytical Science By TRAJAN

Syringe Brilliance

Diamond Syringes

- Increased operational smoothness
- Reduced carryover, adhesive contamination, and sample interaction
- Each plunger is individually fitted to each syringe for perfect sealing

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Diamond Syringes

Syringe Brilliance

Are There Diamonds in Your Laboratory?

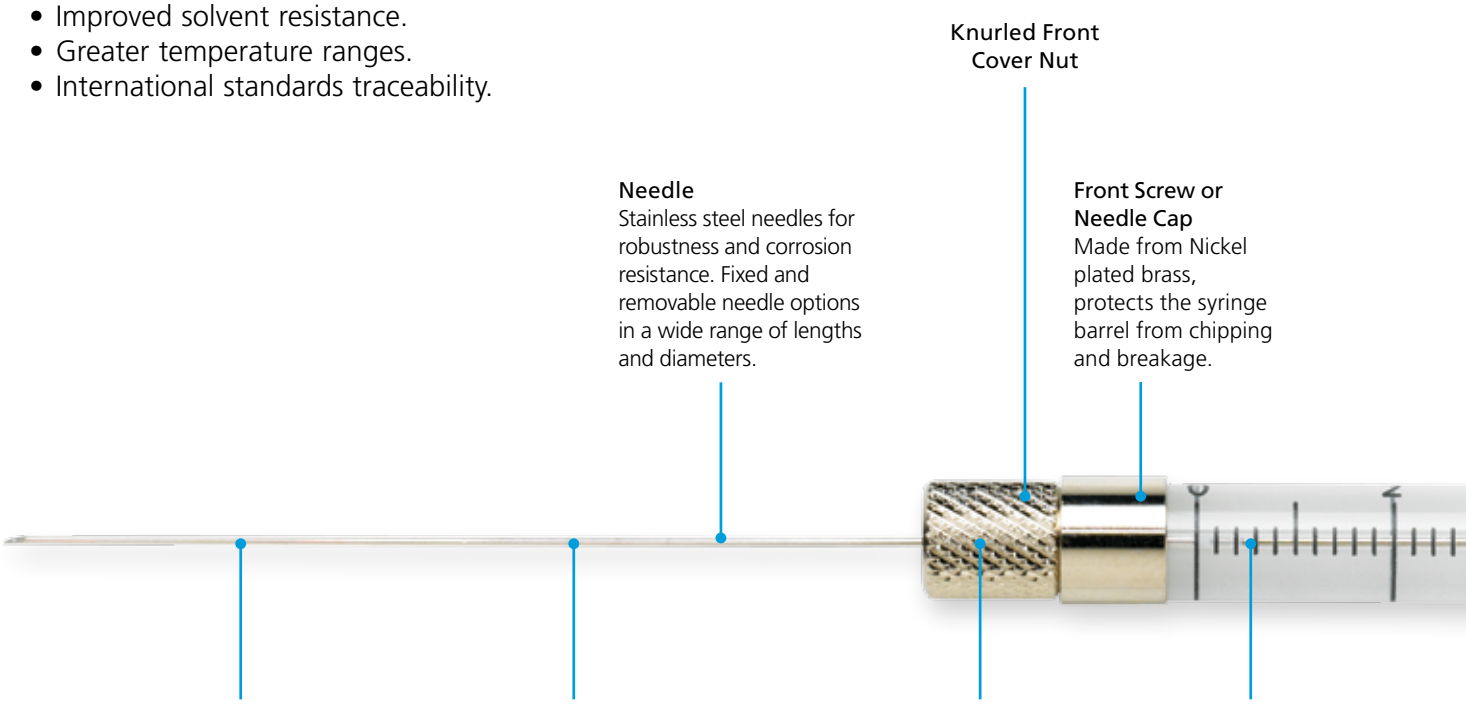
SGE Analytical Science Diamond Syringes offer a never before seen level of durability, clarity and accuracy in the laboratory.

The comprehensive range includes options suitable for gas and liquid samples in various applications including precise liquid handling, HPLC, GC, life sciences and clinical research.

No other syringe range provides such brilliance.

Features and Benefits

- Longer syringe life.
- Improved solvent resistance.
- Greater temperature ranges.
- International standards traceability.



Diamond Syringe Range

The SGE Diamond Syringe range includes manual, autosampler and instrument compatible syringes in a range of capacities, syringe terminations, needle length and needle tip styles.

Manual syringes feature a variety of configurations, including: fixed and removal needles, Luer Tips and Luer Locks, SuperfleX® flexible plunger, guided plunger, PTFE tipped plunger (gas tight), NanoVolume.

A wide range of autosampler syringes with fixed needle and removable needle options are available for Agilent, CTC, PerkinElmer, Shimadzu, Thermo Scientific, and Varian/Bruker autosamplers. Syringes with PTFE tipped replaceable plungers are also available.

Compatible syringes are also available for eVol® XR, MEPS® and many autosamplers, dispensers and pumps.

Backing Strip and Scale
Bright white backing with black scale markings on manual syringes for accurate reading of the syringe scale.

Autosampler syringes have colored backing strip, distinguished by volume for easy identification of installed syringes.

Barrel
Made from borosilicate glass for robustness and solvent resistance.

Back Flange
Shape provides stability and prevents syringe rolling away, made from nickel plated brass to resist fracture.

Plunger Protection
Guides the plunger into the syringe. Helps to prevent plunger bending.

Plunger Button
Designed for easy syringe use or to fit appropriate autosampler.

The Diamond Mark
The mark of syringe brilliance.

Plunger Stem

Diamond Syringes
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Durability

Superior robust design delivers longer syringe life with an improved cycle life up to ten times that of a similar competitor's syringe.

- Syringe barrels made from borosilicate glass for robustness and excellent solvent resistance.
- Stainless steel needles for corrosion resistance.
- Metal back flange with flat sides prevents syringe rolling off benches.
- Metal cap on fixed needle syringes protects the syringe barrel from chipping and breakage.
- Plunger protection on 5 µL and 10 µL syringes helps prevent plunger bending during injection.

Glass Surface Technology

The smoother internal glass surface of SGE Diamond Syringes dramatically improves syringe life by reducing wear on the plunger.

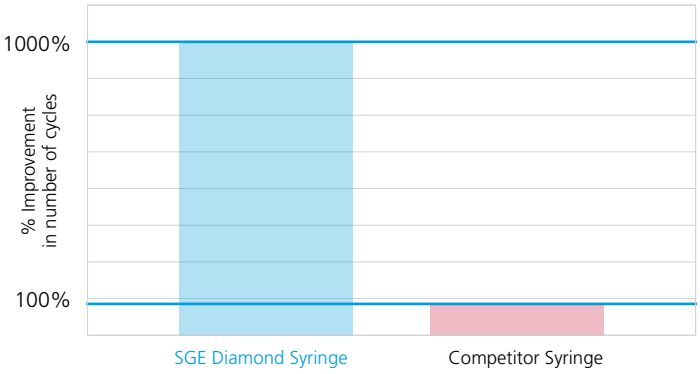
Smoother Internal Surface

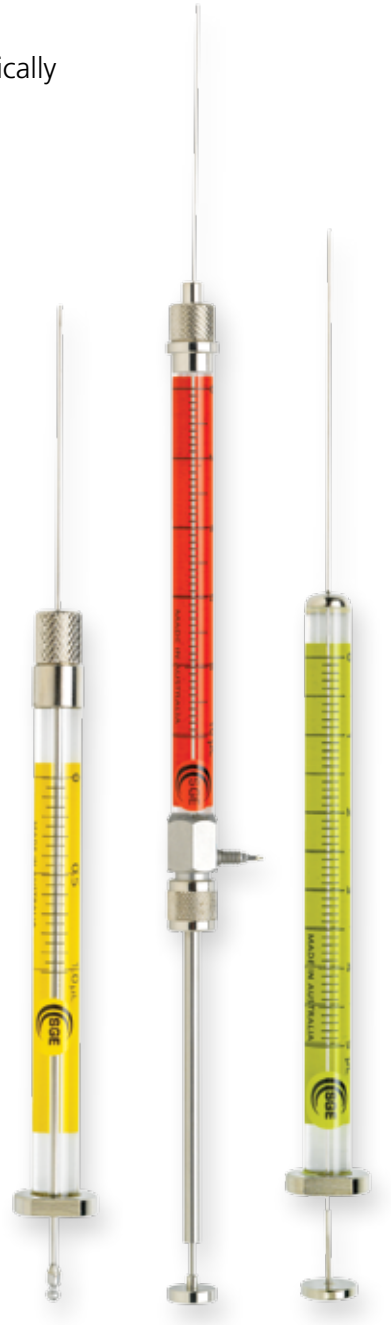
SGE Diamond Syringe

Competitor Syringe

Internal glass surface of syringes at 20 x magnification.

10 Times Longer Syringe Life





Clarity

SGE Diamond Manual Syringes have a bright white backing with contrasting black print for maximum readability and ease of use. The operator can easily see the scale ensuring the correct volume is delivered every time.

SGE Diamond Instrument Syringes are color coded by capacity, enabling easy identification when installed.

Color Code for SGE Diamond Instrument Syringes

Color	Syringe Volumes			
Yellow	1000 nL (1 µL)		1 mL	1000 mL (1 L)
Lime	5000 nL (5 µL)	5 µL	5 mL	
Dark Orange		10 µL	10 mL	
Green		25 µL	25 mL	
Purple		50 µL	50 mL	
Aqua		100 µL	100 mL	
Grey		250 µL	2.5 mL	2000 mL (2 L)
Light Orange	500 nL (0.5 µL)	500 µL		500 mL (0.5 L)

Diamond Syringes
Syringe Brilliance

Accuracy

The SGE Diamond design reduces carryover, adhesive contamination, and sample interaction.

Syringes are designed to meet the critical specifications required by instrument manufacturers.

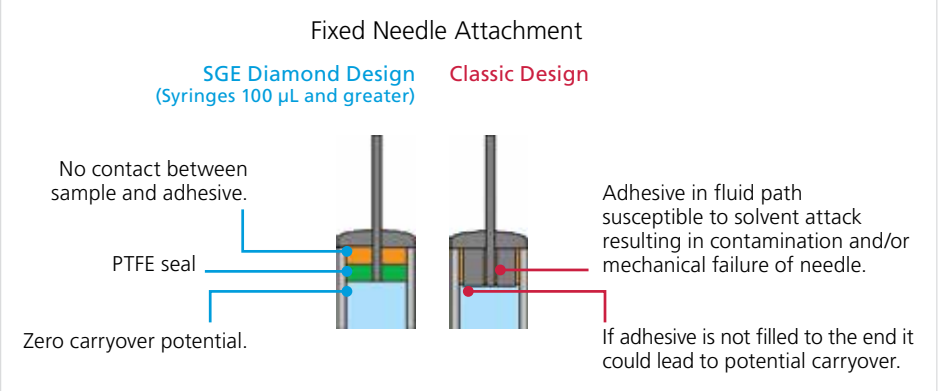
The needle attachment design eliminates areas where fluid could become trapped and potentially cause carryover.

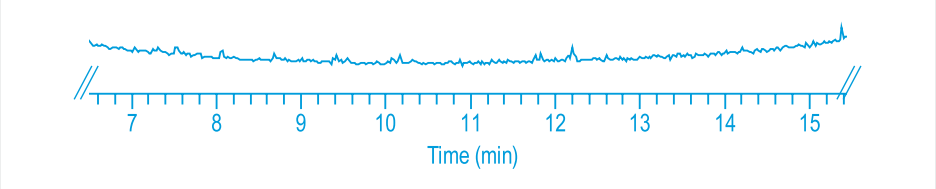
A closer fit between plunger tip and PTFE seal at the zero position, a tighter fit between the PTFE seal and the glass barrel, and an improved fixed needle attachment all help to reduce carryover.

Risk of sample interaction with adhesive is reduced as there is no contact with the fluid path. This also increases durability of the syringe as it is not prone to solvent attack.

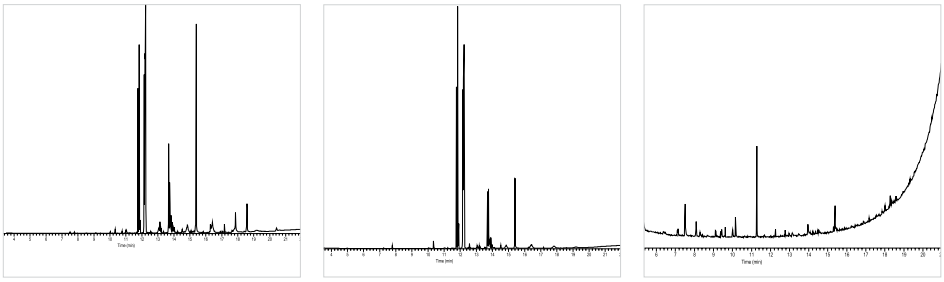
The first GC-MS trace on the right shows no adhesive contamination with SGE Diamond Syringe, compared to other syringes currently available as shown in the other GC-MS traces.

SGE Diamond Syringes show reduced carryover compared to other syringes, so less flushing is required between uses.

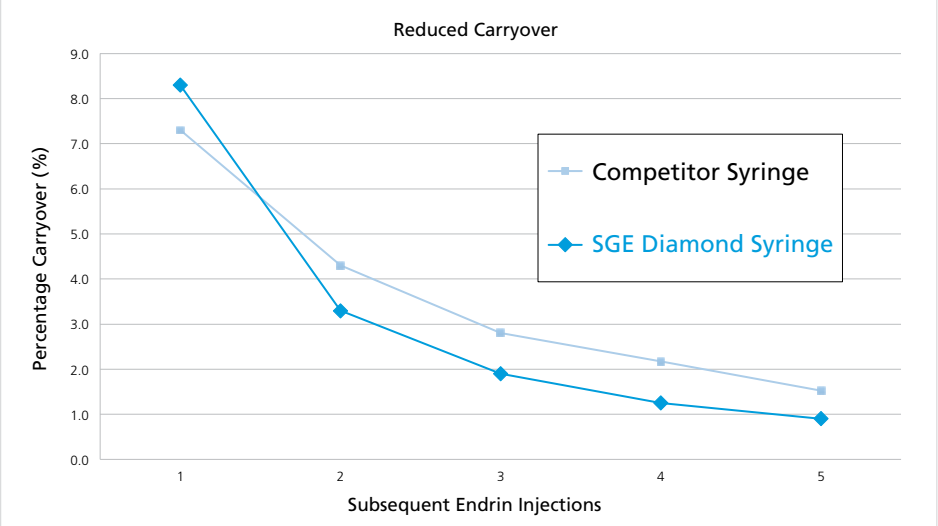




SGE Diamond Syringe shows no adhesive contamination

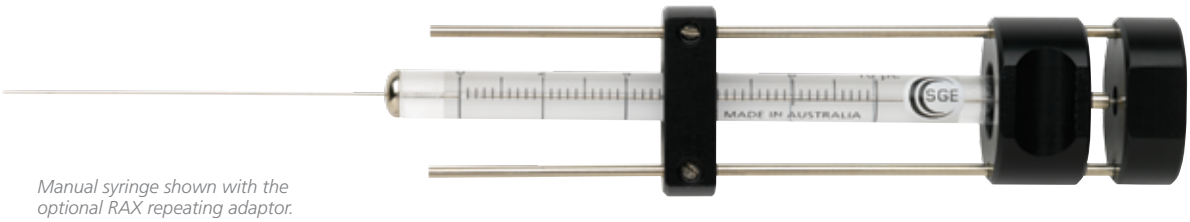


GC-MS traces from three syringes currently available in the market showing peaks identified as being components of adhesives.



Each plunger is fitted individually to each syringe for perfect sealing.

Use a repeating adaptor, RAX, to ensure reproducibility of sample volumes with repeatedly accurate and precise dispensing.



Manual syringe shown with the optional RAX repeating adaptor.

Functional Packaging

SGE Diamond Syringe packaging is designed to make it easy to find the syringe you need.

- Clear window for quick identification of syringe and volume.
- Protective packaging is 100% recyclable.

Reduce potential carryover and dead volume for a new level of accuracy in the laboratory

Diamond Headspace Syringe

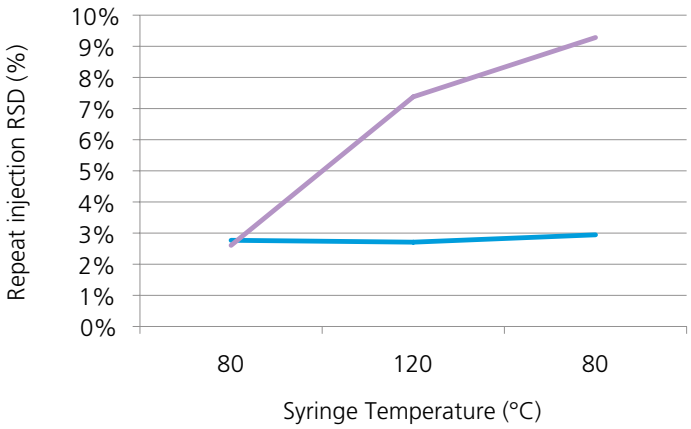
Higher Limits in Headspace Analysis

SGE Diamond Headspace Syringes offer outstanding reproducibility maintained during temperature cycling and highest operating temperature, saving time and improving analysis workflow.

Don't Limit Your Headspace Analysis

Some headspace syringes may perform poorly when used at high temperatures or cycled through high temperature. Common problems experienced with headspace analyses due to poor syringe performance include: syringe plunger tips failing; leaking syringes; needles detaching; additional sample flushing caused by to high syringe carryover; poor reproducibility of results.

Outstanding Reproducibility

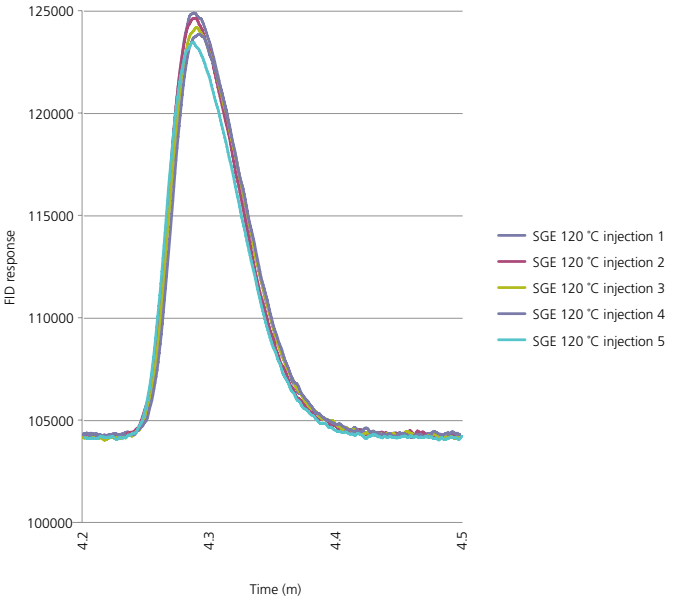


The energized plunger tip design ensures a gas tight seal is consistently maintained providing outstanding performance (%RSD) with temperature cycling and high operating temperatures.

SGE Diamond Headspace Syringe

Competitor Syringe

RSDs of 5 injections at sequential temperatures using SGE Diamond Headspace Syringes compared to another available headspace syringe brand.

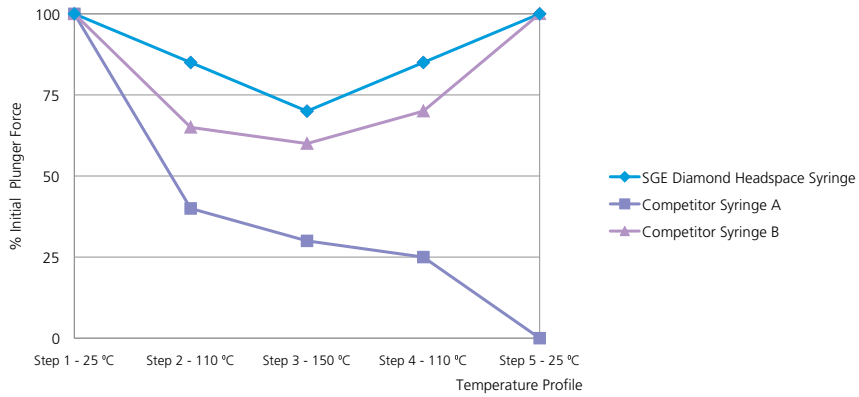


System:	Agilent 6890 GC with CTC PAL autosampler with Headspace system
Phase:	25 m 250 µm ID 0.25 µm BPX5 column
Sample:	10 ppm Hexane:Water sample incubated at 80 °C
Initial Temp:	40 °C
Rate 1:	20 °C / minute
Final Temp:	100 °C
Detector Type:	FID, 250 °C
Carrier Gas:	He
Injection Port Temp:	140 °C

Reproducibility of Results with SGE Diamond Headspace Syringe across 5 injections at 120 °C

Highest Operating Temperature

SGE Diamond Headspace Syringes maintain performance up to 150 °C and continue to perform with temperature cycling resulting in an increased headspace syringe lifetime.



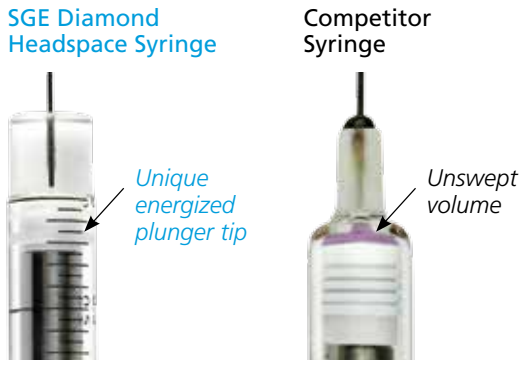
Headspace Syringe Plunger Seal Temperature Cycling Performance.

The PTFE plunger tip in Diamond Headspace Syringes enables the use of a broader range of samples and solvents compared with polymers used in plungers of other high temperature syringes, this provides greater flexibility for your headspace analyses and a longer lasting syringe.

Save Time and Improve Headspace Analysis Workflow

Consistent performance up to 150 °C enables workflow improvements, by avoiding the need for transfer lines or a dedicated headspace autosampler.

Diamond Headspace Syringes do not require extended equilibration time unlike other headspace syringes, and reduced carryover reduces the need for flushing and washing of syringes, saving time.

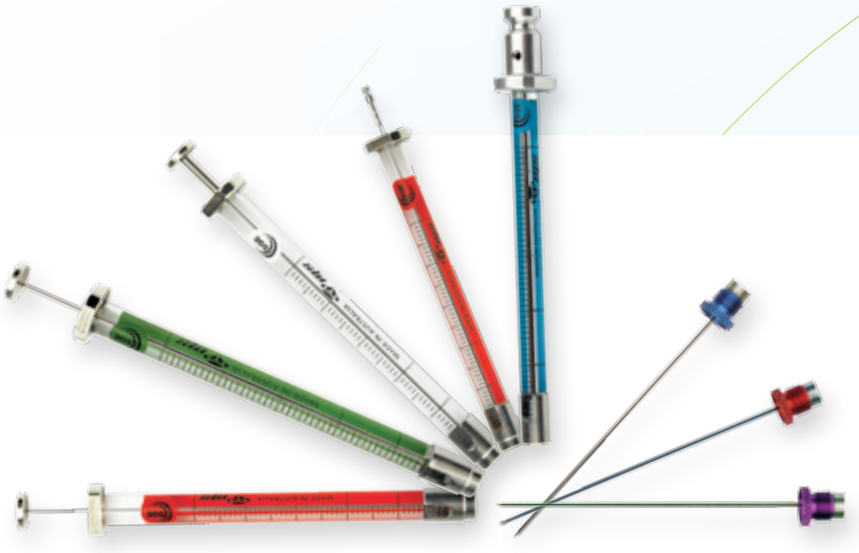


SGE Diamond Headspace and competitor's syringe shown with plungers at the zero position.

No dead space in the Diamond Headspace Syringe means the sample is completely swept from the barrel.

Diamond MS Syringes

The Choice for Sensitivity

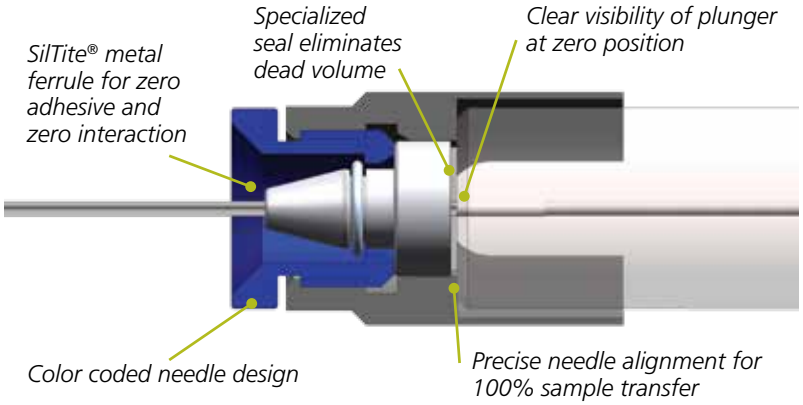


SGE Diamond MS Syringes are engineered to be MS-ready for precious samples and improve the sensitivity of your MS results. With the lowest syringe carryover, reduced non-specific sample interaction and increased analyte recovery, it is easy to choose a Diamond MS Syringe and Ultra Smooth needle to suit your application.

Diamond MS Syringe Design

The unique design of Diamond MS syringes and removable needles ensures carryover is reduced to levels lower even than the best fixed needle syringes available.

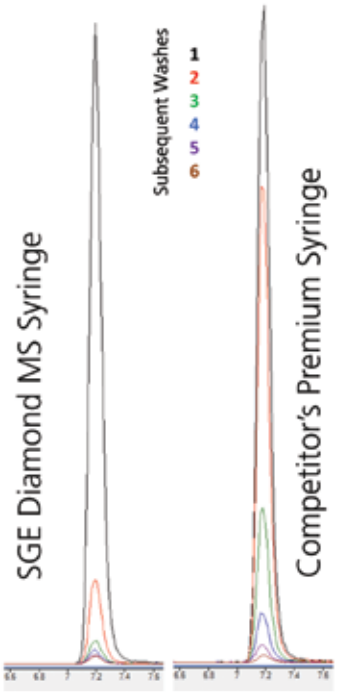
In the event of needle damage, Diamond MS needles provide a cost effective alternative to purchasing an entire fixed needle syringe.



Unbeatable Cleanability

Diamond MS syringes have unbeatable cleanability thereby further reducing carryover.

HPLC–MS Traces Showing Subsequent Washes of a Syringe Contaminated with Reserpine



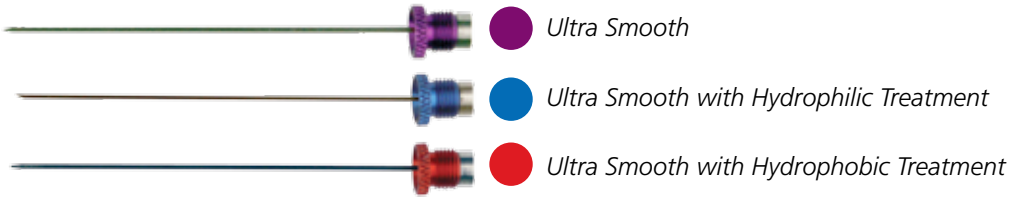
Reduced Non-specific Interaction and Increased Sample Recovery

Anything in the sample flowpath can interact with your sample and impact results, so Ultra Smooth needles have been designed to reduce non-specific interaction between your sample and the needle.

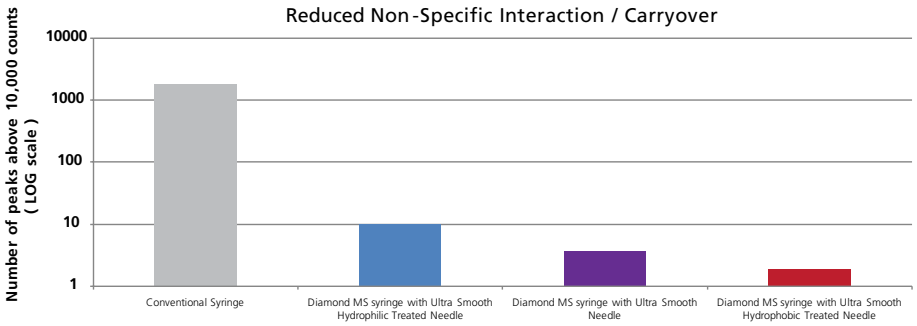
To further reduce potential non-specific interaction, two needle treatment options are available to avoid sample interactions due to hydrophilicity and hydrophobicity.

The unique treatment is extremely stable, even at temperatures up to 350 °C. Unlike some competitor's products, SGE Ultra Smooth needles do not have a glassy coating which would typically fill the valleys of a metal surface, be alkali affected, and can undesirably act like a phase (similar to a capillary column).

Three Ultra Smooth needles available for you to choose based on your sample properties:



Clean syringes were washed 6 times with neat methanol, each wash was collected. Samples were then placed in an Eksigent Tempo LC system and the loading pump (50 % methanol/0.1 % Formic acid/water) used to infuse (initial flow of 2 µL/min then reduced to 0.5 µL/min for analysis) via a nanospray III ion source into an AB Sciex QTRAP 5500. Spectra were collected for a positive EMS scan of 100-1000 amu.



Diamond MS syringes are 100 times more sensitive than a conventional syringe.

The Choice for Sensitivity

How to choose your MS-ready syringe and needle for improved sensitivity:

1. Choose a manual syringe or one specifically designed for your instrument.
2. Select the syringe capacity.
3. Choose the needle geometry – LC or GC injections, tip design and needle dimensions.
4. Choose which Ultra Smooth needle best suits your application.

Diamond Syringes

Syringe Brilliance

SGE Analytical Science (SGE) is a world renowned brand for components and consumables used in scientific analysis.

Primarily in the field of scientific glass engineering for liquid handling and separation science, since its beginnings in 1960, SGE has become the global market leader in niche areas such as autosampler syringes and GC inlet liners.

Completing the transition into Trajan after acquisition in 2013, SGE products make up a solid foundation of Trajan's portfolio and will continue to be created and supported by Trajan customer service and distribution networks worldwide.

For more information visit www.sge.com or contact techsupport@sge.com.

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