fisherbrand

CHROMATOGRAPHY

Focus on vials, closures & chemicals

Delivering convenience, quality and choice to help chromatographers achieve more reliable and efficient sample analysis

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part of Thermo Fisher Scientific

Meet the Fisher Scientific Family

Like you, we constantly marvel at the wonders all around us, and within us, that deepen our devotion to the world of science. For over 50 years we've poured that same endless passion into creating and continually refining the Fisherbrand™ portfolio: value-packed products that make your lab life easier – every day when it matters most.

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- Lab Essentials
- Consumables
- Equipment and Instruments
- Safety

In addition to the extensive Fisherbrand range, Fisher Scientific is your partner of choice for chemicals and bioreagents. Fisher Chemical and Fisher BioReagents deliver convenience, quality and consistency and are the leading provider of chemicals and bioreagents to many research sectors, such as academia, pharmaceuticals, biotechnology and healthcare.

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fisherbrand Fisher Chemical Fisher BioReagents®

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New products are constantly being introduced into the Fisherbrand family
For the full range visit www.eu.fishersci.com/go/fisherbrand

This application brochure is dedicated to providing you with a comprehensive selection of key Fisherbrand items from our extensive chromatography consumables portfolio. It features a range of vials, closures and crimpers for GC, HPLC and headspace analysis as well as essential solvents, blends and reagents from Fisher Chemical.

If, however, you are unable to find the right product or simply need some further information then please contact our Product Support Advisors.

Check out our Frequently Asked Questions

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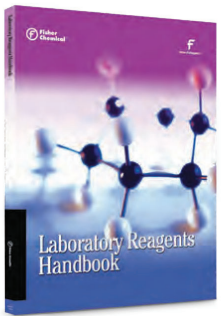
Laboratory Reagents Handbook

For a fuller range of Fisher Chemical and Fisher BioReagents, please refer to our Laboratory Reagents handbook.
This handbook features...
For the analytical chemist:

- Over 4400 Fisher Chemical products dedicated to many analytical applications, including Optima™ LC/MS grade solvents and high purity acids for trace elemental analysis
  - Colour coded applications
  - Physical & chemical data
  - Hazard, packaging and storage information
  - Detailed specifications

For the life scientist:

- A dedicated section relating to four key application areas
  - Protein chemistry
  - Molecular biology
  - Cell biology
  - Core bioreagents



Fisher Chemical

Fisher BioReagents®

Electronic version on www.eu.fishersci.com

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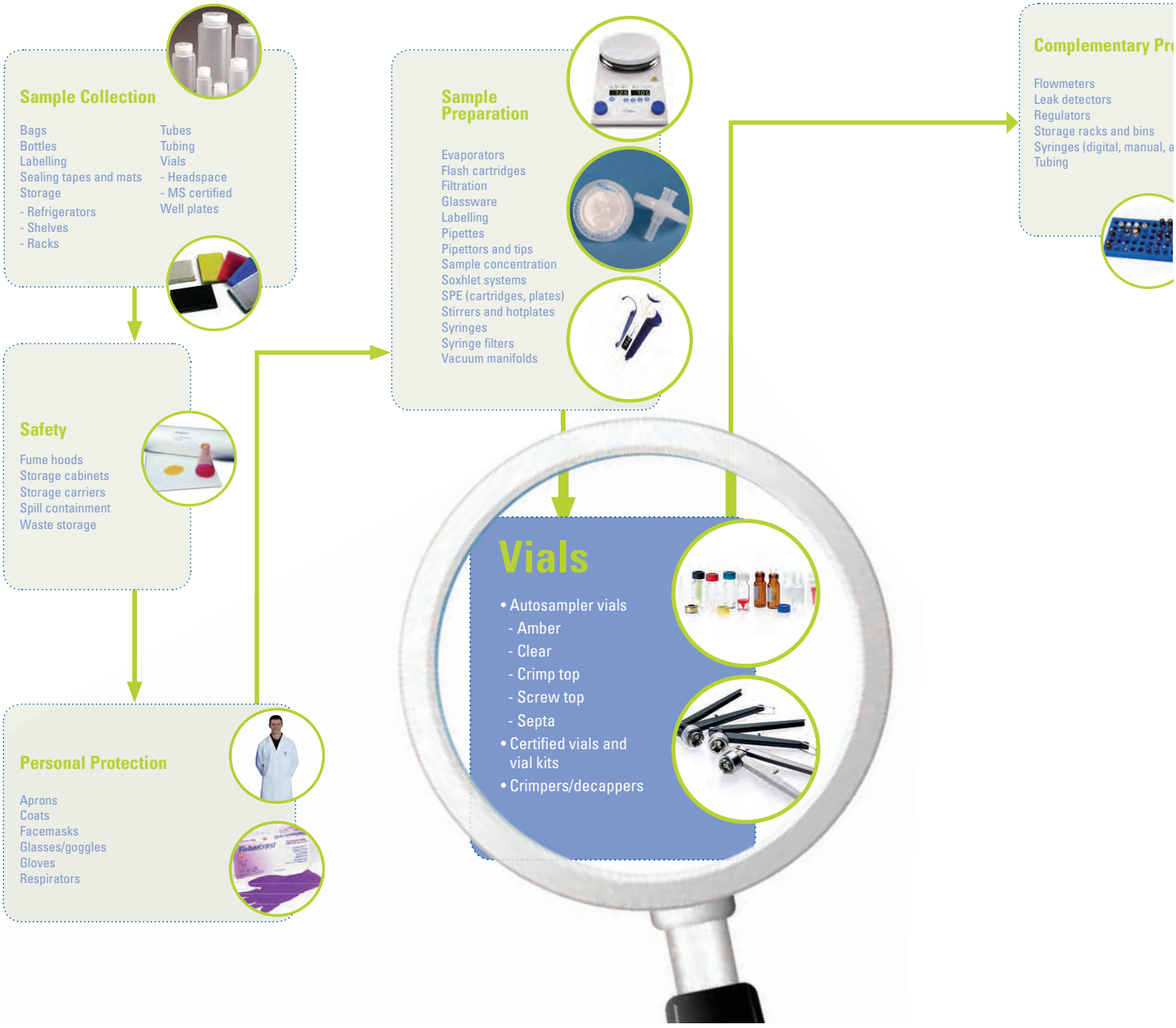
Sample Collection
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General Introduction to Chromatography

The term 'chromatography' is derived linguistically from the Greek roots chroma and graphe, and literally means "colour writing". It was invented by a Russian botanist, Mikhail Tsvet in the early 1900's, who used it for separating the pigments that make up plant dyes. Most people will probably remember their first introduction to chromatography at school with a marker pen and a piece of filter paper. In this experiment, the marker pen is used to draw a line or a spot on the filter paper which is then dipped in water or another solvent. The solvent then slowly creeps over the surface of the paper separating out the different coloured component dyes as it does so (refer to Fig. 1).

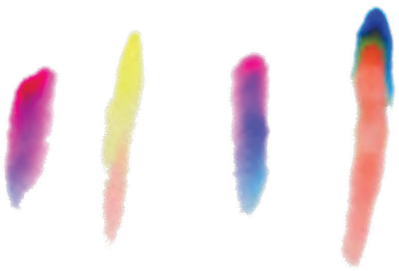


Fig. 1 Using chromatography to separate the components of coloured marker pens

There are many different types of chromatography, though all of them work on the same principle, that is, the mixture to be separated is dissolved or dispersed in a carrying medium (a liquid or gas) which is then made to travel through or over a static medium (which can be either a solid or coated solid) in order to effect its separation. The carrying medium is referred to as the mobile phase, whereas the static medium is called the stationary phase. The components of the sample are separated out by virtue of their differing degrees of chemical or physical interactions or affinities with the mobile and stationary phases.

Chromatography can be analytical or preparative. Analytical chromatography is used to determine the existence and possibly also the concentration of components of complex mixtures. Preparative chromatography, however, is used to purify sufficient quantities of a substance for further use, rather than primarily for the purposes of its analysis. As such preparative chromatography can be considered a specialised form of purification.

Chromatography can also be differentiated by virtue of the bed shape or configuration of the stationary phase, i.e. planar, or else columnar in a column or tube.

Planar chromatography is a separation technique in which the stationary phase is presented as a plane. The plane can be paper (plain or impregnated) as in paper chromatography, or else a layer of solid particles spread on a support such as a glass plate as in Thin Layer Chromatography (TLC). Different analytes or compounds in the sample mixture travel different distances through the plane according to how strongly they interact with the stationary phase as compared to the mobile phase. Paper chromatography is still a powerful teaching technique, whereas TLC is still valuable as a quick and simple tool for the analysis of sample mixtures, especially pigmented ones.

Column chromatography, on the other hand, is a separation technique in which the stationary bed is held within a tube or column. Particles of a solid stationary phase (or a support coated with a liquid stationary phase) may fill the whole inside volume of the tube (packed column) or be distributed as a hollow cylinder just inside the column walls, leaving an open, unrestricted path for the mobile phase in the central core of the tube (open tubular column). Column chromatography can be used as a separation technique for qualification, quantification or purification. There are several different types of liquid column chromatography. Gel filtration, or size exclusion chromatography, is commonly used to separate proteins, peptides or oligonucleotides on the basis of their size, and is used for analysis of molecular weight, for compound separation or for salt removal or buffer exchange. Ion-exchange chromatography, on the other hand, relies on charge-charge interactions between the sample components in the mobile phase and with charges immobilised on a stationary resin, and is also used typically for protein purification. Affinity chromatography, is a separation method based on a highly specific interaction between an immobilised ligand and a binding site, for example, antigen/antibody, enzyme/substrate, or receptor/ligand pairings. It is also used principally for protein purifications. Finally, High Performance Liquid Chromatography (HPLC) is a technical refinement in which the mobile phase is pumped into the column at a defined, high pressure.

HPLC columns are packed with a stationary phase composed of irregularly or spherically shaped particles, a porous monolithic layer, or a porous membrane. Liquid Chromatography-Mass Spectrometry (LC-MS) is simply an HPLC system combined with a mass spectrometry detector, an excellent technique for the assessment of purity.

Gas Chromatography (GC) is an analytical separation technique used to analyse volatile substances in a gas mobile phase. In gas chromatography, the sample is first dissolved into a liquid solvent which is then vapourised into a mobile, inert carrier gas phase (normally helium or nitrogen). Sample separation is achieved by virtue of component distribution between the mobile carrier gas and a stationary phase used to pack the heated column. Gas chromatography is one of the only forms of chromatography that does not utilise the mobile phase for interacting with the compound. The stationary phase is either a solid adsorbent, designated gas-solid chromatography (GSC), or a liquid on an inert support, designated gas-liquid chromatography (GLC). GC is therefore an ideal tool for the analysis of gas and liquid samples containing many hundreds or even thousands of different molecules, allowing the identification of both the types of molecular species present and their concentrations. The technique can be used forensically in drugs or explosives detection and analysis, and is invaluable in the analysis of pharmaceuticals and their intermediates, blood alcohols and other metabolites, essential oils and a variety of other food products.

Therefore, to summarise, chromatography is a powerful method used for separating complex mixtures with great precision so that they can be purified, analysed and studied such that even very similar components, such as proteins that may only vary by a single amino acid, can be resolved. In fact, chromatography can be used to analyse basically any soluble or volatile substance if the right adsorbent material, carrier fluid, and operating conditions are employed. The conditions under which chromatography are performed are also not normally particularly severe so it can even be used to separate sensitive samples. Furthermore, chromatography is a technique which is able to utilise small samples and low concentrations. It is for all these reasons that chromatography is one of the most powerful analytical tools we have at our disposal in the laboratory, and has therefore found widespread use in a variety of applications such as forensic testing, food regulation, pollution monitoring and for studying complex mixtures in products such as perfume, petrochemicals and pharmaceuticals.

The Fisherbrand range of chromatography products featured in this brochure are focused specifically around our comprehensive portfolio of vials and closures, especially with a view to their compatibility with all autosampler makes and models. We also feature our specialty high purity solvent range, critical ancillary chemicals, and a Fisherbrand supplement of other general laboratory consumables and apparatus essential to your chromatography work. Although our primary focus here is not on our equally extensive range of LC, HPLC and GC columns per se, do not hesitate to contact your local Product Support Advisors who will be only to pleased to assist if this is your specific area of interest.

Vials featured in the following section are packed in a cleanroom environment, providing the highest possible standard of cleanliness for dependable and reliable results. In fact, all Fisherbrand products and Fisher Chemical are always manufactured to the highest possible standards and undergo rigorous quality assurance and testing procedures to ensure that they deliver on our promise of quality, reliability and value time after time.

Chromatography Vials and Closures - an overview

Chromatography vials - an overview

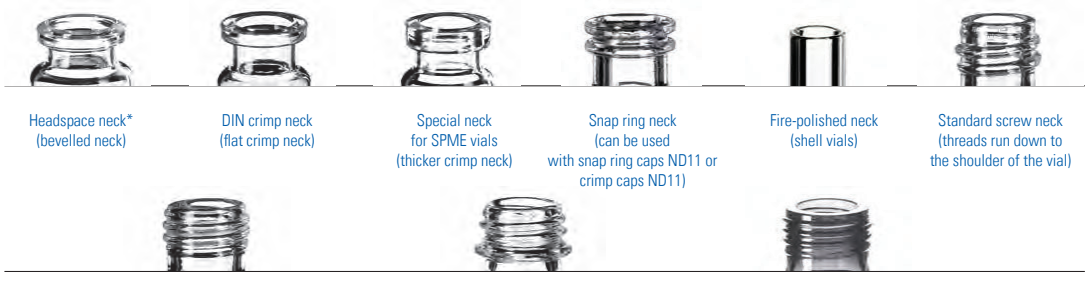
In chromatography, a broad variety of glass or plastic vials are used as containers for sample analysis, collection or storage. Since many vials are used with GC or LC autosamplers or other automated instruments, not only are their physical specifications and dimensions crucial for trouble-free operation, but they also have to fulfill strict requirements regarding inertness and cleanliness such that contamination is minimised and analytical results are not compromised. The range of Fisherbrand vials featured in this brochure meet all these stringent demands in a number of ways.

Firstly, almost all vials are made out of 1st hydrolytic class glass. Hydrolytic class glass is very hard and has a low expansion coefficient even at high temperature variations. It shows excellent chemical resistance to acidic and neutral solutions, and even to alkaline solutions due to its own relatively low alkali content. The higher density of the glass surface also offers a higher hydrolytic resistance. Clear glass of 1st hydrolytic class is differentiated into two types by virtue of their expansion coefficient, namely 33 expansion (Type 1, Class A) and 51 expansion (Type 1, Class B), whereas amber is generally only available as 51 expansion. The lower expansion coefficient of 33 implies that this harder clear glass has to be processed at higher temperatures during its manufacture, i.e. approx. 1,200°C as opposed to only 1000°C for 51 expansion glass. Typically, in the USA, clear 33 expansion and amber 51 expansion is used, whereas in Europe, only 51 expansion glass is processed, although from a quality point of view both types are equally suitable for usage in chromatography. Unless otherwise stated, all autosampler vials offered in this brochure (clear and amber glass) are classified as Type I in accordance with the U.S.Ph. 33th ed. and the European Ph. 7th ed, as well as other Pharmacopoeias or E.P. definitions of type 1 hydrolytic class glass including, for example, the Japanese, Italian and DAB Pharmacopoeias.

Secondly, all vials that carry a CleanPack label on the front side of the polypropylene box have been packed in a certified cleanroom after having passed the annealing oven at approx. 600°C. These exceptionally clean conditions represent established pharmaceutical criteria, but do signify a new standard for chromatography vials, such that a 'CleanPack' label on the box is your guarantee of clean, uncontaminated items for reliable and accurate analyses. Furthermore, vial boxes are packed in tamper-proof shrink-wrapping, with resealable openings to minimise contamination of the contents during usage.

Many vial types are available, and it is important to be able to distinguish them based on the design of their neck and the design of their base (refer to Fig. 2 and Fig. 3).

Fig. 2 Neck design



*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 aluminium 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.

Fig. 3 Base design

Flat bottom | Rounded bottom (HS-bottom) | Round bottom | Conical bottom | Solid glass bottom of a microlitre vial with inner cone | Conical bottom (maximum recovery)

Besides standard glass vials, Fisherbrand can also supply some pre-silanised versions which reduce the adsorption of polar compounds onto the surface, especially important, for example, during critical protein analyses. Other compounds such as amino acids and phenolics can also react with a glass interface, a problem that is minimised when the surface is silanised.

Apart from glass, some specific applications such as atomic absorption, water and protein analysis and capillary electrophoresis require the use of plastic vials. Fisherbrand also offer a broad range of plastic vials and plastic microvials of different materials (PP, TPX).

Finally, if your application demands delivery of pre-sealed vials (i.e., vials that are either already crimped or screw capped), Fisherbrand can supply any type of vial and closure pre-assembled to your requirements, although it should be noted that all components need to be removed from their CleanPack packaging for us to perform this assembly process and thus can no longer be formally designated as ‘cleanroom packed’.

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

Chromatography closures - an overview

Vial closures, also referred to as seals, are the assembled combination of a cap and a septa. To ensure reliable analyses, it is therefore important that all closures are inert and uncontaminated as well as the vial itself. Therefore, Fisherbrand assemble and pack their seals using a fully automated process adhering to stringent manufacturing conditions, thus eliminating potential contamination by any manual human intervention. During this automated sequence, photocells check the placement and orientation of the liner to ensure that the PTFE lamination always faces inwards towards the actual sample. A gauge control also ensures that only one septum is installed (i.e. no more and no less). Seals and their components are also automatically counted during assembly – and not weighed – to ensure that everything tallies. All closures are packed in transparent, PE tamper-evident zip-lock bags for readily visible identification of their contents. The zip-locks are fully resealable, minimising contamination after opening. Closure batch numbers are also clearly printed on the bags for full traceability.

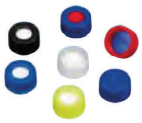
UltraBond seals are specialised closures where the cap and the septa form an inseparable unit without the use of any glue or adhesive which may pose a contamination risk. Instead, this bond is achieved by means of a patented process which actually changes the molecular interface of the cap and the septa surface so that they form a cohesive unit. UltraBond seals also ensure that the septa is not pushed into the vial during needle penetration, even if the needle is very thick and blunt. UltraBond seals come, for example, as 24mm screw thread types for EPA vials or as 9mm short thread versions.

Types of caps

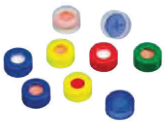
Different closure techniques and/or application requirements necessitate specific cap styles and types. To help you visualise the many different types of cap available, see Figure 4 below.

Fig. 4 Types of caps

Screw caps
(open top/closed top)



Short thread caps
(open top/closed top)



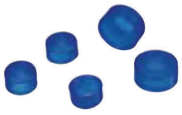
Snap ring caps
(only as open top, hard or soft PE Cap available)

Magnetic short thread caps
(only as open top)

Various UltraBond seals ND9 + ND24

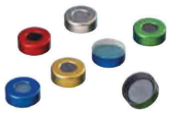
PE plugs
(for shell vials; micro-inserts can be installed in the plug)

Snap caps
(for sample storage containers)

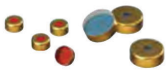


PE push-on caps
ND8 + ND11

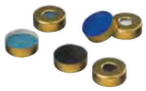
PE caps
(for crimp necks ND8, ND11 + ND20)



Aluminium caps, centre hole

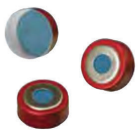


Magnetic crimp caps
(5mm centre hole)



Magnetic crimp caps
(8mm centre hole)

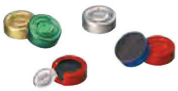
Magnetic screw caps
(8mm centre hole/closed top)



Magnetic bimetal crimp cap
(8mm centre hole)

Headspace caps*
(pressure release caps)

Centre tear-off caps



Complete tear-off caps

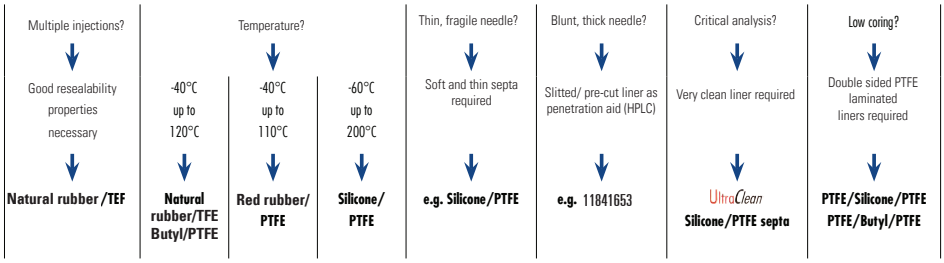
Crimp caps with roll groove

*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 ± 0.5 bar. Thus the excess pressure escapes and the risk of vial explosion is avoided.

Types of 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 guide below will help you to identify the best septa for your particular application.



In order to help you visualise the most common septum material combinations available, refer to Fig. 5, below. Please note, however, that their colours do not necessarily provide an indication of the actual liner material itself.

Fig. 5 Types of liners

*Red rubber/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 compatible with the analytical purity of silicone. Red rubber is a cost effective septa material for routine analysis in GC and 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.

Seal hardness

The hardness testing of many materials, including plastics and rubbers, is most commonly measured by the Shore test (also known as the durometer test). This method measures the resistance of materials toward indentation and provides an empirical hardness value. Shore hardness is the preferred method for rubbers/elastomers and is also commonly used for 'softer' plastics such as fluoropolymers. Most septa hardness values are defined using the Shore Scale A. The results obtained from this test with vial seals are a useful guide to their penetrability, which can help when attempting to select the most appropriate needle gauge for sample withdrawal.

Table 1: Seal hardness in 8mm, 9mm, 11mm, 12mm caps

Seal material	Hardness, °Shore	Thickness (mm)
Aluminium liner	-	0.06
Butyl red/ PTFE grey	55	1.3
Natural rubber red-orange/butyl red/TEF transparent	45	1.0
Natural rubber red-orange/TEF transparent	60	1.0
Natural rubber red-orange/TEF transparent	60	1.3
PTFE grey/butyl red/ PTFE grey	55	1.3
PTFE red/silicone white/PTFE red	45	1.0
PTFE virginal	53	0.25
PTFE virginal	53	0.2
Red rubber/PTFE beige	45	1.0
Silicone beige/PTFE white	45	1.3
Silicone cream/PTFE red	55	1.5
Silicone cream/PTFE red UltraClean	55	1.5
Silicone dark blue translucent/PTFE natural	35	1.0
Silicone dark blue/PTFE white	45	1.3
Silicone white/PTFE blue with slit	55	1.0
Silicone white/PTFE red	45	1.3
Silicone white/PTFE red UltraClean	45	1.3

Table 2: Seal hardness in 16, 18 and 20mm caps

Seal material	Hardness, °Shore	Thickness (mm)	Max. temp, °C
Bromobutyl/PTFE	50	3	120
Butyl red/PTFE grey	55	1.3	-
Butyl red/PTFE grey	55	1.6	-
Butyl red/PTFE grey	55	2.0	-
Chlorobutyl, dark grey	55	3	120
Moulded septa, butyl, dark grey	55	3	120
Moulded septa, butyl/PTFE grey	50	3	120
Natural rubber red-orange/TEF transparent	60	1.3	-
Pharma-fix-septa bromobutyl/PTFE	50	3	120
PTFE red/silicone white/PTFE red	45	1.0	-
Silicone blue transparent/PTFE transparent UltraClean	45	3	200
Silicone blue transparent/PTFE white	45	1.7	200
Silicone blue transparent/PTFE white	45	3	200
Silicone blue transparent/PTFE white UltraClean	45	3	200
Silicone white/aluminium foil	50	3	220
Silicone white/PTFE beige	45	3.2	200
Silicone white/PTFE blue	55	1.5	200
Silicone white/PTFE red	55	1.5	-
UHT silicone dark red/PTFE	45	3	300

Vial certifications

Certifications become more and more important in order to make processes more reproducible and avoid possible sources of errors right from the beginning. For Fisherbrand vials, the highest quality, consistency and quality control are extremely important and are denoted by three incrementally enhanced certification declarations:

Specification Certified

This is a certification and guarantee that Fisherbrand vials and closures meet the strict specification requirements that are essential for autosampler operation. This is achieved by the following measures:

- During the vial manufacturing process, special optoelectronic devices continually monitor their physical specifications (dimensions, etc.) as they go through the production run, and any that fail stringent quality control parameters are automatically rejected.
- Additional manual in-process controls, plus a final visual inspection according to DIN/ISO standards, also ensure functionality and a 'perfect fit' with the autosampler equipment.
- Regular functional tests further ensure that the vial and its components are fully compatible with the autosampler equipment. Reliable analyses can only be achieved if the entire vial assembly (vial, micro-insert and closure) is viable.

HPLC and GC Certified Kits

Based on the 'Specification Certified' declaration, products further destined for 'HPLC and GC Certified Kits' undergo further testing on 15 critical parameters. This involves a HPLC/UV and GC/MS-test of the vial/closure combination on blank and trace samples in a near-to-reality procedure. Furthermore:

- HPLC and GC Certified Kits are delivered completely shrink-wrapped for safety and security during transport.
- Available as 9mm short thread vial in clear and amber with suitable closure.

LC/MS and GC/MS Certified Kits

Our LC/MS and GC/MS Certified Kits represent Fisherbrand's premium range of certified products. Each lot is tested by LC/MS and GC/MS on blank and trace values. Furthermore:

- Available as clear and amber 9mm short thread vials in the screw-top version for the absolute lowest possible evaporation rate of all autosampler vials.
- Furthermore, the glass surface of these particular screw-top vials possesses very low adsorption characteristics for all types of polar compounds; in fact much lower than 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, optimised for ultra trace analysis.
- LC/MS and GC/MS Certified Kits are delivered completely shrink-wrapped for safety and security during transport.

Characteristics and compatibilities

The tables below (Tables 3, 4 and 5), are for reference purposes only. Many factors affect the physical and chemical characteristics of vials and closures (see Tables 3 and 4 below), but we would kindly remind you that it is your responsibility to do a test under your own conditions to ensure that the product you are using is fully compatible. Table 5, starting on p18, is a comprehensive at-a-glance chart indicating the compatibility of most makes and models of autosampler with the full range of Fisherbrand vials (identified by their catalogue number) as featured in this brochure.

Table 3: Physical characteristics of vial and closure materials

Material abbreviation	Material description	Appearance	Max. temp °C	Min. temp °C	Autoclavable	Dry heat	Gamma radiatable	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
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	Polytetrafluorethylene	White	260	-200	Yes	Yes	Yes	Yes	Yes	Very high	Low	Very hard (very thin)	No resealability
RR	Red rubber/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	Soft to medium	Good
	Viton™	Black	230	-30	Yes	Yes	Yes	Yes	Yes	Medium	Medium	Hard	Low to medium

* Due to hardness and molecular structure (coring) † Needle penetration ‡ In case of multiple injections

Table 4: Chemical compatibilities of vial and closure materials

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 continous use.
S – Surface.
The first letter of each pair applies to minimum temperature conditions; the second to maximum temperature conditions.

Chemical	LDPE	HDPE	PP	PTFE	TPX	Glass
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
Aluminium Hydroxide	EG	EE	EG	EE	EG	SS
Amino acids	EE	EE	EE	EE	EE	EE
Ammonia	EE	EE	EE	EE	EE	SS
Ammonia, 25%	EE	EE	EE	EE	EE	SS
Ammonium glycolate	EG	EE	EG	EE	EG	EE
Ammonium hydroxide, 30%	EG	EE	EG	EE	EG	SS
Ammonium Hydroxide, 5%	EE	EE	EE	EE	EE	SS
Ammonium Oxalate	EG	EE	EG	EE	EG	EE
Ammonium Salts	EE	EE	EE	EE	EE	EE

Chemical	LDPE	HDPE	PP	PTFE	TPX	Glass
Amyl Alcohol	EE	EE	EE	EE	EE	EE
Amyl Chloride	NN	FN	EE	EE	NN	EE
Aniline	EG	EG	NN	EE	GF	EE
Aqua Regia	NN	NN	GF	EE	NN	SS
Arsenic Acid	GF	EG	NN	EE	EE	EE
Benzaldehyde	EG	GN	EE	EE	EG	EE
Benzenamine	EG	EG	EG	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	EG	EE
Benzyl Alcohol	NN	FN	NN	EE	NN	EE
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
Bromobenzene	NN	NN	NN	EE	NN	EE
Bromoform	NN	NN	NN	EE	NN	EE
Butadiene	NN	FN	NN	EE	NN	EE
2-Butanol	EE	EE	EE	EE	EG	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

Table 4: Chemical compatibilities of vial and closure materials, continued

Chemical	LDPE	HDPE	PP	PTFE	TPX	Glass
Calcium Hydroxide	EE	EE	EE	EE	EE	SS
Calcium Hypochlorite	EE	EE	EE	EE	EG	EE
Carbazole	EE	EE	EE	EE	EE	EE
Carbon Disulfide	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
Chloroacetic 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:Sulfuric 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
Dibutylphthalate	--	-N	NN	EE	GG	EE
1,2 Dichloroethane	NN	NN	NN	EE	NN	EE
2,4 Dichlorophenol	NN	NN	NN	EE	FN	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
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
Dimethylsulfoxide (DMSO)	EE	EE	EE	EE	EE	EE
Dioxane	GF	GG	GF	EE	FN	EE
1,4-Dioxane	GF	GG	GF	EE	GF	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 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	EG
Fluorine	FN	GN	FN	EG	FN	FN
Formaldehyde, 10%	EE	EE	EE	EE	EG	EG
Formaldehyde, 40%	EG	EE	EG	EE	EG	EG
Formalin, 10%	EE	EE	EE	EE	EG	EG
Formalin, 40%	EG	EE	EG	EE	EG	EG
Formic Acid	EG	EE	EG	EE	EF	EF
Formic Acid, 3%	EG	EE	EG	EE	EG	EG
Formic Acid, 50%	EG	EE	EG	EE	EG	EG
Formic Acid, 85%	EE	EE	EG	EE	EF	EF
Formic Acid, 100%	EG	EE	EG	EE	EF	EF
Freon TF	EG	EG	EG	EE	FN	FN
Glutaraldehyde	EG	EE	EE	EE	FF	FF
Glycerine (Glycerol)	EE	EE	EE	EE	EE	EE

Chemical	LDPE	HDPE	PP	PTFE	TPX	Glass
Hexane	NN	GF	GF	EE	FN	FN
Hydrazine	NN	NN	NN	EE	NN	NN
Hydrobromic Acid, 4%	EG	EE	EG	EE	EG	EG
Hydrobromic Acid, 48%	EE	EE	EE	EE	EE	EE
Hydrobromic Acid, 69%	--	-N	EG	EE	EE	EE
Hydrochloric Acid, 5%	EE	EE	EE	EE	EG	EG
Hydrochloric Acid, 20%	EE	EE	EE	EE	EG	EG
Hydrochloric Acid, 35%	EE	EE	EG	EE	EG	EG
Hydrogen Peroxide, 3%	EE	EE	EE	EE	EE	EE
Hydrogen Peroxide, 30%	EG	EE	EG	EE	EG	EG
Hydrogen Peroxide, 90%	EG	EE	EG	EE	EG	EG
Iodine crystals	NN	NN	FN	EE	GN	GN
Iodine tincture	EG	EG	GG	EE	NN	EE
Isobutanol	EE	EE	EE	EE	EG	EG
Isopropanol, 100%	EE	EE	EE	EE	EE	EE
Isopropyl Acetate	GF	EG	GF	EE	GF	GF
Isopropyl Benzene	FN	GF	FN	EE	NN	NN
Isopropyl Ether	NN	NN	NN	EE	EE	EE
Lactic Acid, 3%	EG	EE	EG	EE	EG	EG
Lactic Acid, 85%	EG	EE	EG	EE	EG	EG
Mercury	EE	EE	EE	EE	EE	EE
Methanol, 100%	EE	EE	EE	EE	EE	EE
2-Methoxyethanol	EG	EE	EE	EE	EE	EE
Methoxyethyl Oleate	EG	EE	EG	EE	EG	EG
Methyl Acetate	FN	FF	GF	EE	EE	EE
Methyl Ethyl Ketone	NN	NN	EG	EE	NN	NN
Methyl Isobutyl Ketone	NN	NN	GF	EE	FF	FF
Methyl Propyl Ketone	GF	EG	GF	EE	FF	FF
Methylene Chloride	FN	FN	FN	EE	FN	FN
Propane Gas	NN	FN	NN	EE	NN	EE
2-Propanol	EE	EE	EE	EE	EE	EE
Proprionic 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, 1%	EE	GF	EE	EE	EE	SS
Sodium Hydroxide, 10%	EE	GF	EE	EE	EE	SS
Sodium Hydroxide, 50%	GG	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, 6%	EE	EE	EE	EE	EE	EE
Sulfuric Acid, 20%	EE	EE	EG	EE	EG	EE
Sulfuric Acid, 30%	EE	EE	GG	EE	EG	EE
Sulfuric Acid, 60%	EG	EE	EG	EE	EG	EE
Sulfuric Acid, 96%	GG	GG	FN	EE	GG	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
Toluene	FN	FN	FN	EE	FF	EE
Tributyl Citrate	GF	EG	GF	EE	GF	EE
Trichloroacetic Acid (TCA)	FN	FF	FN	EE	EE	EE
1,2,4-Trichlorobenzene	NN	NN	NN	EE	GF	EE
Trichloroethane	NN	FN	NN	EG	NN	EE
Trichloroethylene	NN	FN	NN	EE	NN	EE
Triethylene Glycol	EE	EE	EE	EE	EE	EE
2,2,4-Trimethylpentane	FN	FN	FN	EE	FN	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

Table 5: Autosampler compatibility chart

1 Crimp Neck ND8

		Crimp Neck ND8 [1]	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Screw Neck ND8	Screw Neck ND8	Short Thread ND9	Screw Neck ND10	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11
		11732408 11742408	11561364	11531374 11541374	11717567 11722408	11792408 11782408	11712408	11565874 10560053 11595874 11525884	11515884	11575884 10080952 11515894 10145714 12951011 15166425 15136425 15176425 11871653 11595914 11707597 11727597 11575894 11585894 11595894 11535914 15592310 11515924 11884930 11851673 11814940 11824940	11511474 10521593 11531474	10081022 10326042 11535884 11545884 11565894 10678005 11505894	11885813 11555894	11505884	11555894
Agilent	1050									X		X			
Agilent	1050 (34 Pos. Tray)				X										
Agilent	1090									X		X			
Agilent	1090 (34 Pos. Tray)				X										
Agilent	1100									X		X			
Agilent	1200									X		X			
Agilent	1260 Infinity									X		X			
Agilent	1290 Infinity									X		X			
Agilent	6188BA														
Agilent	7673A				X					X		X			
Agilent	7683A				X		X			X		X			
Agilent	HS7694														
Agilent	7695A														
Agilent	79855(A)									X		X			
Agilent	6880									X		X			
Agilent	6890									X		X			
Agilent	6850 (27 Pos. Tray)									X		X			
Agilent	6850 (22 Pos. Tray)														
Agilent	6890									X		X			
Agilent	CTC HTS+HTC PAL	X			X	X				X		X			
Agilent	CTC GC PAL	X			X	X				X		X			
Agilent	CTC Combi PAL														
Agilent	Teknar SOLATek72														
Agilent	Archon Pluge + Trap														
Agilent	AQUAtek 70														
Agilent	7693A							X				X			
Agilent	HS7694														
Agilent	7697A														
Analytik Jena	multi N/C 3000 (TOC)														
Antec Leyden	Alexys							X		X		X			
Antec Leyden	AS 100							X		X	X	X			
Antek	736 Unisampler							X		X	X	X			
Antek	738							X		X	X	X			
Atas	GL Focus							X		X		X			
Beckman	501				X			X		X	X	X			
Beckman	502/502e				X			X		X	X	X			
Beckman	504	X				X									
Beckman	507/507e				X			X	X	X	X	X			
Beckman	508 (System Gold)									X					
Beckman	Marathon							X	X	X		X		X	
Beckman	Promis							X	X	X		X		X	
Beckman	Triathlon,Standard Tray							X	X	X		X		X	X
Beckman	Triathlon, LSV Tray				X										
Beckman	Triathlon, Super-LSV Tray														
Beckman	Triathlon, Micro-Tray	X				X									
Bruker	LC51														
Cambridge Scientific Instruments	205 Series							X		X	X	X			
Cambridge Scientific Instruments	300 Series							X		X	X	X			
Carlo Erba	AS100	X			X	X		X	X	X		X		X	
Carlo Erba	AS200	X				X		X		X		X		X	
Carlo Erba	A200LC	X				X		X	X	X		X		X	
Carlo Erba	AS200S	X				X		X	X	X		X		X	
Carlo Erba	AS300	X			X	X		X	X	X		X		X	
Carlo Erba	AS800, 42 vial tray							X		X		X		X	X
Carlo Erba	AS800, 60 vial tray		X	X	X			X		X		X			
Carlo Erba	HS250														
Carlo Erba	HS500														
Carlo Erba	HS800														
Carlo Erba	HS850														
Cecil Instruments	CE4800							X		X	X	X			
Cecil Instruments	AutoQuest								X		X	X	X		
CTC (LEAP)	LC PAL (216 Pos.)							X	X	X	X	X		X	
CTC (LEAP)	HTX PAL, HTC PAL, HTS 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)														
CTC (LEAP)	Combi PAL (200 Pos. Tray), GC PAL (200Pos. 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 (LEAP)	Combi PAL (32 Pos. Tray), GC PAL (32 Pos. Tray)														
CTC (LEAP)	Combi PAL SPME Mode (32 Pos. Tray)														
CTC	PAL HPLC-Systems	X						X		X	X	X			
CTC	PAL Combi-xt Ligid Mode	X						X		X	X	X			
CTC	Combi-xt Headspace Option											X			
CTC	GC-xt Headspace Option	X						X		X	X	X			
CTC	PAL HTC-xt	X						X		X	X	X			
CTC	HTS-xt	X						X		X	X	X			
CTC	HTX-xt	X						X		X	X	X			
CTC	Combi-xt SPME Options											X			
CTC	A200S	X				X		X		X	X	X			
CTC	A200 LC	X				X		X	X	X	X	X		X	
CTC	HS 500														
DANI	ALS 39.80									X		X			
DANI	ALS 86.80									X		X			

Table 5: Autosampler compatibility chart, continued

2 Snap Ring ND11

		Snap Ring ND11 [2]	Screw Neck ND13	Shell Vials	Shell Vials	Shell Vials	Shell Vials	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Screw Neck ND24 (EPA)
		11525894 11535894 11545894 11545914 12672465 15219468 11585914 11505924 11525924 11545924 11717597 11894930 11804940 11834940	10571013 11556044 11576044 11586044	10306062	10145424 10506075 11561374 10224852	11555914 11565914	11516074 10455982	10663303	10681033 10195012	12990951 10080822 10152512 12981241	10680843 12971231 15552340	11506114 12941221 11526114 12951221 10070952 10510323 12910991	10192652	11520545	10465982 10000782 10758874 11510585 11798256 11530585 11540585 11550585
Agilent	1050	X													
Agilent	1050 (34 Pos. Tray)														
Agilent	1090	X													
Agilent	1090 (34 Pos. Tray)														
Agilent	1100	X													
Agilent	1200	X													
Agilent	1260 Infinity														
Agilent	1290 Infinity														
Agilent	G1888A		X								X				
Agilent	7673A														
Agilent	7683A														
Agilent	HS7694		X								X				
Agilent	7695A														X
Agilent	79855(A)	X													
Agilent	5880														
Agilent	5890														
Agilent	6850 (27 Pos. Tray)														
Agilent	6850 (22 Pos. Tray)		X												
Agilent	6890														
Agilent	CTC HTS+HTC PAL	X													
Agilent	CTC GC PAL														
Agilent	CTC Combi PAL								X			X			
Agilent	Tekmar SOLATek72														X
Agilent	Archon Pluge + Trap														X
Agilent	AQUATek 70														X
Agilent	7693A	X	X		X										
Agilent	HS7694		X								X				
Agilent	7697A										X				
Analytik Jena	multi N/C 3000 (TOC)														X
Antec Leyden	Alexys	X													
Antec Leyden	AS 100	X													
Antek	736 Unisampler	X													
Antek	738	X													
Atas	GL Focus	X													
Beckman	501	X													
Beckman	502/502e	X													
Beckman	504														
Beckman	507/507e	X													
Beckman	508 (System Gold)								X						
Beckman	Marathon	X													
Beckman	Promis	X													
Beckman	Triathlon,Standard Tray	X						X	X						
Beckman	Triathlon, LSV Tray		X												
Beckman	Triathlon, Super-LSV Tray								X						
Beckman	Triathlon, Micro-Tray														
Bruker	LC51		X												
Cambridge Sci- entific Instruments	205 Series		X												
Cambridge Sci- entific Instruments	300 Series		X												
Carlo Erba	AS100	X				X									
Carlo Erba	AS200														
Carlo Erba	A200LC	X				X									
Carlo Erba	AS200S														
Carlo Erba	AS300	X				X									
Carlo Erba	AS800, 42 vial tray														
Carlo Erba	AS800, 60 vial tray														
Carlo Erba	HS250								X						
Carlo Erba	HS500								X						
Carlo Erba	HS800								X			X			
Carlo Erba	HS850								X			X			
Cecil Instruments	CE4800	X													
Cecil Instruments	AutoQuest	X	X		X										
CTC (LEAP)	LC PAL (216 Pos.)	X							X						
CTC (LEAP)	HTX PAL, HTC PAL, HTS PAL (200 Pos. Tray)														
CTC (LEAP)	HTX PAL, HTC PAL, HTS PAL (54/98 Pos. Tray)	X							X						
CTC (LEAP)	HTX PAL, HTC PAL, HTS PAL (32 Pos. Tray)											X			
CTC (LEAP)	Combi PAL (200 Pos. Tray), GC PAL (200 Pos. Tray)														
CTC (LEAP)	Combi PAL (98 Pos. Tray), GC PAL (98 Pos. Tray)														
CTC (LEAP)	"Combi PAL SPME Mode (98 Pos. Tray)"														
CTC (LEAP)	Combi PAL (32 Pos. Tray), GC PAL (32 Pos. Tray)								X			X			
CTC (LEAP)	"Combi PAL SPME Mode (32 Pos. Tray)"											X			
CTC	PAL HPLC-Systems								X			X			
CTC	PAL Combi-xt Liqid Mode								X			X			
CTC	Combi-xt Headspace Option								X			X			
CTC	GC-xt Headspace Option								X			X			
CTC	PAL HTC-xt								X			X			
CTC	HTS-xt								X			X			
CTC	HTX-xt								X			X			
CTC	Combi-xt SPME Options								X			X			
CTC	A200S														
CTC	A200 LC	X							X						
CTC	HS 500								X						
DANI	ALS 39.80	X													
DANI	ALS 86.80	X													

Table 5: Autosampler compatibility chart, continued

3 Screw Neck ND8

		Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8 [3]	Crimp Neck ND8	ScrewNeck ND8	ScrewNeck ND8	Short Thread ND9	Screw Neck ND10	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11
		11732408 11742408	11561364	11531374 11541374	11717567 11722408	11792408 11782408	11712408	11565874 10560053 11595874 11525884	11515884	11575884 10080952 11515894 10145714 12951011 15166425 15136425 15176425 11871653 11595914 11707597 11727597 11575894 11585894 11595894 11535914 15592310 11515924 11884930 11851673 11814940 11824940	11511474 10521593 11531474	10081022 10326042 11535884 11545884 11565894 10678005 11505894	11865813 11555894	11505884	11555894
DANI	ALS 1000									X		X			
DANI	HS39.50														
DANI	HS86.50														
DANI	Master AS									X		X			
Dimatec	Dimatoc 2000														
Dionex	Gina 50			X						X		X			
Dionex	AS 50				X			X		X	X				
Dionex	Summit ASI 100, Micro-Tray (192 Pos.)			X											
Dionex	Summit ASI 100, Analytical- Tray (117 Pos.)							X		X		X			
Dionex	Summit ASI 100, Semiprep - Tray (63 Pos.)														
Dionex	Famos (LC Packings/Dionex)							X		X	X	X			
Dionex	UltiMate Analytical, cylindri- cal, WPS-3000 SL, 120 Pos. Rack (2ml)							X		X	X	X			
Dionex	UltiMate Analytical, conical, WPS-3000 SL, 120 (3x40) Pos. Rack (1.1ml=2ml w. Inserts)													X	
Dionex	UltiMate Micro, conical, WPS-3000 SL, 120 (3x40) Pos. Rack (250µl)				X										
Dionex	UltiMate Semipreparative, WPS-3000 SL, 66 (3x22) Pos. Rack (4ml)														
Dionex	UltiMate Nano/Cap/Micro, WPS-3000 SL, 216 (3x72) Pos. Rack (1.2ml)			X											
Dionex	ASE 200														
Dionex	AS 40														
Dionex	HS-HV							X							
Dimatec	Dimatoc 200														
Dimatec	Dimatoc 300														
Dimatec	Dimatoc 400														
Finnigan	A200S	X				X		X		X		X			
Fisons	AS100	X			X	X		X	X	X		X		X	
Fisons	AS200	X				X		X		X		X		X	
Fisons	A200LC	X				X		X	X	X		X		X	
Fisons	AS200S	X				X		X	X	X		X		X	
Fisons	AS300	X			X	X		X	X	X		X		X	
Fisons	AS800, 42 vial tray							X		X		X		X	X
Fisons	AS800, 60 vial tray		X	X	X			X		X		X			
Fisons	HS250														
Fisons	HS500														
Fisons	HS800														
Fisons	HS850														
GE Instruments	Sievers® 900														
Gerstel	MPS2	X			X	X						X		X	
Gilson	201/202							X		X					
Gilson	221/222							X		X					
Gilson	231/401							X		X					
Gilson	232/402							X		X					
Gilson	Aspec							X		X					
Gilson	Aspec Xi							X		X					
Gilson	Aspec XL4							X		X					
Gilson	221XL/222XL	X			X (only f. 221XL)	X									
Gilson	223	X				X									
Gilson	231XL/232XL/233XL	X			X (only f. 231XL)	X									
Gilson	Nano Injektor							X		X					
Gilson	235/235P/SP 235/SP 235P	X				X		X		X					
Gynkotek	Gina 50			X						X		X			
Hach Lange	IL 550 TOC-TN														
HTA	HT200H														
HTA	HT250D							X		X	X	X			X
HTA	HT280T							X		X	X	X			X
HTA	HT300A							X		X	X	X			X
HTA	HT310A							X		X	X	X			X
HTA	HT300L							X		X	X	X			
ICI	LC1600	X				X									X
IMT GmbH	VSP4000														
IMT GmbH	PTA3000														
Jasco	AS 2055/AS 2055 (i)				X			X		X	X	X			
Jasco	AS 2057/AS 2057 (i)				X			X		X	X	X			
Jasco	AS 2059				X			X		X	X	X			
Knauer	K-3800 (Basic Marathon)							X	X	X		X		X	
Knauer	Smartline K-3950							X		X		X			
Knauer	PLATINblue AS-1							X		X		X			
LDC	713-60		X		X										
LDC	Marathon							X	X	X		X		X	
LDC	Promis							X	X	X		X		X	
LEAP	pls. see CTC														
O.I. Analytical	1020A														
O.I. Analytical	1088														
O.I. Analytical	1096+														
O.I. Analytical	4551A														
O.I. Analytical	1552														
PerkinElmer	Series 200, 25 vial tray														
PerkinElmer	Series 200, 85 vial tray										X	X			
PerkinElmer	Series 200, 81/100 vial tray										X	X			

Table 5: Autosampler compatibility chart, continued

4 Shell Vials

		Snap Ring ND11	Screw Neck ND13	Shell Vials 4	Shell Vials	Shell Vials	Shell Vials	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Screw Neck ND24 (EPA)
		11525894 11535894 11545894 11545914 12672465 15219468 11585914 11505924 11525924 11545924 11717597 11894930 11804940 11834940	10571013 11556044 11576044 11586044	10306062	10145424 10506075 11561374 10224852	11555914 11565914	11516074 10455982	10663303	10681033 10195012	12990951 10080822 10152512 12981241	10680843 12971231 15552340	11506114 12941221 11526114 12951221 10070952 10510323 12910991	10192652	11520545	10465982 10000782 10758874 11510585 11798256 11530585 11540585 11550585
DANI	ALS 1000	X													
DANI	HS39.50										X				
DANI	HS86.50										X				
DANI	Master AS	X									X				
Dimatec	Dimatec 2000														X
Dionex	Gina 50	X	X												
Dionex	AS 50	X													
Dionex	Summit ASI 100, Micro-Tray (192 Pos.)														
Dionex	Summit ASI 100, Analytical- Tray (117 Pos.)	X													
Dionex	Summit ASI 100, Semiprep.- Tray (63 Pos.)		X												
Dionex	Famos (LC Packings/Dionex)	X							X						
Dionex	UltiMate Analytical, cylindri- cal, WPS-3000 SL, 120 Pos. Rack (2ml)	X							X						
Dionex	UltiMate Analytical, conical, WPS-3000 SL, 120 (3x40) Pos. Rack (1.1ml=2ml w. Inserts)								X						
Dionex	UltiMate Micro, conical, WPS-3000 SL, 120 (3x40) Pos. Rack (250µl)								X						
Dionex	UltiMate Semipreparative, WPS-3000 SL, 66 (3x22) Pos. Rack (4ml)		X						X						
Dionex	UltiMate Nano/Cap/Micro, WPS-3000 SL, 216 (3x72) Pos. Rack (1.2ml)								X						
Dionex	ASE 200														X
Dionex	AS 40		X		X										
Dionex	HS-HV														
Dimatec	Dimatec 200														X
Dimatec	Dimatec 300														X
Dimatec	Dimatec 400														X
Finnigan	A200S														
Fisons	AS100	X				X									
Fisons	AS200														
Fisons	A200LC	X				X									
Fisons	AS200S														
Fisons	AS300	X				X									
Fisons	AS800, 42 vial tray														
Fisons	AS800, 60 vial tray														
Fisons	HS250								X						
Fisons	HS500								X						
Fisons	HS800								X			X			
Fisons	HS850								X			X			
GE Instruments	Sievers® 900														X
Gerstel	MPS2								X			X			
Gilson	201/202					X	X								
Gilson	221/222					X	X								
Gilson	231/401					X									
Gilson	232/402					X									
Gilson	Aspec					X	X								
Gilson	Aspec Xli														
Gilson	Aspec XL4														
Gilson	221XL/222XL														
Gilson	223														
Gilson	231XL/232XL/233XL														
Gilson	Nano Injektor														
Gilson	235/235P/SP 235/SP 235P														
Gynkotek	Gina 50	X	X												
Hach Lange	IL 550 TOC-TN														X
HTA	HT200H										X				
HTA	HT250D	X									X				
HTA	HT280T	X									X				
HTA	HT300A	X													
HTA	HT310A	X													
HTA	HT300L	X									X				
ICI	LC1600														
IMT GmbH	VSP4000														X
IMT GmbH	PTA3000														
Jasco	AS 2055/AS 2055 (i)	X													
Jasco	AS 2057/AS 2057 (i)	X													
Jasco	AS 2059	X													
Knauer	K-3800 (Basic Marathon)	X						X							
Knauer	Smartline K-3950	X						X							
Knauer	PLATINblue AS-1	X													
LDC	713-60														
LDC	Marathon	X													
LDC	Promis	X													
LEAP	pls. see CTC														
O.I. Analytical	1020A														X
O.I. Analytical	1088														X
O.I. Analytical	1096+														X
O.I. Analytical	4551A														X
O.I. Analytical	1552														X
PerkinElmer	Series 200, 25 vial tray							X							
PerkinElmer	Series 200, 85 vial tray							X							
PerkinElmer	Series 200, 81/100 vial tray														

Table 5: Autosampler compatibility chart, continued

5 Short Thread ND9

		Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	ScrewNeck ND8	ScrewNeck ND8	Short Thread ND9 [5]	Screw Neck ND10	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11
		11732408 11742408	11561364	11531374 11541374	11717567 11722408	11792408 11782408	11712408	11565874 10560053 11595874 11525884	11515884	11575884 10080952 11515894 10145714 12951011 15166425 15136425 15176425 11871653 11595914 11707597 11727597 11575894 11585894 11595894 11535914 15592310 11515924 11884930 11851673 11814940 11824940	11511474 10521593 11531474	10081022 10326042 11535884 11545884 11565894 10678005 11505894	11865813 11555894	11505884	11555894
PerkinElmer	Series 200, 205 vial tray				X						X	X			
PerkinElmer	Series 200, 225 vial tray				X										
PerkinElmer	AI-1		X		X							X			
PerkinElmer	AS-100/AS-100B		X		X							X			
PerkinElmer	AS2000/AS2000B		X				X				X	X			
PerkinElmer	AS-300		X		X							X			
PerkinElmer	AS8200		X		X							X			
PerkinElmer	Autosystem		X		X							X			
PerkinElmer	HS 6														
PerkinElmer	HS40/HS100/101														
PerkinElmer	TurboMatrix HS16/HS40/ HS40 XL/ HS40 Trap/ HS110/ HS110 Trap														
PerkinElmer	Integral 4000										X	X			
PerkinElmer	ISS-100, 85 vial tray										X	X			
PerkinElmer	ISS-100, 100 vial tray										X	X			
PerkinElmer	ISS-200, 85 vial tray										X	X			
PerkinElmer	ISS-200, 100 vial tray										X	X			
PerkinElmer	ISS-200, 145 vial tray				X										
PerkinElmer	ISS-225, 205 vial tray				X						X	X			
PerkinElmer	ISS-225, 100 vial tray + 80 vial tray										X	X			
PerkinElmer	ISS-225, 85 vial tray										X	X			
PerkinElmer	ISS-225, 25 vial tray														
PerkinElmer	LC 600, 42 vial tray		X												
PerkinElmer	LC 600, 60 vial tray										X	X			
PerkinElmer	Clarus 400, 500, 600											X			
Pharmacia	LKB 2157-010							X		X		X			
Pharmacia	LKB 2157-020	X				X									X
Polymer Labora- tories	PL-AS RT							X		X	X	X			
Quma Elektronik	QHSS-40														
Sedere										X		X			
SGE	LS-3200	X				X									
Shimadzu	AOC-5000	X			X	X				X		X		X	
Shimadzu	AOC-14/1400							X	X	X	X	X		X	
Shimadzu	AOC-17							X	X	X	X	X		X	
Shimadzu	"AOC-20/20i/20s 150 Pos. Tray"							X	X	X	X	X		X	
Shimadzu	AOC-20/20i/20s 96 Pos. Tray														
Shimadzu	LC-20A							X	X	X	X	X		X	
Shimadzu	SIL-2AS				X			X	X	X	X	X		X	
Shimadzu	SIL-6A				X			X	X	X	X	X		X	
Shimadzu	SIL-6B/SIL-7A/SIL-8A/SIL-9A							X	X	X	X	X		X	
Shimadzu	SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/SIL-10AxL/ Rack S 100 Pos.				X			X	X	X	X	X		X	
Shimadzu	"SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/SIL-10AxL/ Rack L 80 Pos.														
Shimadzu	SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/SIL-10AxL/ Rack MTP2 192 Pos.														
Shimadzu	SIL-10HTA/SIL-10HTC 350 pos. Tray														
Shimadzu	SIL-10HTA/SIL-10HTC 140 Pos. Tray							X		X	X	X			
Shimadzu	SIL-10HTA/SIL-10HTC 100 Pos. Tray														
Shimadzu	SIL-10ADvp							X	X	X	X	X		X	
Shimadzu	HTA 200 H														
Shimadzu	SIL-20A (Prominence) 105 vial tray/SIL-20AC (Promi- nence) 70 vial tray				X			X	X	X	X	X		X	
Shimadzu	SIL-20A/Sil-20AC (Promi- nence) 175 vial tray														
Shimadzu	SIL-20A/Sil-20AC (Promi- nence) 50 vial tray														
Shimadzu	LC2010C + LC2010A 350 Pos. Tray														
Shimadzu	LC2010C + LC2010A 140 Pos. Tray							X		X	X	X		X	
Shimadzu	LC2010C + LC2010A 100 Pos. Tray														
Shimadzu	ASI-V														
Shimadzu	HSS-2B														
Shimadzu	SIL 30-ACMP							X		X		X			
Shimadzu	SIL-20AXR/SIL-20ACXR (Prominence) 175 (1-mL vials), 70 (1.5-mL vials), 50 (4-mL vials)							X		X		X			
Shimadzu	SIL-30AC(Nexera) 175 (1-mL vials), 105 (1.5-mL vials), 50 (4-mL vials)							X		X		X			
Sievers (GE Instruments)	Sievers® 900														
Spark	Marathon Basic, Standard 96 Pos. Tray							X	X	X		X		X	
Spark	Marathon Basic Präp King Size 48 Pos. Tray														

Table 5: Autosampler compatibility chart, continued

6 Headspace ND20

		Snap Ring ND11	Screw Neck ND13	Shell Vials	Shell Vials	Shell Vials	Shell Vials	Headspace ND20 (ND18) 6	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Screw Neck ND24 (EPA)
		11525894 11535894 11545894 11545914 12672465 15219468 11585914 11505924 11525924 11545924 11717597 11894930 11804940 11834940	10571013 11556044 11576044 11586044	10306062	10145424 10506075 11561374 10224852	11555914 11565914	11516074 10455982	10663303	10681033 10195012	12990951 10080822 10152512 12981241	10680843 12971231 15552340	11506114 12941221 11526114 12951221 10070952 10510323 12910991	10192652	11520545	10465982 10000782 10758874 11510585 11798256 11530585 11540585 11550585
PerkinElmer	Series 200, 205 vial tray														
PerkinElmer	Series 200, 225 vial tray														
PerkinElmer	AI-1														
PerkinElmer	AS-100/AS-100B														
PerkinElmer	AS2000/AS2000B														
PerkinElmer	AS-300														
PerkinElmer	AS8300														
PerkinElmer	Autosystem														
PerkinElmer	HS 6							X							
PerkinElmer	HS40/HS100/101							X		X					
PerkinElmer	TurboMatrix HS16/HS40/ HS40 XL/ HS40 Trap/ HS110/HS110 Trap							X** (not suitable for Turboma- trix™ 110)		X		X* (for Turboma- trix™ 16, 40, 110 produced after 1.9.06)			
PerkinElmer	Integral 4000														
PerkinElmer	ISS-100, 85 vial tray							X							
PerkinElmer	ISS-100, 100 vial tray														
PerkinElmer	ISS-200, 85 vial tray							X							
PerkinElmer	ISS-200, 100 vial tray														
PerkinElmer	ISS-200, 145 vial tray														
PerkinElmer	ISS-225, 205 vial tray														
PerkinElmer	ISS-225, 100 vial tray + 80 vial tray														
PerkinElmer	ISS-225, 85 vial tray							X							
PerkinElmer	ISS-225, 25 vial tray							X							
PerkinElmer	LC 600, 42 vial tray														
PerkinElmer	LC 600, 60 vial tray														
PerkinElmer	Clarus 400, 500, 600														
Pharmacia	LKB 2157-010	X													
Pharmacia	LKB 2157-020														
Polymer Labora- tories	PL-AS RT	X	X												
Quma Elektronik	QHSS-40										X				
Sedere		X													
SGE	LS-3200														
Shimadzu	AOC-5000								X			X			
Shimadzu	AOC-14/1400	X	X						X						
Shimadzu	AOC-17	X	X												
Shimadzu	AOC-20/20i/20s 150 Pos. Tray		X												
Shimadzu	AOC-20/20i/20s 96 Pos. Tray		X												
Shimadzu	LC-20A	X	X												
Shimadzu	SIL-2AS	X	X				X								
Shimadzu	SIL-6A	X	X				X								
Shimadzu	SIL-6B/SIL-7A/SIL-8A/SIL-9A	X	X			X	X								
Shimadzu	SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/ SIL-10AxL/Rack S 100 Pos.	X				X									
Shimadzu	SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/ SIL-10AxL/Rack L 80 Pos.		X				X								
Shimadzu	SIL-10A/SIL-10AF/SIL-10AP/ SIL-10Ai/ SIL-10AxL/Rack MTP2 192 Pos.				X										
Shimadzu	SIL-10HTA/SIL-10HTC 350 pos. Tray				X										
Shimadzu	SIL-10HTA/SIL-10HTC 140 Pos. Tray	X				X									
Shimadzu	SIL-10HTA/SIL-10HTC 100 Pos. Tray		X				X								
Shimadzu	SIL-10ADvp	X	X		X	X	X								
Shimadzu	HTA 200 H										X	X			
Shimadzu	SIL-20A (Prominence) 105 vial tray/ SIL-20AC (Prominence) 70 vial tray	X													
Shimadzu	SIL-20A/Sil-20AC (Prominence) 175 vial tray				X										
Shimadzu	SIL-20A/Sil-20AC (Prominence) 50 vial tray		X				X								
Shimadzu	LC2010C + LC2010A 350 Pos. Tray				X										
Shimadzu	LC2010C + LC2010A 140 Pos. Tray	X				X									
Shimadzu	LC2010C + LC2010A 100 Pos. Tray		X				X								
Shimadzu	ASI-V														X
Shimadzu	HSS-2B										X	X			
Shimadzu	SIL 30-ACMP														
Shimadzu	SIL-20AXR/SIL-20ACXR (Prominence) 175 (1-mL vials), 70 (1.5-mL vials), 50 (4-mL vials)	X	X		X		X								
Shimadzu	SIL-30AC(Nexera) 175 (1-mL vials), 105 (1.5-mL vials), 50 (4-mL vials)	X	X		X		X								
Sievers (GE Instruments)	Sievers® 900														X
Spark	Marathon Basic, Standard 96 Pos. Tray	X													
Spark	Marathon Basic Prep King Size 48 Pos. Tray							X							

Table 5: Autosampler compatibility chart, continued

7 Crimp Neck ND11

		Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	ScrewNeck ND8	ScrewNeck ND8	Short Thread ND9	Screw Neck ND10	Crimp Neck ND11 [7]	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11
		11732408 11742408	11561364	11531374 11541374	11717567 11722408	11792408 11782408	11712408	11565874 10560053 11595874 11525884	11515884	11575884 10080952 11515894 10145714 12951011 15166425 15136425 15176425 11871653 11595914 11707597 11727597 11575894 11585894 11595894 11535914 15592310 11515924 11884930 11851673 11814940 11824940	11511474 10521593 11531474	10081022 10326042 11535884 11545884 11565894 10678005 11505894	11865813 11555894	11505884	11555894
Spark	Midas, Standard 84 Pos. Tray							X	X	X		X		X	X
Spark	Midas, Large Capacity 96 Pos. Tray							X	X	X		X		X	X
Spark	Midas, Large Volume 24 Pos. Tray														
Spark	Alias							X	X	X		X		X	
Spark	Promis							X	X	X		X		X	
Spark	SPH 125								X	X		X		X	
Spark	Triathlon,Standard 96 Tray							X	X	X		X		X	X
Spark	Triathlon, LSV 72 Pos. Tray														
Spark	Triathlon, Super-LSV 32 Pos. Tray														
Spark	Triathlon, Micro 160 Pos. Tray	X				X									
Spark	Endurance 48 Pos. Tray							X	X	X		X		X	
Spark	Reliance 48 Pos. Tray							X	X	X		X		X	
Spark	Interity									X		X			
Spark	Prospekt 2											X			
Spark	Reliance/Symbiosis Pharma											X			
Spark	Dried Blood Spot (DBS)							X		X		X			
Spark	Integrity							X		X		X			
Spark	Integrity 108 Pos.(2ml) 2 x Plates , IntegrityPlus 2 x 108 Pos.(2ml) 4 x Plates							X		X		X			
Spark	Optimas							X		X		X			
Spark	Optimas 96 Pos.(2mL) 24 Pos.(10mL)							X		X		X			
Spark	Alias							X	X	X		X		X	
Spectra-Physics	8875							X		X		X			
Spectra-Physics	8880							X		X		X			
Spectra-Physics	SpectraSYSTEM AS1000	X			X	X		X		X		X		X	
Spectra-Physics	SpectraSYSTEM AS 3000	X		X	X	X		X		X		X		X	X
Spectra-Physics	SpectraSYSTEM AS 3500	X			X	X		X		X		X		X	
Sykam	S 5200									X					
Teledyne Tekmar	7000/7000HT/7050														
Teledyne Tekmar	AQUATek 70/SOLATek 72™														
Teledyne Tekmar	STS 8000 TOC														
Teledyne Tekmar	HT3														
Thermo Scientific	AS1000 (Trace GC)	X			X	X		X		X		X		X	
Thermo Scientific	AS200	X				X		X	X	X		X		X	
Thermo Scientific	AS300	X			X	X		X	X	X		X		X	
Thermo Scientific	AS2000 30 vial tray														
Thermo Scientific	AS2000 90 vial tray (Trace GC)			X				X	X	X		X		X	X
Thermo Scientific	AI3000 (II)/AS3000 (II) AS3500 (Trace GC + Focus GC)	X			X	X				X		X		X	
Thermo Scientific	A200LC	X				X		X	X	X		X		X	
Thermo Scientific	SpectraSYSTEM AS 1000	X			X	X		X		X		X		X	
Thermo Scientific	SpectraSYSTEM AS 3000	X		X	X	X		X		X		X		X	X
Thermo Scientific	SpectraSYSTEM AS 3500	X			X	X		X		X		X		X	
Thermo Scientific	A200S	X				X		X	X	X		X		X	
Thermo Scientific	AS100	X			X	X		X	X	X		X		X	
Thermo Scientific	AS800, 42 vial tray							X		X		X		X	X
Thermo Scientific	AS800, 60 vial tray		X	X	X			X		X		X			
Thermo Scientific	Dionex AS-AP							X		X	X	X			
Thermo Scientific	Dionex UltiMate WPS-3000	X		X				X	X	X	X	X			
Thermo Scientific	Dionex AS 40														
Thermo Scientific	HS250														
Thermo Scientific	HS500														
Thermo Scientific	HS800														
Thermo Scientific	HS850														
Thermo Scientific	HS2000														
Thermo Scientific	TriPlus (-GC PAL) (AS+ Duo)	X		X	X	X		X		X		X		X	X
Thermo Scientific	TriPlus HS														
Thermo Scientific	TriPlus SPME														
Thermo Scientific	TriPlus RSH				X	X		X		X		X			
Thermo Scientific	TriPlus 300														
Thermo Scientific	HiPerTOC														
Thermo Scientific	Surveyor (Surveyor Plus)	X			X	X		X		X		X		X	
Thermo Scientific	Accela High Speed LC Autosampler (200 Pos.)	X			X	X		X		X		X			
Thermo Scientific	Accela Open Autosampler	X				X	X		X	X		X			
Thermo Scientific	Trace 1300 Series							X		X	X	X			
Unicam	4247							X		X		X			
Unicam	4710							X		X		X			
Unicam	4700 (GC)	X				X									
Unicam	4700 (LC)	X				X		X	X	X					
Unicam	LC-XP							X	X	X		X		X	
Unicam	S4/S8	X				X									
Varian	ProStar 400, Standard 96 Pos. Tray							X	X	X	X	X		X	
Varian	ProStar 400, King Size 48 Pos. Tray														
Varian	ProStar 410, Standard 84 Pos. Tray							X	X	X	X	X		X	X
Varian	ProStar 410, Large Capacity 96 Pos. Tray							X	X	X	X	X		X	X
Varian	ProStar 410, Large Volume 24 Pos. Tray														
Varian	ProStar 420, Standard 96 Pos. Tray							X	X	X	X	X		X	X

Table 5: Autosampler compatibility chart, continued

8 Crimp Neck ND11

		Snap Ring ND11	Screw Neck ND13	Shell Vials 8	Shell Vials	Shell Vials	Shell Vials	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Screw Neck ND24 (EPA)
		11525894 11535894 11545894 11545914 12672465 15219468 11585914 11505924 11525924 11545924 11717597 11894930 11804940 11834940	10571013 11556044 11576044 11586044	10306062	10145424 10506075 11561374 10224852	11555914 11565914	11516074 10455982	10663303	10681033 10195012	12990951 10080822 10152512 12981241	10680843 12971231 15552340	11506114 12941221 11526114 12951221 10070952 10510323 12910991	10192652	11520545	10465982 10000782 10758874 11510585 11798256 11530585 11540585 11550585
Spark	Midas, Standard 84 Pos. Tray	X							X							
Spark	Midas, Large Capacity 96 Pos. Tray	X														
Spark	Midas, Large Volume 24 Pos. Tray								X							
Spark	Alias	X								X						
Spark	Promis	X														
Spark	SPH 125	X														
Spark	Triathlon,Standard 96 Tray	X				X										
Spark	Triathlon, LSV 72 Pos. Tray		X													
Spark	Triathlon, Super-LSV 32 Pos. Tray								X							
Spark	Triathlon, Micro 160 Pos. Tray															
Spark	Endurance 48 Pos. Tray	X														
Spark	Reliance 48 Pos. Tray	X														
Spark	Interity	X														
Spark	Prospekt 2	X														
Spark	Reliance/Symbiosis Pharma	X														
Spark	Dried Blood Spot (DBS)															
Spark	Integrity															
Spark	Integrity 108 Pos.(2ml) 2 x Plates , IntegrityPlus 2 x 108 Pos.(2ml) 4 x Plates	X														
Spark	Optimas															
Spark	Optimas 96 Pos.(2mL) 24 Pos.(10mL)	X										X				
Spark	Alias	X							X							
Spectra-Physics	8875	X														
Spectra-Physics	8880	X														
Spectra-Physics	SpectraSYSTEM AS1000	X				X										
Spectra-Physics	SpectraSYSTEM AS 3000	X				X										
Spectra-Physics	SpectraSYSTEM AS 3500	X				X										
Sykam	S 5200	X														
Teledyne Tekmar	7000/7000HT/7050									X						
Teledyne Tekmar	AQUATek 70/SOLATek 72™															X
Teledyne Tekmar	STS 8000 TOC															X
Teledyne Tekmar	HT3									X		X				
Thermo Scientific	AS1000 (Trace GC)															
Thermo Scientific	AS200															
Carlo Erba	AS300	X				X										
Thermo Scientific	AS2000 30 vial tray								X							
Thermo Scientific	AS2000 90 vial tray (Trace GC)															
Thermo Scientific	AI3000 (II)/AS3000 (II) AS3500(Trace GC + Focus GC)								X							
Thermo Scientific	A200LC	X				X										
Thermo Scientific	SpectraSYSTEM AS 1000	X				X										
Thermo Scientific	SpectraSYSTEM AS 3000	X				X										
Thermo Scientific	SpectraSYSTEM AS 3500	X				X										
Thermo Scientific	A200S															
Thermo Scientific	AS100	X				X										
Thermo Scientific	AS800, 42 vial tray															
Thermo Scientific	AS800, 60 vial tray															
Thermo Scientific	Dionex AS-AP	X						X								
Thermo Scientific	Dionex UltiMate WPS-3000	X	X					X								
Thermo Scientific	Dionex AS 40		X				X									
Thermo Scientific	HS250								X							
Thermo Scientific	HS500								X							
Thermo Scientific	HS800								X			X				
Thermo Scientific	HS850								X			X				
Thermo Scientific	HS2000								X			X				
Thermo Scientific	TriPlus (=GC PAL) (AS+ Duo)								X			X				
Thermo Scientific	TriPlus HS								X			X				
Thermo Scientific	TriPlus SPME								X			X				
Thermo Scientific	TriPlus RSH	X							X			X				
Thermo Scientific	TriPlus 300											X				
Thermo Scientific	HiPer TOC															X
Thermo Scientific	Surveyor (Surveyor Plus)	X				X			X							
Thermo Scientific	Accela High Speed LC Autosampler (200 Pos.)	X														
Thermo Scientific	Accela Open Autosampler	X														
Thermo Scientific	Trace 1300 Series	X						X		X	X					
Unicam	4247															
Unicam	4710															
Unicam	4700 (GC)															
Unicam	4700 (LC)															
Unicam	LC-XP		X													
Unicam	S4/S8															
Varian	ProStar 400, Standard 96 Pos. Tray	X														
Varian	ProStar 400, King Size 48 Pos. Tray							X								
Varian	ProStar 410, Standard 84 Pos. Tray	X							X							
Varian	ProStar 410, Large Capacity 96 Pos. Tray	X														
Varian	ProStar 410, Large Volume 24 Pos. Tray								X							
Varian	ProStar 420, Standard 96 Pos. Tray	X				X										

Table 5: Autosampler compatibility chart, continued

9 Short Thread ND9

		Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	Crimp Neck ND8	ScrewNeck ND8	ScrewNeck ND8	Short Thread ND9 [9]	Screw Neck ND10	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11	Crimp Neck ND11
		11732408 11742408	11561364	11531374 11541374	11717567 11722408	11792408 11782408	11712408	11565874 10560053 11595874 11525884	11515884	11575884 10080952 11515894 10145714 12951011 15166425 15136425 15176425 11871653 11595914 11707597 11727597 11575894 11585894 11595894 11535914 15592310 11515924 11884930 11851673 11814940 11824940	11511474 10521593 11531474	10081022 10326042 11535884 11545884 11565894 10678005 11505894	11865813 11555894	11505884	11555894
Varian	ProStar 420, LSV 72 Pos. Tray				X										
Varian	ProStar 420, Super-LSV 32 Pos. Tray														
Varian	ProStar 420, Micro 160 Pos. Tray	X				X									
Varian	ProStar 430, 48 Pos. Tray							X	X	X		X		X	
Varian	8035							X	X	X					
Varian	8000							X		X		X			
Varian	8400 (100 Pos.)							X		X		X			
Varian	8410-Autoinjector (10 x 2ml; 6 x 5ml; 5 x 10ml)							X		X		X			
Varian	8100							X		X		X			
Varian	8200							X		X	X	X			
Varian	CP-910, 911, 912							X		X		X			
Varian	CP-940, 941											X			
Varian	LC 9100/LC 9095/LC 9090									X		X			
Varian	Archon														
Varian	COMBI PAL (200 Pos. Tray) GC PAL (200 pos. Tray)	X				X									
Varian	COMBI PAL (98 Pos. Tray) GC PAL (98 Pos. Tray)				X					X		X			
Varian	COMBI PAL SPME mode (98 Pos. Tray)									X		X			
Varian	COMBI PAL (32 Pos. Tray) GC PAL (32 Pos. Tray)														
Varian	COMBI PAL SPME mode (32 Pos. Tray)														
Varian	Genesis														
Varian	Marathon Basic, Standard 96 Pos. Tray							X	X	X		X		X	
Varian	Marathon Basic, Präp, King Size 48 Pos. Tray														
Varian	Vista							X		X					
Varian	CP-9020/CP-9025														
Varian	CP-9060														
Varian	CP-9010							X		X		X			
Varian	920-LC/940-LC							X							
Viscotek	Vortex™														
Viscotek	GPC Autosampler							X		X	X				
VWR	Hitachi Chromaster							X		X		X			
VWR(Merck®)/ Hitachi	L2200 (LaChrom Elite)/ L2200-U (LaChrom Ultra) (200 Pos. Tray)							X		X					
VWR(Merck®)/ Hitachi	L2200 (LaChrom Elite) (128 Pos. Tray)														
VWR(Merck®)/ Hitachi	L7200 (LaChrom) (80 Pos. Tray)/ L7250(LaChrom) (120 Pos. Tray)							X		X					
VWR(Merck®)/ Hitachi	L7250 (LaChrom) (Rack Holder for combination Racks)				X			X		X					
VWR(Merck®)/ Hitachi	655-A40 (108 Pos. Tray)							X		X					
VWR(Merck®)/ Hitachi	L-9100							X		X					
VWR(Merck®)/ Hitachi	AS 2000 (50 Pos. Tray)							X		X		X			
VWR(Merck®)/ Hitachi	AS 4000 (150 Pos. Tray)							X		X		X			
VWR(Merck®)/ Hitachi	AS 4000 (198 Pos. Tray)				X										
VWR(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			
VWR(Merck®)/ Hitachi	AS 6000				X			X		X					
Waters®	ACQUITY™ UPLC Systeme									X					
Waters®	Wisp 48 position														
Waters®	Wisp 96 position														
Waters®	717, 96 Position Carousel														
Waters®	717, 48 Position Carousel														
Waters®	Alliance®									X	X	X			
Waters®	Alliance® GPC 2000														
Waters®	Alliance® HT Syst.									X	X	X			
Waters®	Alliance® 2790/2795									X	X	X			
Waters®	Acquity Sample Organizer									X					
Waters®	Acquity/CapLC/Waters/ Nano Acquity									X					
Waters®	Alliance® 2690/2695									X (not for 11515894)	X	X			

Table 5: Autosampler compatibility chart, continued

10 Snap Ring ND11

		Snap Ring ND11 [10]	Screw Neck ND13	Shell Vials	Shell Vials	Shell Vials	Shell Vials	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Headspace ND20 (ND18)	Screw Neck ND24 (EPA)
		11525894 11535894 11545894 11545914 12672465 15219468 11585914 11505924 11525924 11545924 11717597 11894930 11804940 11834940	10571013 11556044 11576044 11586044	10306062	10145424 10506075 11561374 10224852	11555914 11565914	11516074 10455982	10663303	10681033 10195012	12990951 10080822 10152512 12981241	10680843 12971231 15552340	11506114 12941221 11526114 12951221 10070952 10510323 12910991	10192652	11520545	10465982 10000782 10758874 11510585 11798256 11530585 11540585 11550585
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														
Varian	ProStar 430, 48 Pos. Tray	X													
Varian	8035														
Varian	8000														
Varian	8400 (100 Pos.)												X		
Varian	8410-Autoinjector (10 x 2ml; 6 x 5ml; 5 x 10ml)												X	X	
Varian	8100														
Varian	8200														
Varian	CP-910, 911, 912														
Varian	CP-940, 941														
Varian	LC 9100/LC 9095/LC 9090	X													
Varian	Archon														X
Varian	COMBI PAL (200 Pos. Tray) GC PAL (200 pos. Tray)								X						
Varian	COMBI PAL (98 Pos. Tray) GC PAL (98 Pos. Tray)								X						
Varian	COMBI PAL SPME mode (98 Pos. Tray)								X						
Varian	COMBI PAL (32 Pos. Tray) GC PAL (32 Pos. Tray)								X			X			
Varian	COMBI PAL SPME mode (32 Pos. Tray)								X			X			
Varian	Genesis										X				
Varian	Marathon Basic, Standard 96 Pos. Tray	X													
Varian	Marathon Basic, Präp, King Size 48 Pos. Tray							X							
Varian	Vista														
Varian	CP-9020/CP-9025								X						
Varian	CP-9060								X						
Varian	CP-9010														
Varian	920-LC/940-LC	X													
Viscotek	Vortex™														X
Viscotek	GPC Autosampler														
VWR	Hitachi Chromaster		X												
VWR(Merck®)/ Hitachi	L2200 (LaChrom Elite)/ L2200-U (LaChrom Ultra) (200 Pos. Tray)	X													
VWR(Merck®)/ Hitachi	L2200 (LaChrom Elite) (128 Pos. Tray)		X												
VWR(Merck®)/ Hitachi	L7200 (LaChrom) (80 Pos. Tray)/ L7250(LaChrom) (120 Pos. Tray)	X													
VWR(Merck®)/ Hitachi	L7250 (LaChrom) (Rack Holder for combination Racks)	X	X												X
VWR(Merck®)/ Hitachi	655-A40 (108 Pos. Tray)	X													
VWR(Merck®)/ Hitachi	L-9100	X													
VWR(Merck®)/ Hitachi	AS 2000 (50 Pos. Tray)	X													
VWR(Merck®)/ Hitachi	AS 4000 (150 Pos. Tray)	X													
VWR(Merck®)/ Hitachi	AS 4000 (198 Pos. Tray)														
VWR(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								
VWR(Merck®)/ Hitachi	AS 6000	X													
Waters®	ACQUITY™ UPLC Systeme		X(for 24 Position Plate)												
Waters®	Wisp 48 position		X				X								
Waters®	Wisp 96 position				X										
Waters®	717, 96 Position Carousel				X										
Waters®	717, 48 Position Carousel		X				X								
Waters®	Alliance®	X													
Waters®	Alliance® GPC 2000		X						X						
Waters®	Alliance® HT Syst.	X													
Waters®	Alliance® 2790/2795	X													
Waters®	Acquity Sample Organizer	X													
Waters®	Acquity/CapLC/Waters/ Nano Acquity	X													
Waters®	Alliance® 2690/2695	X													

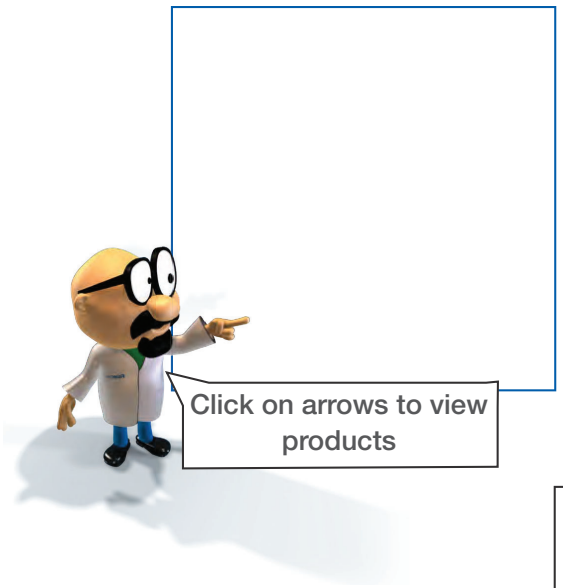
The Fisherbrand range of chromatography vials and closures is extensive. They have been designed to provide you with the best fit for your applications, sample type and autosampler mode. However, if you are unable to find the product you need or if you have any further questions regarding the Fisherbrand range of chromatography vials and closures, then please contact our Product Support Advisors.

CRIMP NECK VIALS ND8

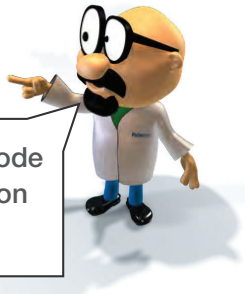
These vials are preferentially used on instruments from the following manufacturers: Agilent, Beckman, Carlo Erba, CTC, Fisons, PerkinElmer, Shimadzu, Thermo Scientific, VWR (Merck™)/Hitachi, etc. A broad selection of ND8 crimp neck vials and microvials are available (see below), which can closed with 8mm aluminium caps, 9mm PE caps or 8mm push-on caps. Note that some microvials may need an adapter for full autosampler compatibility as typically they have a conical base and are therefore not free-standing.

- Available in different capacities
- With flat, round or conical bottoms
- In clear or amber glass
- For almost all autosamplers

ND8 Crimp neck vials and microvials



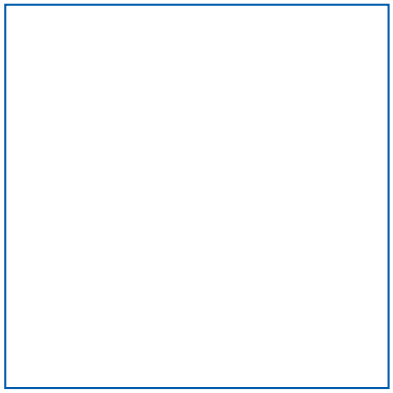
		Description	Dimensions, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
	Crimp neck vials								
1	**11732408**	0.7mL Crimp neck vial	40 x 7	Clear	0.9	0.8	40	<11	1000
2	**11742408**	0.7mL Crimp neck vial	40 x 7	Amber	0.9	0.8	40	<11	1000
3	**11561364**	0.8mL Crimp neck vial	30 x 8.2	Clear	0.9	0.8	40	<11	100
1	**11531374**	1.2mL Crimp neck vial	40 x 8.2	Clear	1.1	1.00	50	<20	100
2	**11541374**	1.2mL Crimp neck vial	40 x 8.2	Amber	1.1	1.00	50	<20	100
	Microvials								
4	**11717567**	0.3mL Microvial round bottom	31.5 x 5.5	Clear	0.35	0.3	30	<6	1000
5	**11722408**	0.2mL Microvial conical bottom	31.5 x 5.5	Clear	0.26	0.2	25	<3	1000
6	**11782408**	0.6mL Microvial conical bottom	40 x 7	Clear	0.64	0.6	25	<3	1000
7	**11792408**	0.6mL Microvial conical bottom	40 x 7	Amber	0.64	0.6	25	<3	1000
8	**11712408**	0.7mL Microvial conical bottom	30 x 7	Amber	1.3	1.05	25	<3	1000



Aluminium crimp caps ND8

Natural rubber/TEF and red rubber/PTFE seals

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

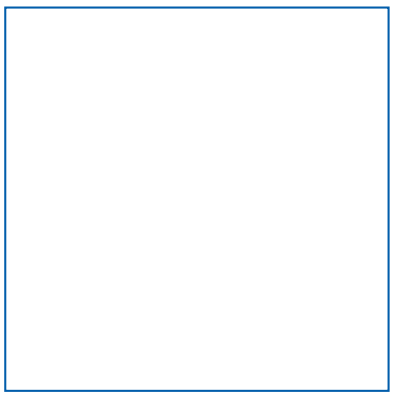


		Cap description	Septa material	Durometer	Thickness,mm	Pack qty
1	11797557	Aluminium cap clear lacquered, 4mm centre hole	Natural rubber red-orange/TEF transparent approved IMQ*	60° Shore A	1.0	1000
1	11561344	Aluminium cap clear lacquered, 4mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	100
2	11818981	Aluminium cap clear lacquered, 4mm centre hole	Red rubber/PTFE beige	45° Shore A	1.0	1000

*IMQ = Instrument Manufacturer Quality

Silicone/PTFE seals ND8

- 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 red rubber
- Silicone liners with PTFE on both sides for less coring during penetration



		Cap description	Septa material	Durometer	Thickness, mm	Pack qty
1	11702418	Aluminium cap clear lacquered, 4mm centre hole	Silicone white/PTFE red	45° Shore A	1.3	1000
1	11898961	Aluminium cap clear lacquered, 4mm centre hole	Silicone cream/PTFE red	55° Shore A	1.5	1000
2	11808981	Aluminium cap clear lacquered, 4mm centre hole	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
3	11712418	Aluminium cap clear lacquered, 4mm centre hole	PTFE red/Silicone white/ PTFE red	45° Shore A	1.0	1000
4	11722418	Aluminium cap clear lacquered, 4mm centre hole	Silicone white/PTFE red, with slit	45° Shore A	1.3	1000

Other caps and seals for crimp neck vials ND8

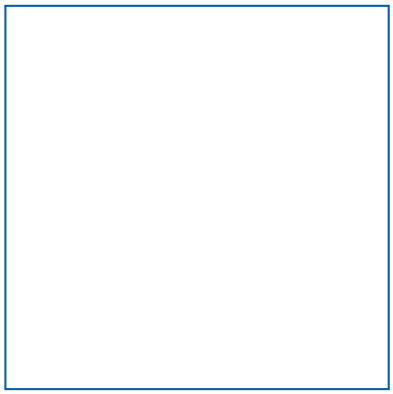
- Push-on cap (11838991) with thinned penetration point made of polyethylene for crimp neck vials and microvials ND8
- Inexpensive alternative to crimp caps for uncritical analyses, as it does not contain any septa, but only has a thinner penetration point

		Cap description	Septa material	Durometer	Thickness, mm	Pack qty
1	11838991	PE push-on cap, blue	With thinned penetration point	-	-	1000
2	11804830	PE push-on cap, transparent 9 x 5.9mm, 4mm centre hole	Natural rubber red-orange/ TEF transparent	60° Shore A	1.3	1000
3	11814830	PE push-on cap, transparent 9 x 5.9mm, 4mm centre hole	Silicone white/PTFE red	45° Shore A	1.3	1000

Screw neck vials ND8

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

- Standard vials for GC and HPLC
- Specially suitable for VWR (Merck™)/Hitachi instruments (Cat No.11565874, 10560053, 10040992, 11782428, 11831653, 11821663, 11841653)
- Broad range of micro-insert
- Vials and seals also available as 2-in-1 kit
- Small opening requires micro-inserts with a diameter of 5mm
- Micro-insert with flat bottom also available

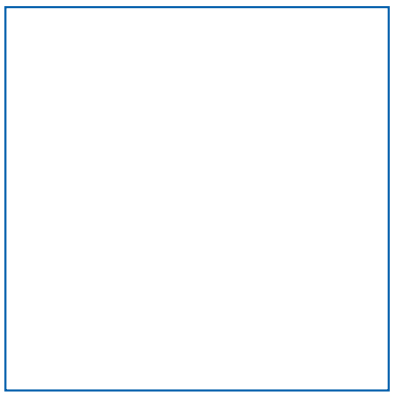


Screw neck vials ND8, small opening, 8-425 thread and microvials ND8

		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11565874	1.5mL Screw neck vial, small opening (silanised version available 11575904)	32 x 11.6	Clear	1.9	1.5	200	<110	100
2	10560053	1.5mL Screw neck vial, small opening	32 x 11.6	Amber	1.9	1.5	200	<110	100
3	11525884	1.5mL Screw neck vial, small opening, label + filling lines	32 x 11.6	Clear	1.9	1.65	200	<110	100
4	11595874	1.5mL Screw neck vial, small opening, label + filling lines (silanised version available 11525914)	32 x 11.6	Amber	1.9	1.5	200	<110	100
5	11515884	1.1mL Microvial, conical, small opening	32 x 11.6	Clear	1.3	1	30	<3	100

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

Micro-inserts for vials ND8 with small opening



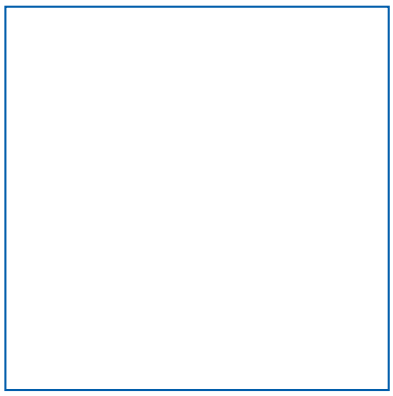
		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11762428	0.1mL Micro-insert, 15mm top	31 x 5	Clear	0.2	0.15	25	<1	1000
2	11861653	0.1mL Micro-insert, 9mm top	31 x 5	Clear	0.25	0.2	30	<2	1000
3	11772428	0.2mL Micro-insert, flat bottom	31 x 5	Clear	0.3	0.26	40	<8	1000
4	11858951	0.1mL Micro-insert, with assembled plastic spring	29 x 5	Clear	0.2	0.15	25	<1	1000
5	11848951	0.1mL Micro-insert, metal spring required!	27.5 x 4	Clear	0.2	0.11	25	<1	1000
6	11571304	Spring for micro-insert 11848951	36 x 5	-	-	-	-	-	100

Polypropylene screw caps ND8

- Ready to use combination seals; no time consuming and “tricky” assembly
- Available as 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 red rubber as cost-effective seals

Natural rubber/TEF, red rubber/PTFE and butyl/PTFE seals ND8

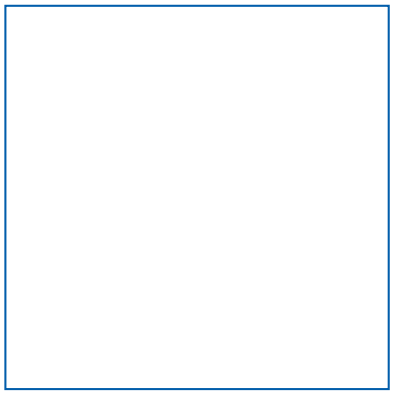
- Natural rubber is ideal for multiple injections due to high resealability, but not as easy to penetrate as red rubber/PTFE
- Standard, moderately priced seals for GC and HPLC
- Red rubber/PTFE has a better purity than natural rubber/TEF, is softer and has less fragmentation, but doesn´t offer the same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



		Septa material	Durometer	Thickness, mm	Pack qty
Polypropylene screw cap black, 5.5mm centre hole, 8-425 thread					
1	**11782428**	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	**11894800**	Red rubber/PTFE beige	45° Shore A	1.0	1000
3	**11757567**	Butyl red/PTFE grey	55° Shore A	1.3	1000

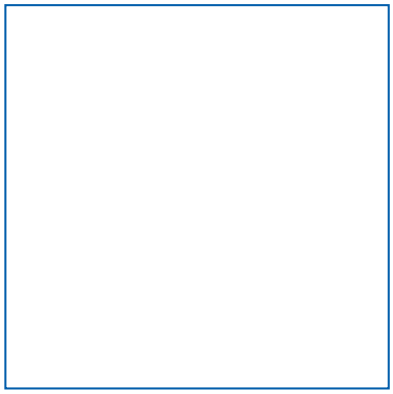
Silicone/PTFE seals ND8

- Temperature resistant from -60°C up to +200°C
- Silicone liners with PTFE on both sides for less coring
- Much cleaner than natural rubber, red rubber or butyl
- Different hardnesses (durometers) to meet requirements of the various types of needles regarding penetration



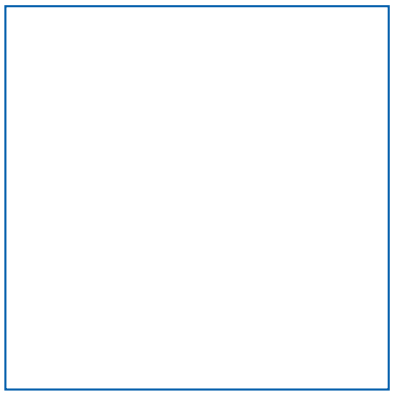
		Septa material	Durometer	Thickness, mm	Pack qty
Polypropylene screw cap black, 5.5mm centre hole, 8-425 thread					
1	**11792428**	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
1	**11814800**	Silicone cream/PTFE red UltraClean	55° Shore A	1.5	1000
2	**11844800**	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
3	**11702438**	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
4	**11823560**	Silicone white/PTFE red, with slit	45° Shore A	1.3	1000

Natural rubber/TEF, red rubber/PTFE, butyl/PTFE and silicone/PTFE seals, closed top ND8



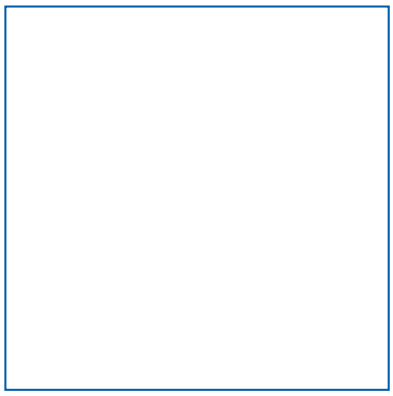
		Septa material	Durometer	Thickness, mm	Pack qty
Polypropylene screw cap black, closed top, 8-425 thread					
1	**11747567**	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	**15552300**	Red rubber/PTFE beige	45° Shore A	1.0	100
3	**11884800**	Butyl red/PTFE grey	55° Shore A	1.3	1000
4	**11864800**	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000

Septa (only, without caps) for ND8 (8mm) vials



		Septa material	Durometer	Thickness, mm	Pack qty
1	11821663	PTFE virginal (only unassembled)	53° Shore D	0.25	1000
2	11848961	Natural rubber red-orange/TEF transparent (only unassembled)	60° Shore A	1.0	1000
2	11787557	Natural rubber red-orange/TEF transparent, tested by VWR (Merck™)/Hitachi	60° Shore A	1.3	1000
3	12950841	Red rubber/PTFE beige	45° Shore A	1.0	100
4	11868961	Butyl red/PTFE grey	55° Shore A	1.3	1000
5	11872663	Silicone white/PTFE red	45° Shore A	1.3	1000
5	11830772	Silicone cream/PTFE red	55° Shore A	1.5	1000
6	11840772	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
7	11841653	Silicone white/PTFE blue, slitted, rec. by VWR (Merck™)/Hitachi (only unassembled)	55° Shore A	0.9	1000
8	11828961	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000

Polypropylene screw caps ND8 (caps only, supplied without seals)



		Cap description	Pack qty
1	11831653	Polypropylene screw cap, black, 5.5mm centre hole	1000
2	11861683	Polypropylene screw cap, black, closed top	1000
3	11898981	Polypropylene screw cap, white, 5.5mm centre hole	1000
4	11888981	Polypropylene screw cap, white, closed top	1000

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

	Vial description	Seal	Pack qty
12980861	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening (seal Cat.No 11565874)	Pre-screwed with polypropylene screw cap, black, 5.5mm centre hole (seal Cat.No 11831653); silicone white/PTFE blue, 55° Shore A, 0.9mm, slitted (seal Cat. No 11841653), rec. by VWR (Merck™)/Hitachi	100
11555924	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening (seal Cat.No 11565874)	Pre-screwed with polypropylene screw cap black, 5.5mm centre hole; silicone white/PTFE red, 45° Shore A, 1.3mm, (seal Cat.No 11792428)	100
11575924	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening (seal Cat.No 11565874)	Pre-screwed with polypropylene screw cap black, 5.5mm centre hole; silicone white/PTFE red, 45° Shore A, 1.3mm, slitted (seal Cat.No 11823560)	100
12980861	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening (Vial Cat.No 11565874)	Pre-screwed with polypropylene screw cap black, closed top, 8-425 thread; silicone white/PTFE red, 45° Shore A, 1.3mm (seal Cat.No 11864800)	100
11555924	1.5mL Screw neck vial, 8-425 thread, 32 x 11.6mm, amber glass, 1st hydrolytic class, small opening (vial Cat.No 10560053)	Pre-screwed with polypropylene screw cap black, 5.5mm centre hole; silicone white/PTFE red, 45° Shore A, 1.3mm, (seal Cat.No 11792428)	100
11575924	1.5mL Screw neck vial, 8-425 thread, 32 x 11.6mm, amber glass, 1st hydrolytic class, small opening (vial Cat.No 10560053)	Pre-screwed with polypropylene screw cap black, closed top, 8-425 thread; silicone white/PTFE red, 45° Shore A, 1.3mm (seal Cat.No 11864800)	100

Special 3-in-1 and 2-in-1 kits

3-in-1 and 2-in-1 kits for VWR (Merck™)/Hitachi autosampler

	Item	Description	Pack qty
10670843	3-in-1 kit	3-in-1 kit consisting of: 11565874, 11831653† and 11841653	100
11565874	Vial	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening	100
11831653	Cap	Polypropylene screw cap, black, 5.5mm centre hole †	1000
11841653	Septa	Silicone white/PTFE blue, 55° Shore A, 0.9mm, slitted rec. by VWR (Merck™)/Hitachi	100
12980871	Alternative 3-in-1 kits	Same cap + same septa in combination with 10560053 (amber glass, small opening)	100
12950871	Alternative 3-in-1 kits/2-in-1 kits	Same vial + same cap in combination with 11821663 (PTFE virginal 0.25mm)	100
10000842	2-in-1 kit	2-in-1 kit consisting of: 11565874, 11782428†	100
11565874	Vial	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening	100
11782428	Cap	Polypropylene screw cap, black, 5.5mm centre hole, natural rubber red-orange/TEF transparent, 60° Shore A, 1.3mm †	1000
12910881	Alternative 2-in-1 kits	Same seal in combination with 10560053 (amber glass, small opening)	100
12900881	Alternative 2-in-1 kits	Same seal in combination with 11525884 (clear glass, small opening, with label + filling lines)	100

† Note: Pack qty is a 100 in this kit

2-in-1 kits for Varian autosampler

	Item	Description	Pack qty
10475792	2-in-1 kit	2-in-1 kit consisting of: 11565874, 11792428†	100
11565874	Vial	1.5mL Screw neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, small opening	100
11792428	Seal	PP screw cap, black, 5.5mm centre hole; UltraClean silicone white/PTFE red, 45° Shore A, 1.3mm †	1000
12990871	Alternative 2-in-1 kit	Same seal in combination with 11525884 (clear glass, small opening, with label + filling lines)	100
12960871	2-in-1 kit	2-in-1 kit consisting of: 10560053, 11792428†	100
10560053	Vial	1.5mL Screw neck vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, small opening	100
11792428	Seal	PP screw cap, black, 5.5mm centre hole; UltraClean silicone white/PTFE red, 45° Shore A, 1.3mm †	1000
12970871	Alternative 2-in-1 kit	Same seal in combination with 11595874 (amber glass, small opening, with label + filling lines)	100

† Note: Pack qty is a 100 in this kit

To download a copy of the vial compatibility chart for your autosampler, simply visit eu.fishersci.com/go/fisherbrand

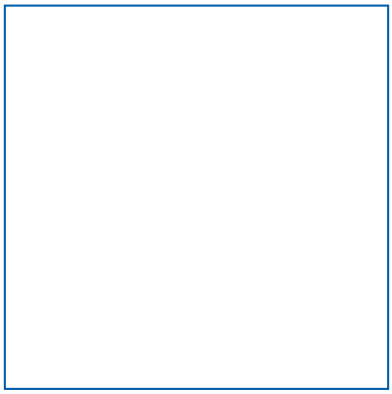
SHORT THREAD VIALS ND9

These vials can be used on all popular autosamplers thanks to their technical geometry, especially models manufactured by Agilent, HTA, Shimadzu, Thermo Scientific, Varian and Waters

The universal autosampler vial

- Universally compatible with almost all autosamplers
- Vials with integrated micro-insert are also now available in amber glass
- Pre-screwed short thread vials available

Short thread vials ND9, wide opening and microvials with short thread ND9



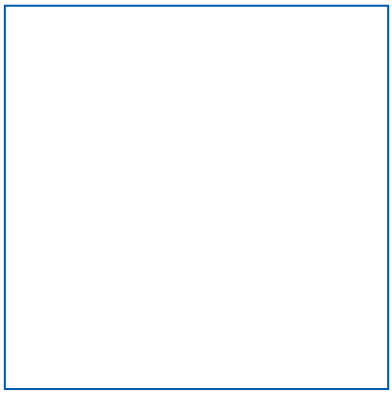
		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	10162512	1.5mL Short thread vial, 1st hydrolytic class, wide opening (silanised version available 11585894)	32 x 11.6	Clear	1.85	1.5	200	<120	100
2	11575884	1.5mL Short thread vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available 15562310)	32 x 11.6	Clear	1.85	1.5	200	<120	100
3	10080952	1.5mL Microlitre thread vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available 11595894)	32 x 11.6	Amber	1.85	1.5	200	<120	100
4	11575894	Short thread vial with integrated 0.2mL Micro-insert, 1st hydrolytic class, label + filling lines, "Top Bonded"	32 x 11.6	Clear	0.34	0.2	25	<1	100
5	10145714	Short thread vial with integrated 0.2mL Micro-insert, 1st hydrolytic class, label + filling lines, "Top Bonded"	32 x 11.6	Amber	0.34	0.2	25	<1	100
6	12951011	Short thread vial with integrated micro-insert, 1st hydrolytic class "Base Bonded"	32 x 11.6	Clear	0.4	0.3	30	<3	100
7	15592310	Short thread vial with integrated micro-insert, 1st hydrol.class "Base bonded"	32 x 11.6	Amber	0.4	0.3	30	<3	100
8	11515894	1.1mL Microlitre short thread vial ND9, 1st hydrolytic class (silanised version available 10670341)	32 x 11.6	Clear	1.6	1.5	30	<3	100
9	11535914	0.9mL total Microlitre short thread vial ND9, 1st hydrolytic class	32 x 11.6	Clear	1.4	1.1	25	<1	100
10	11871653	TopSert TPX short thread vial, with integrated 0.2mL glass micro-insert (silanised version available 11595914)	32 x 11.6	Clear	0.36	0.2	25	<1	1000
11	11515924	TopSert TPX short thread vial, with integrated 0.2mL glass micro-insert (silanised version available 11535924)	32 x 11.6	Amber	0.36	0.2	25	<1	100

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

Short thread SureStop™ vials ND9

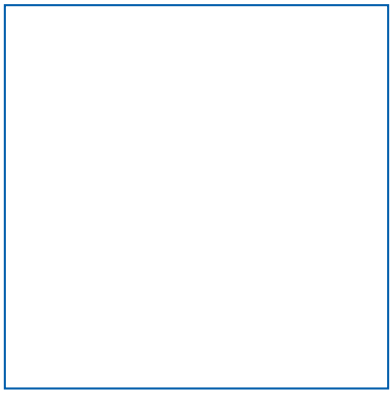
1.5mL short thread SureStop™ vials ND9 with SureStop™ function

- A stop-ring barrier thread defines the ideal endpoint of the screwing process
- Defined screwing end-point eliminates user-to-user variance
- Optimal septum compression produces significantly higher analytical reproducibility



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	15166425	1.5mL short thread SureStop™ vial, wide opening, with overwind-barrier	32 x 11.6	Clear	1.85	1.5	200	<120	100
2	15136425	1.5mL short thread SureStop™ vial, wide opening, label + filling lines, with overwind-barrier	32 x 11.6	Clear	1.85	1.5	200	<120	100

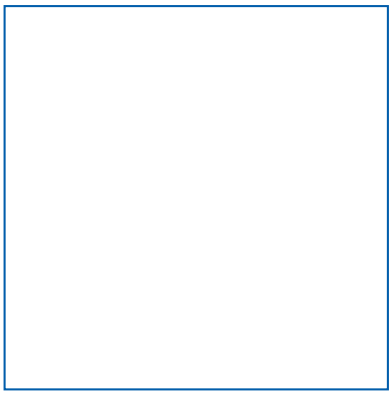
Micro-inserts for short thread vials ND9 with wide opening



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11752418	0.1mL Micro-insert, 1st hydrolytic class, 15mm top (silanised version available 11889120)	31 x 6	Clear	0.34	0.25	30	<4	1000
2	11777557	0.1mL Micro-insert, 1st hydrolytic class, 12mm top	31 x 6	Clear	0.35	0.3	30	<4	1000
3	11805863	0.1mL Micro-insert, 1st hydrolytic class, with assembled plastic spring (silanised version available 11878951)	29 x 5.7	Clear	0.3	0.25	30	<4	1000
4	11762418	0.2mL Micro-insert, 1st hydrolytic class, flat bottom (silanised version available 11792368)	31 x 6	Clear	0.5	0.35	40	<8	1000
5	13445489	0.1mL PP micro-insert, 10mm top, filling lines	29 x 6	Clear	0.30	0.25	30	<4	1000
6	13455499	0.1mL PP micro-insert, 10mm top, filling lines and attached plastic spring	29 x 6	Clear	0.30	0.25	30	<4	1000
7	13495479	0.2mL PP micro-insert, flat bottom	31 x 6	Clear	0.5	0.35	40	<8	1000

TFVol. = Total Volume/Filling Volume (mL) Us Vol. = Usable Volume (mL) MW Vol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Plastic vials ND9 and plastic microvials ND9



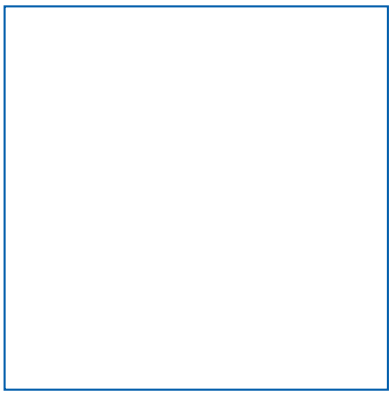
		Description	Dimension, mm	Glass type	TFVol (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	**11727597**	1.5mL PP short thread vial, filling lines, slightly concave shaped bottom	32 x 11.6	Transparent	1.85	1.50	200	<110	1000
2	**11814940**	1.5mL PP short thread vial, filling lines, slightly concave shaped bottom	32 x 11.6	Amber	1.85	1.50	200	<110	1000
3	**11824940**	0.7mL PP short thread microvial	32 x 11.6	Transparent	0.87	0.60	150	<80	1000
4	**11707597**	0.3mL PP short thread microvial	32 x 11.6	Transparent	0.4	0.25	30	<4	1000
5	**11884930**	0.3mL TPX short thread microvial	32 x 11.6	Crystal clear	0.4	0.25	30	<4	1000
6	**11851673**	0.3mL PP short thread microvial	32 x 11.6	Amber	0.4	0.25	30	<4	1000

TFVol. = Total Volume/Filling Volume (mL) Us Vol. = Usable Volume (mL) MW Vol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Polypropylene short thread seals ND9

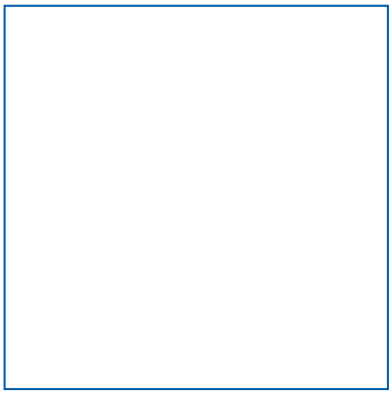
- The synthetic red rubber/PTFE septum is cost-effective alternative to the natural rubber Instrument Manufacturer Quality (IMQ) option. Please note however that although softer for easier penetration, it is not suitable for multiple injection
- With pre-cut septa only, the silicone material is slitted in a Y-shape whilst the PTFE lamination remains intact. This ensures that sample evaporation and concentration occurring with completely slitted septa can be minimised
- Short thread seals also available as closed top version (blue cap)
- Fully assembled seal with slitted liner available, in order to avoid a vacuum inside the vial during multiple injections
- Screw caps actually possess a crimp cap design, making them suitable for robotic handling

Polypropylene short thread cap ND9 transparent, 6mm centre hole



		Septa material	Durometer	Thickness, mm	Pack qty
1	11835903	PTFE virginal	53° Shore D	0.2	1000
2	11804021	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11824850	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	12353700	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11824740	PTFE red/silicone white/ PTFE red	45° Shore A	1.0	1000
6	11894011	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000
7	11874850	Silicone white/PTFE red, pre-cut (Y)	55° Shore A	1.0	1000

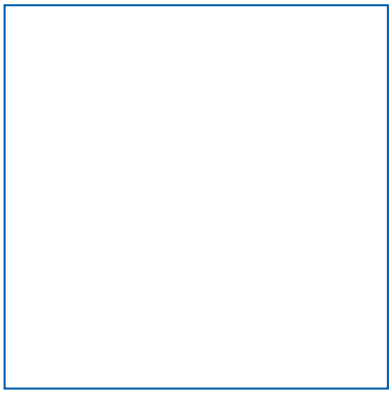
Polypropylene short thread ND9 cap blue, 6mm centre hole



		Septa material	Durometer	Thickness, mm	Pack qty
1	11834830	PTFE virginal	53° Shore D	0.2	1000
2	11722438	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11863021	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	11787567	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11732438	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11797567	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000
7	11864850	Silicone white/PTFE red, pre-cut (Y)	55° Shore A	1.0	1000
8	15572300	Aluminium liner sealed by transparent flat-seal		0.06	100

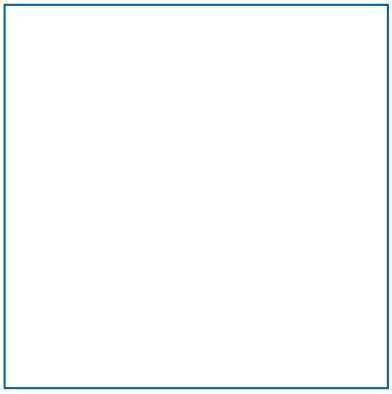
*Instrument Manufacturer Quality (IMQ)

Polypropylene short thread ND9 cap blue, closed top



		Septa material	Durometer	Thickness, mm	Pack qty
1	10142913	PTFE virginal	53° Shore D	0.2	1000
2	11814850	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11804850	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000

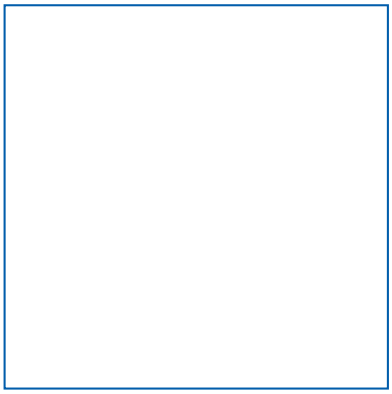
Polypropylene short thread ND9 cap red, 6mm centre hole



		Septa material	Durometer	Thickness, mm	Pack qty
1	11894830	PTFE virginal	53° Shore D	0.2	1000
2	11844830	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11834850	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	11864830	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11854830	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11874830	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000

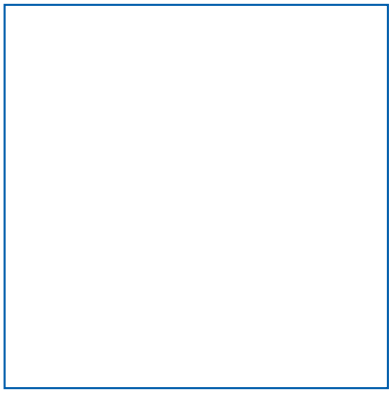
*Instrument Manufacturer Quality (IMQ)

Polypropylene short thread ND9 cap black, 6mm centre hole



		Septa material	Durometer	Thickness, mm	Pack qty
1	11874840	PTFE virginal	53° Shore D	0.2	1000
2	11854840	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11844850	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	11827281	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11864840	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11862771	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000

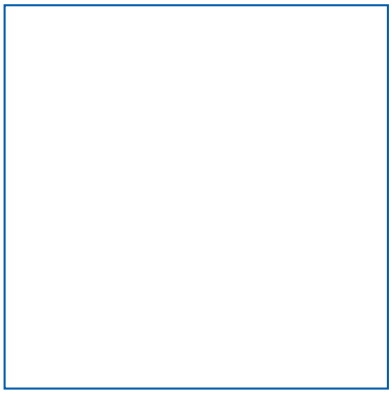
Polypropylene short thread ND9 cap green, 6mm centre hole



		Septa material	Durometer	Thickness, mm	Pack qty
1	12912680	PTFE virginal	53° Shore D	0.2	100
2	11804840	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	10498704	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	11884830	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11907071	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11894840	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000

*Instrument Manufacturer Quality (IMQ)

Polypropylene short thread cap yellow, 6mm centre hole

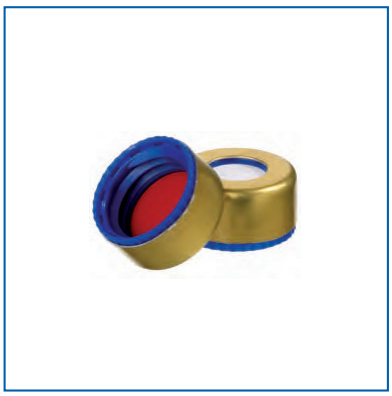


		Septa material	Durometer	Thickness, mm	Pack qty
1	12922680	PTFE virginal	53° Shore D	0.2	100
2	11844840	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
3	11854850	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	11834840	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000
5	11824840	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11884840	Silicone white/PTFE blue, with slit	55° Shore A	1.0	1000

*Instrument Manufacturer Quality (IMQ)

Magnetic short thread cap, 6mm centre hole (for CTC GC PAL and Thermo Scientific TriPlus Autosamplers)

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



	Septa material	Durometer	Thickness, mm	Pack qty
10310094	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000

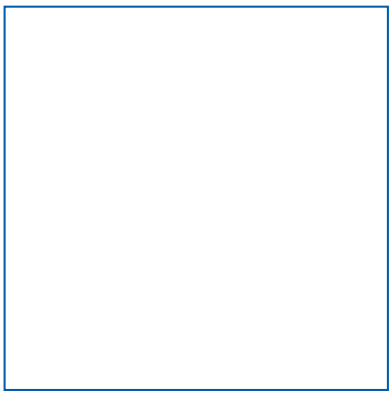
Short thread MS ND9 cap transparent

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

	Description cap	Pack qty
11894820	With thinned penetration area and diaphragm	1000

UltraBond Seals ND9

Analogous to the LECTRABOND closure from Waters and the INTERSEAL closure from Agilent, we also offer several UltraBond short thread seals, including some manufactured to an improved Instrument Manufacturer Quality. The new septa material is an especially pure silicone, which optimises product safety even more, whilst the PTFE layer has also been modified to permit even easier needle penetration. With the UltraBond seal, the cap and liner form an inseparable unit, such that the liner cannot be dislocated or pushed into the vial, even with a blunt needle.



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11767567	PP short thread cap black, 6mm centre hole	Silicone white/PTFE red	45° Shore A	1.3	1000
2	11707587	PP short thread cap blue, 6mm centre hole	Silicone beige/PTFE white, improved IMQ*	45° Shore A	1.3	1000
	11777567	PP short thread cap blue, 6mm centre hole	Silicone beige/PTFE white, with slit, improved IMQ*	45° Shore A	1.3	1000

*Instrument Manufacturer Quality (IMQ)

Special 2-in-1 kits for Waters instruments

	Item	Description	Pack qty
12960891	2-in-1 kit	2-in-1 kit consisting of: 10162512 + 11707587†	100
10162512	Vial	1.5mL short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
11707587	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm†	1000
12950891	2-in-1 kit	2-in-1 kit consisting of: 10162512 + 11777567†	100
10162512	Vial	1.5mL short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
11777567	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm, slit †	1000
12910901	2-in-1 kit	2-in-1 kit consisting of: 11575884 + 10418092	100
11575884	Vial	1.5mL short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening, label and filling lines	100
11707587	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm †	100
11860972	2-in-1 kit	2-in-1 kit consisting of: 11575884 + 11707587†	100
11575884	Vial	1.5mL short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening, label and filling lines	100
11707587	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm, slit †	1000
12920901	2-in-1 kit	2-in-1 kit consisting of: 10080952 + 11707587†	100
10080952	Vial	1.5mL short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label and filling lines	100
11707587	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm †	1000
12570186	2-in-1 kit	2-in-1 kit consisting of: 10080952 + 11777567†	100
10080952	Vial	1.5mL short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label and filling lines	100
11777567	Seal	9mm UltraBond PP short thread cap, blue, centre hole; silicone beige/PTFE white, 45° Shore A, 1.3mm, slit †	1000

† Note: Pack qty is a 100 in this kit

HPLC and GC Certified vial kits (short thread vials and short thread seals ND9)

Vial certifications are getting far more critical, in order to ensure process reproducibility and to avoid possible sources of errors right from the beginning. For Fisherbrand, the highest quality, consistency and quality control have always been very important, as exemplified by our range of 'HPLC and GC Certified' vials and closures.

		Description	Seal	Pack qty
1	**13429748**	HPLC/GC certified vial kit 1.5mL short thread vial, clear glass, 1st hydrolytic class, label + filling lines	UltraClean seal: 9mm PP short thread cap, blue, centre hole; silicone white/PTFE red, 1.0mm	100
2	**13439748**	HPLC/GC certified vial kit 1.5mL short thread vial, amber glass, 1st hydrolytic class, label + filling lines	UltraClean seal: 9mm PP short thread cap, blue, centre hole; silicone white/PTFE red, 1.0mm	100

*Instrument Manufacturer Quality (IMQ)

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

- Fisherbrand LC/MS and GC/MS certified kits represent our premium range of certified products. Each lot of vial/closure combination has been tested by LC/MS and GC/MS on blank and trace values
- Available as clear and amber 9mm short thread vial in the SureStop™ version for the lowest evaporation rate of all autosampler vials
- The glass surface of the SureStop™ vials possesses very low adsorption properties for all types of polar compounds, notably lower than 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, optimised for ultra-trace analysis
- LC/MS and GC/MS certified kits are delivered fully shrink-wrapped to assure total transport safety and security

		Description	Seal	Pack qty
1	15562320	LC/MS and GC/MS certified vial kit 1.5mL short thread SureStop™ vial, 32 x 11.6mm, clear glass, wide opening, label + filling lines with overwind-barrier	Ultra high performance seal: PP short thread cap, blue, centre hole; silicone dark blue-translucent/PTFE natural, 35° Shore A, 1.0mm	100
2	15572320	LC/MS and GC/MS certified vial kit 1.5mL short thread SureStop™ vial, 32 x 11.6mm, amber glass, wide opening, label + filling lines with overwind-barrier	Ultra high performance seal: PP short thread cap, blue, centre hole; silicone dark blue-translucent/PTFE natural, 35° Shore A, 1.0mm	100

*Instrument Manufacturer Quality (IMQ)

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 during cap assembly in the laboratory
- Pre-screwed vials are available with any of the short thread vials and any seal of your choice

	Description	Seal	Pack qty
12990861	1.5mL Short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening (vial Cat.No 10162512)	Pre-screwed with PP short thread cap blue, 6mm centre hole, silicone white/PTFE blue, with slit, 55° Shore A, 1.0mm (seal Cat.No 11797567)	100
11585924	1.5mL Short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label + filling lines (vial Cat.No 10080952)	Pre-screwed with PP short thread cap blue, 6mm centre hole, silicone white/PTFE blue, with slit, 55° Shore A, 1.0mm (seal Cat.No 11797567)	100
11595924	1.5mL Short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label + filling lines (vial Cat.No 10080952)	Pre-screwed with PP UltraBond Seal blue, 6mm centre hole, silicone beige/PTFE white, with slit (approved IMQ*), 45° Shore A, 1.3mm (seal Cat. No 11777567)	100
12356763	1.5mL Short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label + filling lines (vial Cat.No 10080952)	Pre-screwed with PP short thread cap transparent, centre hole, silicone white/PTFE red, 55° Shore A, 1.0mm, pre-cut (Y) (seal Cat.No 11874850)	100

2-in-1 kits with short thread vials ND9

	Item	Description	Pack qty
11787497	2-in-1 kit	2-in-1 kit consisting of: 10162512 + 11787567†	100
10162512	Vial	1.5mL Short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
†11787567	Seal	PP short thread cap blue, 6mm centre hole; UltraClean silicone white/PTFE red, 55° Shore A, 1.0mm	1000
15124649	2-in-1 kit	2-in-1 kit consisting of: 10162512 + 11797567†	100
10162512	Vial	1.5mL Short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
†11797567	Seal	PP short thread cap blue, 6mm centre hole; silicone white/PTFE blue, 55° Shore A, 1.0mm, with slit	1000
15532320	2-in-1 kit	2-in-1 kit consisting of: 11575884 + 11862771†	100
11575884	Vial	1.5mL Short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening, label and filling lines	100
†11862771	Seal	PP short thread cap, black, 6mm centre hole; silicone white/PTFE blue, 55° Shore A, 1.0mm, slit	1000
12951251	2-in-1 kit	2-in-1 kit consisting of: 10162512 + 12353700†	100
10162512	Vial	1.5mL Short thread vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
†12353700	Seal	PP short thread cap transparent, 6mm centre hole; UltraClean silicone white/PTFE red, 55° Shore A, 1.0mm	1000
11395991	2-in-1 kit	2-in-1 kit consisting of: 10080952 + 12353700†	100
10080952	Vial	1.5mL Short thread vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label and filling lines	100
†12353700	Seal	PP short thread cap transparent, 6mm centre hole; silicone white/PTFE red, 55° Shore A, 1.0mm	1000

† Note: Pack qty is a 100 in this kit
*Instrument Manufacturer Quality (IMQ)

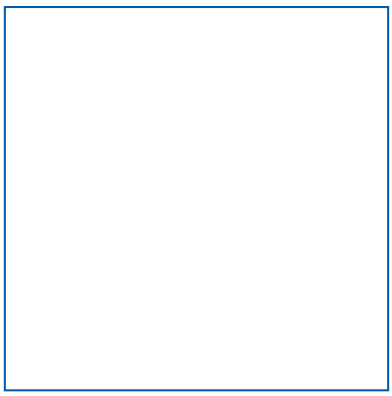
SCREW NECK VIALS ND10

These vials are preferentially used on autosampler models from the following manufacturers: Jasco, PerkinElmer, Shimadzu, Varian and Waters

- Packed in a cleanroom environment as the new standard for chromatography vials
- Wide opening enables easy filling with viscous materials
- Broad range of micro-inserts

SCREW NECK VIALS ND10

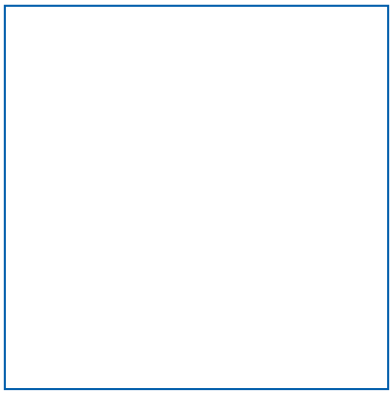
Screw neck vials ND10, wide opening, 10-425 thread and appropriate micro-inserts



		Description	Dimensions, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	**11511474**	1.5mL Screw neck vial, 10-425 Thread, 1st hydrolytic class, wide opening	32 x 11.6	Clear	2.0	1.50	200	<120	100
2	**10521593**	1.5mL Screw neck vial, 10-425 thread, 1st hydrolytic class, wide opening, label + filling lines	32 x 11.6	Clear	2.0	1.50	200	<120	100
3	**11531474**	1.5mL Screw neck vial, 10-425 thread, 1st hydrolytic class, wide opening, label + filling lines	32 x 11.6	Amber	2.0	1.50	200	<120	100
4	**11752418**	0.1mL Micro-insert, 1st hydrolytic class, 15mm top (silanised version available 11531314)	31 x 6	Clear	0.34	0.25	30	<4	1000
5	**11777557**	0.1mL Micro-insert, 1st hydrolytic class, 12mm top	31 x 6	Clear	0.35	0.30	30	<4	1000
6	**11805863**	0.1mL Micro-insert, 1st hydrolytic class, with assembled plastic spring (silanised version available 11541314)	29 x 5.7	Clear	0.3	0.25	30	<4	1000
7	**11762418**	0.2mL Micro-insert, 1st hydrolytic class, flat bottom	31 x 6	Clear	0.5	0.35	40	<8	1000

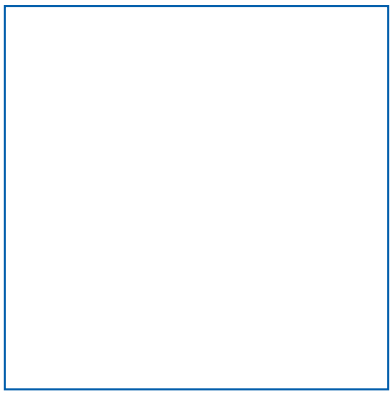
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Polypropylene screw caps and seals ND10



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11727577	PP screw cap black, 7mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11762448	PP screw cap black, 7mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
3	11822562	PP screw cap black, 7mm centre hole	Silicone white/PTFE beige UltraClean	45° Shore A	1.5	1000
4	11772448	PP screw cap black, 7mm centre hole	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
5	11782448	PP screw cap black, 7mm centre hole	Silicone white/PTFE blue, with slit	55° Shore A	1.5	1000
6	12696575	PP screw cap black, 7mm closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000

Polypropylene screw caps ND10 (without seals)



		Description cap	Pack qty
1	11380850	Polypropylene screw cap black, 7mm centre hole	1000
2	10735535	Polypropylene screw cap black, closed top	1000

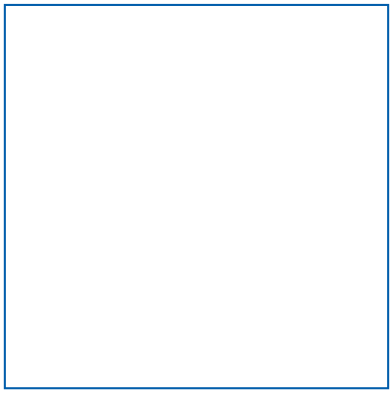
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

CRIMP NECK VIALS ND11

These vials are preferentially used on autosampler models from the following manufacturers: Agilent, Carlo Erba, CTC, DANI, Fisons, Gerstel, Jasco, PerkinElmer, Shimadzu, Spark, Thermo Scientific and Varian

- Vials with integrated micro-insert are also available now in clear and amber glass
- Use our TopSert microvial with fused-in micro-inserts, absolutely centred and which forms a tight seal up against the septa due to its slightly proud top rim
- Vials with a barcode label can be obtained as well as pre-crimped vials
- Standard vials for GC and HPLC
- Microlitre vials (11505894/11545914) are ideal for sample preparation (reactions, concentrations) or as an alternative for crimp neck vials with conical inserts

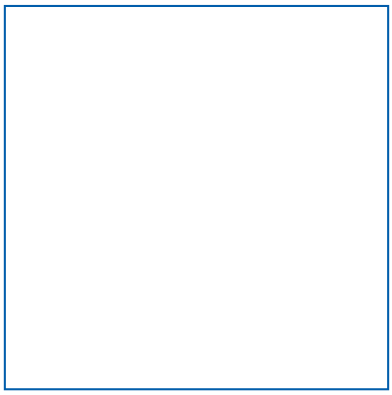
Crimp neck vials ND11, wide opening and microvials with crimp neck ND11



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	10326042	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening small opening 10081022 (silanised version available 11555904)	32 x 11.6	Clear	2.0	1.50	200	<100	100
2	11535884	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available 15572310)	32 x 11.6	Clear	2.0	1.50	200	<100	100
3	11545884	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available 11525904)	32 x 11.6	Amber	2.0	1.50	200	<100	100
4	11565894	Crimp neck vial with integrated 0.2mL Micro-insert, 1st hydrolytic class, label + filling lines "Top Bonded"	32 x 11.6	Clear	0.4	0.21	25	<1	100
5	10678005	Crimp neck vial with integrated 0.2mL Micro-insert, 1st hydrolytic class, label + filling lines "Top Bonded"	32 x 11.6	Amber	0.4	0.2	25	<1	100
6	12672465	Snap/crimp vial ND11 with integrated Micro- Insert, 1st hydrolytic class "Base Bonded"	32 x 11.6	Clear	0.4	0.3	30	<3	100
7	15219468	Snap/crimp vial ND11 with integrated micro- insert, 1st hydrolytic class "Base Bonded"	32 x 11.6	Amber	0.4	0.3	30	<3	1000
8	11505894	1.1mL Microlitre vial, 1st hydrolytic class (silanised version available 11595904)	32 x 11.6	Clear	1.8	1.5	40	<8	100
9	11545914	0,9mL Total microlitre snap/crimp ring Vial ND11, 1st hydrolytic class	32 x 11.6	Clear	1.4	1.2	25	<1	100
10	11505884	1.1mL Microvial, 1st hydrolytic class, conical	32 x 11.6	Clear	1.3	1.1	30	<4	100
11	11865813	0.9mL Microvial, 1st hydrolytic class, conical	32 x 10	Clear	1.1	0.9	30	<2	1000
12	11585914	TopSert TPX snap/crimp vial ND11, with integrated 0.2mL glass micro-insert (silanised version available 11505924)	32 x 11.6	Clear	0.35	0.2	30	<4	100
13	11525924	TopSert TPX snap/crimp vial ND11, with integrated 0.2mL glass micro-insert (silanised version available 11545924)	32 x 11.6	Amber	0.35	0.2	30	<4	100

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

Micro-inserts for crimp neck vials ND11 with wide opening

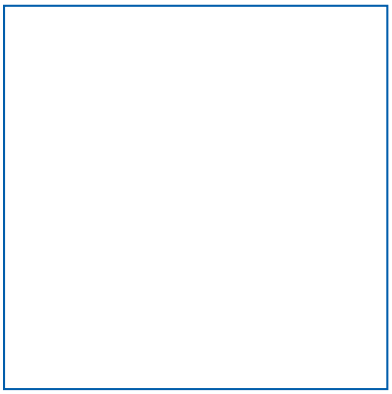


		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11752418	0.1mL Micro-insert, 1st hydrolytic class, 15mm top (silanised version available 11531314)	31 x 6	Clear	0.34	0.25	30	<4	1000
2	11777557	0.1mL Micro-insert, 1st hydrolytic class, 12mm top	31 x 6	Clear	0.35	0.3	30	<4	1000
3	11805863	0.1mL Micro-insert, 1st hydrolytic class, with assembled plastic spring (silanised version available 11541314)	29 x 5.7	Clear	0.3	0.25	30	<4	1000
4	11762418	0.2mL Micro-insert, 1st hydrolytic class, flat bottom (silanised version available 12396192)	31 x 6	Clear	0.5	0.35	40	<8	1000

Aluminium crimp caps with seals ND11

Natural rubber/TEF seals

- Three layer septa of natural rubber/butyl/TEF combines the good physical properties of natural 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

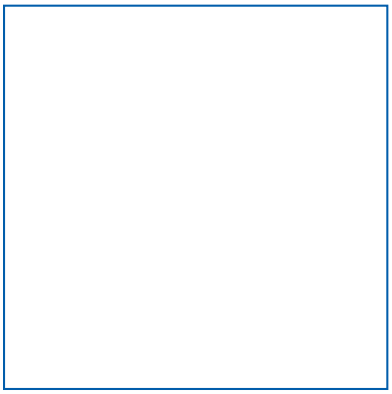


		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11737577	Aluminium cap clear lacquered, 5.5mm centre hole	Natural rubber red-orange/TEF transparent approved IMQ*	60° Shore A	1.0	1000
1	11821653	Aluminium cap clear lacquered, 5.5mm centre hole	Natural rubber red-orange/butyl red/TEF transparent	45° Shore A	1.0	1000
1	15239468	Aluminium cap clear lacquered, 5.5mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	11874870	Aluminium cap green lacquered, 5.5mm centre hole	Natural rubber red-orange/butyl red/TEF transparent	45° Shore A	1.0	1000
3	11884870	Aluminium cap red lacquered, 5.5mm centre hole	Natural rubber red-orange/butyl red/TEF transparent	45° Shore A	1.0	1000
4	11894870	Aluminium cap blue lacquered, 5.5mm centre hole	Natural rubber red-orange/butyl red/TEF transparent	45° Shore A	1.0	1000
5	10489734	Aluminium cap gold lacquered, 5.5mm centre hole	Natural rubber red-orange/butyl red/TEF transparent	45° Shore A	1.0	1000

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

Red rubber/PTFE seals ND11

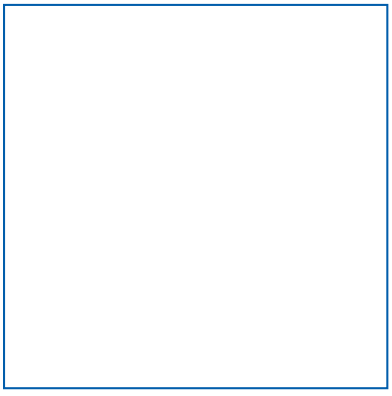
- Temperature resistant from –40°C up to +110°C
- Softer alternative to natural rubber/TEF and butyl/PTFE
- Cleaner than natural rubber or butyl; low fragmentation
- Red rubber is a synthetic rubber



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	10728468	Aluminium cap clear lacquered, 5.5mm centre hole	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
2	10237907	Aluminium cap green lacquered, 5.5mm centre hole	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
3	11824890	Aluminium cap red lacquered, 5.5mm centre hole	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	10349487	Aluminium cap blue lacquered, 5.5mm centre hole	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
5	11977051	Aluminium cap gold lacquered, 5.5mm centre hole	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000

Silicone/PTFE seals ND11

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

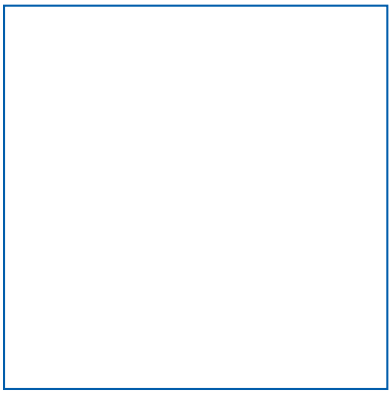


		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11772418	Aluminium cap clear lacquered, 5.5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
1	10051634	Aluminium cap clear lacquered, 5.5mm centre hole	Silicone cream/PTFE red	55° Shore A	1.5	1000
2	11884880	Aluminium cap clear lacquered, 5.5mm centre hole	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
3	11782418	Aluminium cap clear lacquered, 5.5mm centre hole	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
4	11792418	Aluminium cap clear lacquered, 5.5mm centre hole	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.5	1000
5	10200025	Aluminium cap green lacquered, 5.5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
6	10108214	Aluminium cap red lacquered, 5.5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
7	10557005	Aluminium cap blue lacquered, 5.5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
8	10793717	Aluminium cap gold lacquered, 5.5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000

*Instrument Manufacturer Quality (IMQ)

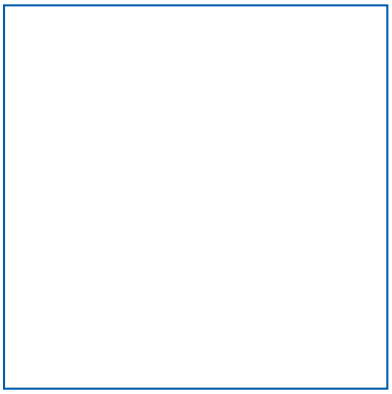
Other aluminium crimp caps with seals ND11

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



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	15522310	11mm TPF combination seal: aluminium cap, clear lacquered, 5.5mm centre hole	Aluminium liner, (sealed by an additional assembled ring)	-	0.06	100
2	15532310	11mm Combination seal: aluminium cap, clear lacquered, 5.5mm centre hole	PTFE virginal (sealed by an additional assembled ring)	53° Shore D	0.25	100
3	11747577	Aluminium cap clear lacquered, 5.5mm centre hole, roll groove	PTFE virginal	53° Shore D	0.25	1000
4	11804890	Aluminium cap clear lacquered, 5.5mm centre hole	Butyl red/PTFE grey	55° Shore A	1.3	1000
5	11814890	Aluminium cap clear lacquered, 5.5mm centre hole	PTFE grey/butyl red/PTFE grey	55° Shore A	1.3	1000

Magnetic crimp caps and seals ND11 (for CTC PAL and Thermo Scientific TriPlus autosamplers)



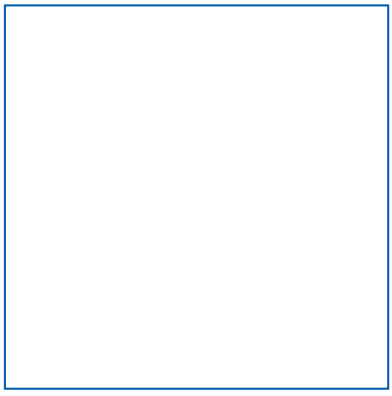
		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11834880	Magnetic cap, gold lacquered, 5mm centre hole	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
2	11844880	Magnetic cap, gold lacquered, 5mm centre hole	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000

*Instrument Manufacturer Quality (IMQ)

PE Caps, seals and septa for crimp neck vials ND11

	Description cap	Septa material	Durometer	Thickness, mm	Pack qty
11804980	PE cap, transparent, 13 x 7.5mm, 4.5mm centre hole	Silicone white/PTFE red UltraClean	55° Shore A	1.0	1000

Septa 11mm for crimp neck vials ND11



		Description cap	Durometer	Thickness, mm	Pack qty
1	**11874860**	PTFE virginal	53° Shore D	0.25	1000
2	**11804870**	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	**15512310**	Natural rubber red-orange/TEF transparent, tested by VWR (Merck™)/Hitachi	60° Shore A	1.3	1000
3	**11864870**	Red rubber/PTFE beige approved IMQ*	45° Shore A	1.0	1000
4	**11844870**	Butyl red/PTFE grey	55° Shore A	1.3	1000
5	**11854870**	PTFE grey/butyl red/PTFE grey	55° Shore A	1.3	1000
6	**10041204**	Silicone white/PTFE red	45° Shore A	1.3	1000
6	**11864860**	Silicone cream/PTFE red	55° Shore A	1.5	1000
7	**11834870**	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
8	**11854860**	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
9	**11894860**	Silicone white/PTFE blue, cross slitted	55° Shore A	1.5	1000

*Instrument Manufacturer Quality (IMQ)

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

- Pre-crimped vials reduce the risk of contamination during self-assembly in the laboratory

	Description Vial	Description of pre-crimped Seal	Dimension, mm	Glass type	Pack qty
12910921	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening (10326042) pre-crimped	Aluminium cap clear lacquered, 5.5mm centre hole, natural rubber red-orange/ TEF transparent, 60° Shore A, 1.0mm (11737577) (approved IMQ*)	32 x 11.6	Clear	100
12940921	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening (10326042) pre-crimped	Aluminium cap clear lacquered, 5.5mm centre hole, natural rubber red-orange/ TEF transparent, 60° Shore A, 1.3mm (11545864)	32 x 11.6	Clear	100
12930921	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening (10326042) pre-crimped	Aluminium cap clear lacquered, 5.5mm centre hole, natural rubber red-orange/butyl red/TEF transparent, 45° Shore A, 1.0mm (11821653)	32 x 11.6	Clear	100
12900921	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening (10326042) pre-crimped	Aluminium cap blue lacquered, 5.5mm centre hole, natural rubber red-orange/butyl red/TEF transparent, 45° Shore A, 1.0mm (11894870)	32 x 11.6	Clear	100
12920921	1.5mL Crimp neck vial, 1st hydrolytic class, wide opening, label + filling lines (11545884) pre-crimped	Aluminium cap clear lacquered, 5.5mm centre hole, natural rubber red-orange/ TEF transparent, 60° Shore A, 1.0mm (11737577) (approved IMQ*)	32 x 11.6	Amber	100

2-in-1 Kits with crimp neck vials ND11

	Item	Description	Pack qty
10571383	2-in-1 Kit	2-in-1 Kit consisting of: 10326042 + 11821653†	100
10326042	Vial	1.5mL Crimp neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
11821653	Seal	11mm Aluminium cap, clear lacquered, centre hole; natural rubber red-orange/butyl red/ TEF transparent, 45° Shore A, 1.0mm †	1000
12696655	2-in-1 Kit	2-in-1 Kit consisting of: 10326042 + 11737577†	100
10326042	Vial	1.5mL Crimp neck vial, 32 x 11.6mm, clear glass, 1st hydrolytic class, wide opening	100
11737577	Seal	11mm Aluminium cap, clear lacquered, centre hole; natural rubber red-orange/TEF transparent, 60° Shore A, 1.0mm †	1000
11326451	2-in-1 Kit	2-in-1 Kit consisting of: 11545884 + 11821653†	100
11545884	Vial	1.5mL Crimp neck vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label and filling lines	100
11821653	Seal	11mm Aluminium cap, clear lacquered, centre hole; natural rubber red-orange/butyl red/ TEF transparent, 45° Shore A, 1.0mm †	1000
10692143	2-in-1 Kit	2-in-1 Kit consisting of: 11545884 + 11737577†	100
11545884	Vial	1.5mL Crimp neck vial, 32 x 11.6mm, amber glass, 1st hydrolytic class, wide opening, label and filling lines	100
11737577	Seal	11mm Aluminium cap, clear lacquered, centre hole; natural rubber red-orange/TEF transparent, 60° Shore A, 1.0mm †	1000

† Note: Pack qty is a 100 in this kit

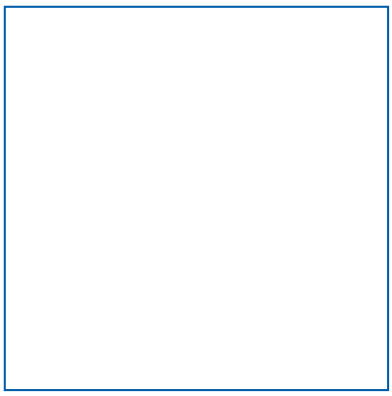
*Instrument Manufacturer Quality (IMQ)

SNAP RING VIALS ND11

These vials are preferentially used with autosampler models from the following manufacturers: Agilent, CTC, DANI, Dionex, Jasco, Shimadzu, Spark, Thermo Scientific, Varian, VWR (Merck™)/ Hitachi and Waters

- 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 11mm Aluminium crimp seal, as the two snap ring lips have the same height as a crimp neck
- Wide opening enables easy filling with viscous materials

Snap ring vials ND11, wide opening



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11525894	1.5mL Snap ring vial, 1st hydrolytic class, wide opening (silanised version available 11565904)	32 x 11.6	Clear	1.9	1.5	200	<100	100
2	11535894	1.5mL Snap ring vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available Cat No 15582310	32 x 11.6	Clear	1.9	1.5	200	<100	100
3	11545894	1.5mL Snap ring vial, 1st hydrolytic class, wide opening, label + filling lines (silanised version available 11515914)	32 x 11.6	Amber	1.9	1.5	200	<100	100
4	11545914	0.9mL Total microlitre snap ring vial ND11, 1st hydrolytic class	32 x 11.6	Clear	1.4	1.2	25	<1	100
5	12672465	Snap/crimp vial with integrated micro-insert, 1st hydrolytic class "Base Bonded"	32 x 11.6	Clear	0.4	0.3	30	<3	100
6	15219468	Snap/crimp vial with integrated micro-insert, 1st hydrolytic class "Base bonded"	32 x 11.6	Amber	0.4	0.3	30	<3	1000
7	11585914	TopSert TPX snap/crimp vial ND11, with integrated 0.2mL glass micro-insert (silanised version available 11505924)	32 x 11.6	Clear	0.35	0.2	20	<4	100
8	11525924	TopSert TPX snap/crimp vial ND11, with integrated 0.2mL glass micro-insert (silanised version available 11545924)	32 x 11.6	Amber	0.35	0.2	20	<4	100
9	11717597	0.3mL PP snap ring microvial	32 x 11.6	Transparent	0.4	0.25	30	<4	1000
10	11894930	0.3mL TPX snap ring microvial	32 x 11.6	Clear	0.4	0.25	30	<4	1000
11	11834940	0.7mL PP snap ring microvial	32 x 11.6	Transparent	0.9	0.64	50	<25	1000
12	11804940	0.3mL PP snap ring microvial	32 x 11.6	Amber	0.4	0.25	30	<4	1000

*Instrument Manufacturer Quality (IMQ)

Micro-inserts for snap ring vials ND11 with wide opening

		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11752418	0.1mL Micro-insert, 1st hydrolytic class, 15mm top (silanised version available 11531314)	31 x 6	Clear	0.34	0.25	30	<4	1000
2	11777557	0.1mL Micro-insert, 1st hydrolytic class, 12mm top	31 x 6	Clear	0.35	0.3	30	<4	1000
3	11805863	0.1mL Micro-insert, 1st hydrolytic class, with assembled plastic spring (silanised version available 11541314	29 x 5.7	Clear	0.3	0.25	30	<4	1000
4	11762418	0.2mL Micro-insert, 1st hydrolytic class, flat bottom (silanised version available 12396192)	31 x 6	Clear	0.5	0.35	40	<8	1000

PE snap ring caps and seals ND11

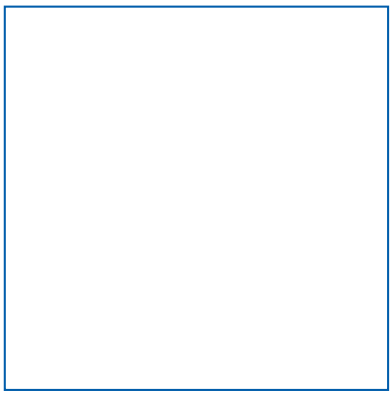
- Choose synthetic red rubber/PTFE as a cost-effective alternative, but unlike natural rubber, synthetic rubber is not suitable for multiple injections but is nevertheless softer for safer needle penetration
- Snap ring caps are also available in a softer PE material in red or blue. They are easier to handle and push on/remove than the hard-cap version, but are less tight-fitting
- Snap ring cap with the design of a crimp cap; therefore suitable for robotic handling
- For quick and simple vial closing, saving time cost and effort
- Vials can also be sealed with an aluminium crimp seal ND11

PE snap ring cap ND11 transparent, 6mm centre hole, hard or soft version

		Septa material	Durometer	Thickness, mm	Pack qty
	Hard Cap				
1	11702428	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	15272056	Red rubber/PTFE beige IMQ*	45° Shore A	1.0	1000
3	11712428	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
4	11777587	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
5	11787587	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000
6	11844930	Silicone white/PTFE red, pre-cut (Y)	45° Shore A	1.3	1000
	Soft Cap				
1	11824920	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	11814930	Red rubber/PTFE beige IMQ*	45° Shore A	1.0	1000
3	11844920	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
4	11834920	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
5	11854920	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000
6	11854930	Silicone white/PTFE red, pre-cut (Y)	45° Shore A	1.3	1000

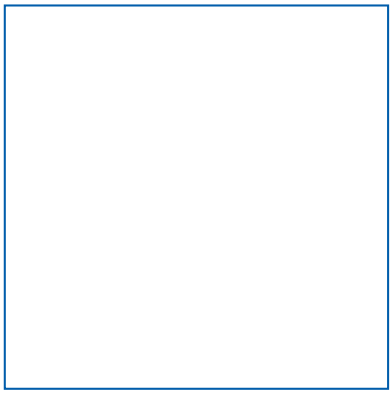
*Instrument Manufacturer Quality (IMQ)

PE snap ring cap ND11 blue, 6mm centre hole, hard or soft version



		Septa material	Durometer	Thickness, mm	Pack qty
	Hard Cap				
1	**11867301**	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	**15522320**	Red rubber/PTFE beige, IMQ*	45° Shore A	1.0	100
3	**11814910**	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
4	**11824910**	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
5	**11834910**	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000
6	**10668205**	Silicone white/PTFE red, pre-cut (Y)	45° Shore A	1.3	100
	Soft Cap				
1	**11874920**	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	**11595944**	Red rubber/PTFE beige, IMQ*	45° Shore A	1.0	100
3	**11864920**	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
4	**11884920**	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
5	**11894920**	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000
6	**11864930**	Silicone white/PTFE red, pre-cut (Y)	45° Shore A	1.3	1000

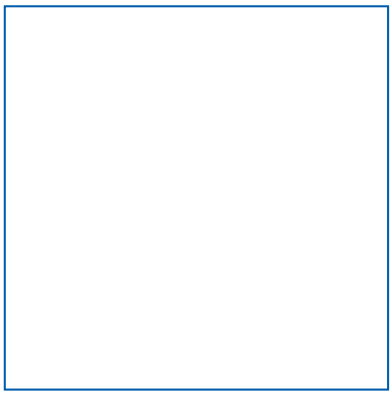
PE snap ring cap ND11 red, 6mm centre hole, hard version only



		Septa material	Durometer	Thickness, mm	Pack qty
	Hard version				
1	**11844910**	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	**11864910**	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
3	**11854910**	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
4	**11797587**	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000

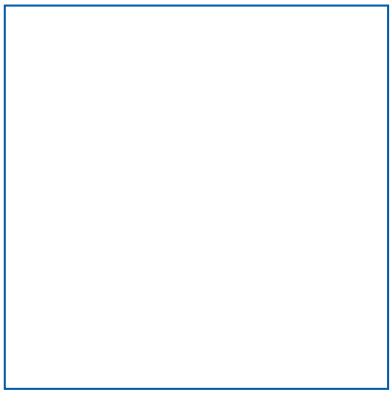
*Instrument Manufacturer Quality (IMQ)

PE snap ring cap ND11 green, 6mm centre hole, hard version only



		Septa material	Durometer	Thickness, mm	Pack qty
	Hard version				
1	11874910	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	11824930	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
3	11834930	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
4	11814920	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000

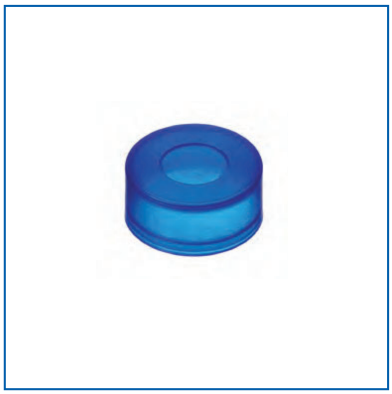
PE snap ring cap ND11 yellow, 6mm centre hole, hard version only



		Septa material	Durometer	Thickness, mm	Pack qty
	Hard version				
1	11884910	Natural rubber red-orange/TEF transparent	60° Shore A	1.0	1000
2	11804930	Silicone white/PTFE red UltraClean	45° Shore A	1.3	1000
3	11894910	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
4	11804920	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.0	1000

*Instrument Manufacturer Quality (IMQ)

PE snap cap for snap ring vials ND11



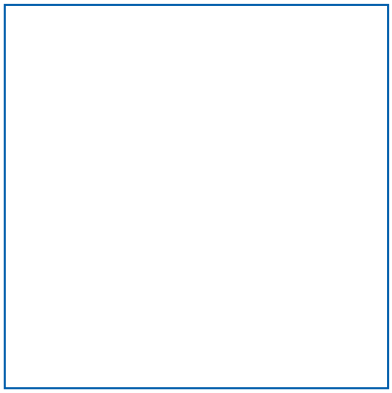
	Description cap	Septa description	Pack qty
11836201	PE push-on cap, blue	With thinned penetration point	1000

SCREW NECK VIALS ND13

These vials are preferentially used on autosampler models from the following manufacturers: Dionex, Shimadzu, Spark, Varian, VWR (Merck)/Hitachi and Waters (Wisp 48 Position Carousel)

- Vials are packed in a cleanroom in reclosable, tamper-proof evident PP-boxes
- Any combination of 4mL Screw neck vial ND13 with one of our 13mm PP screw seals can be obtained as a 2-in-1 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 4mL vials

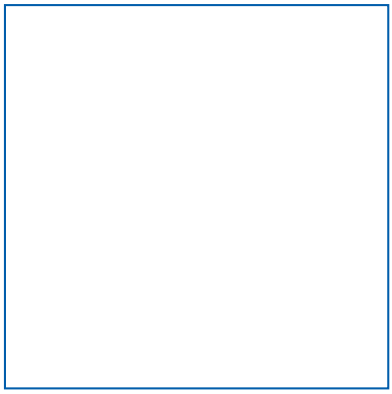
Screw neck vials ND13 and appropriate micro-inserts



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	10571013	4mL Screw neck vial, 1st hydrolytic class	45 x 14.7	Clear	5	4.1	800	<400	100
2	11576044	4mL Screw neck vial, 1st hydrolytic class, label + filling lines	45 x 14.7	Clear	5	4.1	800	<400	100
3	11556044	4mL Screw neck vial, amber glass, 1st hydrolytic class	45 x 14.7	Amber	5	4.1	800	<400	100
4	11586044	4mL Screw neck vial, 1st hydrolytic class, label + filling lines	45 x 14.7	Amber	5	4.1	800	<400	100
5	11826912	0.3mL Micro-insert, 1st hydrolytic class, 15mm top metal spring required!	40 x 6	Clear	0.5	0.4	40	<9	1000
6	10682733	Spring, for micro-insert 11826912	50 x 7.5	-	-	-	-	-	100

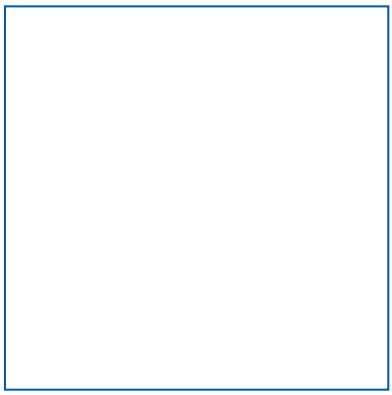
Polypropylene screw caps with seals ND13

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



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11702448	Polypropylene screw cap black, 8.5mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11792438	Polypropylene screw cap black, 8.5mm centre hole	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11772438	Polypropylene screw cap black, 8.5mm centre hole	Silicone cream/PTFE red	55° Shore A	1.5	1000
4	11894970	Polypropylene screw cap black, 8.5mm centre hole	Silicone dark blue/PTFE white	45° Shore A	1.3	1000
5	11782438	Polypropylene screw cap black, 8.5mm centre hole	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11712448	Polypropylene screw cap black, 8.5mm centre hole	Silicone white/PTFE blue, cross-slitted	55° Shore A	1.5	1000
7	11864970	Polypropylene screw cap black, closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
8	11823861	Polypropylene screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.3	1000
9	11884970	Polypropylene screw cap black, closed top	Silicone cream/PTFE red	55° Shore A	1.5	1000

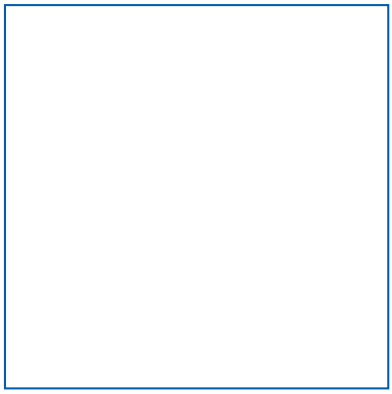
Septa 12mm for vial seals ND13



		Septa material	Durometer	Thickness, mm	Pack qty
1	11804950	PTFE virginal	53° Shore D	0.25 (only unassembled)	1000
2	11814950	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
3	11757597	Butyl red/PTFE grey	55° Shore A	1.3	1000
4	11894940	Silicone cream/PTFE red	55° Shore A	1.5	1000
5	11844950	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000
6	11824950	Silicone white/PTFE blue	55° Shore A	1.5 cross-slitted	1000

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

Polypropylene screw caps ND13



		Description cap	Pack qty
1	11797597	Polypropylene screw cap, black, 8.5mm centre hole	1000
2	11707607	Polypropylene screw cap, black, closed top	1000
3	11717607	Polypropylene screw cap, white, 8.5mm centre hole	1000
4	11898881	Polypropylene screw cap, white, closed top	1000

Special kits with screw neck ND13

3-in-1 kits for VWR (Merck™)/Hitachi and Waters™ autosamplers

	Item	Description	Pack qty
10672923	3-in-1 Kit	3-in-1 Kit consisting of: 10571013 + 11797597† + 11804950	100
10571013	Vial	4mL Screw neck vial, 45 x 14.7mm, clear glass, 1st hydrolytic Class	100
11797597	Cap	Polypropylene screw cap, black, 8.5mm centre hole †	1000
11804950	Septa	PTFE virginal, 53° Shore D, 0.25mm	1000
11556044	Vial	4mL Screw neck vial, 45 x 14.7mm, amber glass, 1st hydrolytic Class	100
11797597	Cap	Polypropylene screw cap, black, 8.5mm centre hole	1000
11804950	Septa	PTFE virginal, 53° Shore D, 0.25mm	1000

† Note: Pack qty is a 100 in this kit

Other 2-in-1 kits with screw neck vials ND13

	Item	Description	Pack qty
11737607	2-in-1 Kit	2-in-1 Kit consisting of: 10571013 + 11702448†	100
10571013	Vial	4mL Screw neck vial, 45 x 14.7mm, clear glass, 1st hydrolytic class	100
11702448	Seal	PP screw cap, black, 8.5mm centre hole; natural rubber red-orange/TEF transparent, 60° Shore A, 1.3mm †	1000
10224662	2-in-1 Kit	2-in-1 Kit consisting of: 10571013 + 11772438†	100
10571013	Vial	4mL Screw neck vial, 45 x 14.7mm, clear glass, 1st hydrolytic class	100
11772438	Seal	PP screw cap, black, 8.5mm centre hole; silicone cream/PTFE red, 55° Shore A, 1.5mm †	1000
10778874	Alternative 2-in-1 Kit	Same seal in combination with 11556044 (amber glass)	100
12950931	2-in-1 Kit	2-in-1 Kit consisting of: 10571013+11782438†	100
10571013	Vial	4mL Screw neck vial, 45 x 14.7mm, clear glass, 1st hydrolytic class	100
11782438	Seal	PP screw cap, black, 8.5mm centre hole; PTFE red/silicone white/PTFE red, 45° Shore A, 1.0mm †	1000
12910941	2-in-1 Kit	2-in-1 Kit consisting of: 10571013 + 11712448†	100
10571013	Vial	4mL Screw neck vial, 45 x 14.7mm, clear glass, 1st hydrolytic class	100
11712448	Seal	PP screw cap, black, 8.5mm centre hole; silicone white/PTFE blue, 55° Shore A, 1.5mm cross-slitted †	1000

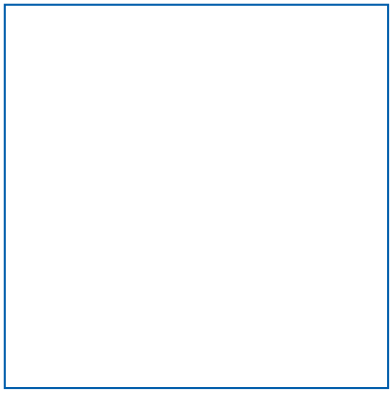
† Note: Pack qty is a 100 in this kit

Shell Vials

These vials are preferentially used on autosampler models from the following manufacturers: Alcott, Gilson, Shimadzu and Waters (Wisp 96 48-position carousel)

- PE plugs 11561374/10224852, 11555914/11565914 and 11516074/10455982 may be used for the fixation of a micro-insert eliminating the need for springs
- For the 1mL Shell vials, plugs with and without insertion barriers for the micro-inserts are available. The option without barrier demonstrates a better valving effect with regard to vacuum formation
- Star-shaped diaphragm enables easy penetration of the PE plug
- 10145424 + 10506075 with soft style plug for Waters™ and Shimadzu
- Recommended for HPLC usage
- A handy and inexpensive vial/closure combination for uncritical analyses

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

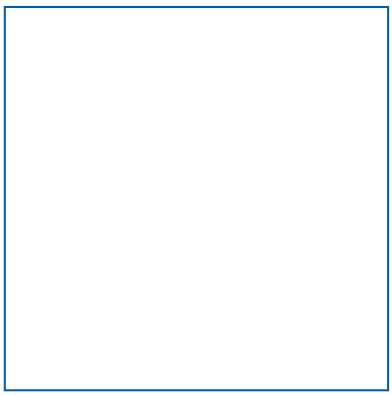


		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	10306062	1mL Shell vial, 1st hydrolytic class, 6mm PE plug, transparent, for ALCOTT	35 x 7.8	Clear	1.1	0.8	60	<25	100
2	10145424*	1mL Shell vial, 1st hydrolytic class, 8mm PE plug, soft, without insertion barrier for micro-insert, transparent for Waters™ Wisp 96 pos. carousel, Shimadzu	40 x 8.2	Clear	1.4	1	100	<80	100
3	10506075*	1mL Shell vial, 1st hydrolytic class, 8mm PE plug, soft, without insertion barrier for micro-insert, transparent for Waters™ Wisp 96 pos. carousel, Shimadzu	40 x 8.2	Amber	1.4	1	100	<80	100
4	11792368	0.1mL Micro-insert, 1st hydrolytic class, 13mm top (only in comb. With 11561374 + 10224852)	34 x 5	Clear	0.2	0.15	25	<0.1	1000
5	11516074	4mL Shell vial, 1st hydrolytic class, 15mm PE plug, transparent for Waters™ Wisp 48 pos. carousel	44.6 x 14.65	Clear	5.5	4	1000	<800	100
6	10455982	4mL Shell vial, 1st hydrolytic class, 15mm PE plug, transparent for Waters™ Wisp 48 pos. carousel	44.6 x 14.65	Amber	5.5	4	1000	<800	100
7	11728276	0.3mL Micro-insert, 1st hydrolytic class, 13mm top	43.45 x 6	Clear	0.4	0.3	50	<8	1000

*If a micro-insert is used in combination with the shell vial, please use 11561374 and 10224852, respectively, as they have an insertion barrier for micro-inserts. However, please note that the flexibility of the plug with the insertion barrier is reduced, so that plug push-in and needle penetration is more difficult.

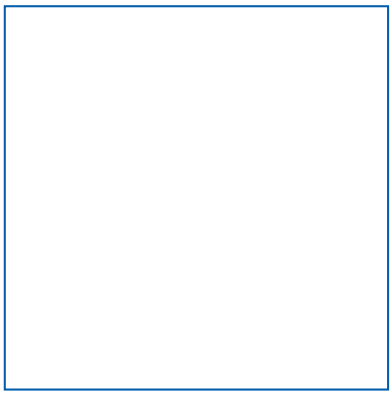
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Shell vials 2mL and appropriate micro-inserts



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11555914	2mL Shell vial, 1st hydrolytic class, 12mm PE plug, transparent for various instruments	31.5 x 11.6	Clear	2.3	1.5	200	<100	100
2	11565914	2mL Shell vial, 1st hydrolytic class, 12mm PE plug, transparent for various instruments	31.5 x 11.6	Amber	2.3	1.5	200	<100	100
3	11752418	0.1mL Micro-insert, 1st hydrolytic class, 15mm top (silanised version available 11531314)	31 x 6	Clear	0.34	0.25	30	<4	1000
4	11777557	0.1mL Micro-insert, 1st hydrolytic class, 12mm top	31 x 6	Clear	0.35	0.3	30	<4	1000
5	11762418	0.2mL Micro-insert, 1st hydrolytic class, flat bottom (silanised version available 12396192)	31 x 6	Clear	0.5	0.35	40	<8	1000

Polypropylene shell vials 1mL, 3mL and 4mL, with plugs



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11561404	1mL PP shell vial, 8mm PE plug, transparent	40 x 8	Clear	1.28	1.05	50	<25	100
2	12980941	3mL PP shell vial, with inner cone; 15mm PE plug, transparent	44.6 x 14.65	Clear	4	3	40	<8	100
3	12970941	4mL PP shell vial, 15mm PE plug, transparent	44.6 x 14.65	Clear	5.5	4	1000	<800	100

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

Headspace ND20 (ND18) vials

IMPORTANT SAFETY TIP:

As headspace vials have to withstand high internal pressures, almost all vials featured below have a wall thickness of 1.2mm to prevent bursting. Contrary to widespread opinion, the seal and not the vial represents the weakest part of the whole vial assembly. Under pressure, the septa will press and bulge against the aluminium cap with such force that the cap is torn apart. Using our own testing procedures, we have verified that (for example) our PerkinElmer vial 10080822 can easily withstand 10 bars or more, whereas the seal is torn apart at around 10 bars when no pressure release system – such as our headspace cap – is used.

Headspace vials are available in a range of different forms and styles:

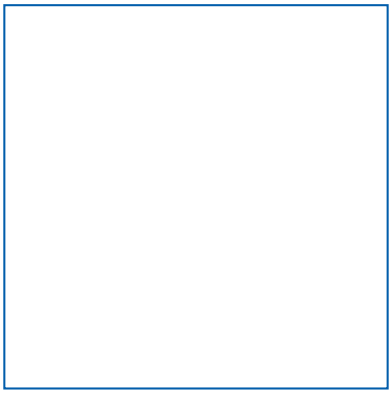
- Volume (5mL, 10mL, 20mL)
- Rounded or flat bottom. Rounded bottoms are more robust and more resistant to high pressures within the vial. These vials also slide more easily into heating blocks etc. On the other hand, a flat bottom might be required when vials have to run within instruments on a gradient or slope
- Bevelled top or flat DIN crimp neck/screw neck. A bevelled headspace neck rim might be required for some special closure systems (PerkinElmer), however, a liner has more surface area to make contact with a flat DIN crimp neck. The more surface area for the liner to sit on, the tighter the seal
- Length of the neck (instrument specific)
- Clear/amber glass
- With/without label and filling lines

Similarly, headspace closures are also available in a range of different forms and materials:

- Different types of cap permutations, for example, crimp\screw\headspace\centre hole\tear-off\magnetic\bimetal\PP\PE. Screw caps (as opposed to crimp-neck) are a novelty when it comes to headspace vials, but they represent a ready-to-use, convenient option that does not require any additional tools (crimpers, decappers). Therefore, samples can be taken and sealed out in the field without the need for sample transfer later in the lab. Magnetic screw seals can be used universally for headspace as well as for SPME.
- Different types of liner materials, such as butyl, butyl/PTFE, pharma-fix-liner (butyl/PTFE), silicone/PTFE, silicone/aluminium foil, viton, natural rubber/TEF. Besides the actual material, liners may also differ in thickness, hardness (° Shore A), colour, type of PTFE lamination and grade of silicone (UltraClean).

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

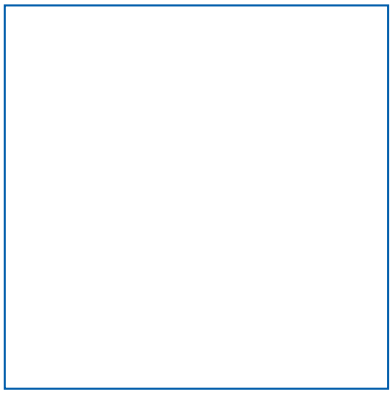
Headspace vials ND20 and ND18



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Compatibility	Pack qty
	10663303	5mL Headspace vial, 1st hydrolytic class, rounded bottom	38.2 x 22	Clear	9.4	5	1,500	800	Perkin Elmer	100
1	10192652	5mL Crimp neck vial,1st hydrolytic class, flat bottom	38 x 20	Clear	8	5	1,500	800	Varian	100
	10681033	10mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, rounded bottom	46 x 22.5	Clear	12.3	10	1,500	800	Carlo Erba, CTC, Fisons, Varian (CP)	100
2	10195012	10mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, rounded bottom	46 x 22.5	Amber	12.3	10	1,500	800	Carlo Erba, CTC, Fisons, Varian (CP)	100
	11520545	10mL Crimp neck vial, 1st hydrolytic class, flat bottom	54.5 x 20	Clear	12.2	10	1,500	800	Varian	100
	10680843	10mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, long neck, flat bottom	46 x 22.5	Clear	11.7	10	1,500	800	Carlo Erba, Dani, Fisons, Agilent	100
	10080822	20mL Headspace vial, 1st hydrolytic class, rounded bottom	75.5 x 23	Clear	22	20	1,500	800	Perkin Elmer, Tekmar	100
	12981241	20mL Headspace vial, 1st hydrolytic class, rounded bottom	75.5 x 23	Amber	22	20	1,500	800	Perkin Elmer, Tekmar	100
	10152512	20mL Headspace vial, 1st hydrolytic class, rounded bottom, label + filling lines	75.5 x 23	Clear	22.4	20	1,500	800	Perkin Elmer, Tekmar	100
3	15552340	20mL Headspace vial, 1st hydrolytic class, bevelled crimp neck, long neck, flat bottom	75.5 x 22.75	Clear	21.2	20	1,500	800	Agilent	100
	12971231	20mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, long neck, flat bottom	75.5 x 22.5	Clear	21.2	20	1,500	800	Carlo Erba, Dani, Fisons, Agilent	100
4	10070952	20mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, long neck, rounded bottom	75.5 x 22.5	Clear	20.9	20	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu), TriPlus HS	100
	12910991	20mL Headspace vial, 1st hydrolytic class, DIN-crimp neck, long neck, rounded bottom	75.5 x 22.5	Amber	20.9	20	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu), TriPlus HS	100
	10510323	20mL SPME Vial, 1st hydrolytic class, rounded bottom, special crimp neck	75.5 x 22.5	Clear	21.2	20	1,500	800	SPME Vial for CTC PAL	100
	11506114	10mL Precision thread vial ND18, 1st hydrolytic class, rounded bottom	46 x 22.5	Clear	10.8	8	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu, Agilent)	100
5	11526114	10mL Precision thread vial ND18, 1st hydrolytic class, rounded bottom	46 x 22.5	Amber	10.8	8	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu, Agilent)	100
6	12941221	20mL Precision thread vial ND18, 1st hydrolytic class, rounded bottom	75.5 x 22.5	Clear	20.6	18	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu, Agilent)	100
	12951221	20mL Precision thread vial ND18, 1st hydrolytic class, rounded bottom	75.5 x 22.5	Amber	20.6	18	1,500	800	CTC PAL (Varian, Gerstel, Atas, Shimadzu, Agilent)	100

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

Other headspace crimp neck vials ND20 and screw neck vial ND18



		Description	Dimension, mm	Glass Type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res. Vol. (µL)	Pack qty
1	**11530535**	50mL Crimp neck vial, 1st hydrolytic class	101 x 31	Clear	58	50	3,080	1,500	100
2	**11560535**	100mL Crimp neck vial, 3rd hydrolytic class	94.5 x 51.6	Clear	118.8	100	10,000	6,000	88
3	**12990951**	20mL Headspace vial, 1st hydrolytic class, rounded bottom, with screw thread ND18 Perkin Elmer	75.5 x 23	Clear	21.2	20	1,500	800	100

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

FISHERBRAND Spotlight

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FISHER CHEMICAL SOLVENT SELECTION GUIDE

Chromatography Application	Instrument and Detector Type	Fisher Chemical Solvent Grade
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HPLC-MS	LC coupled with mass detector	LC/MS grade
UHPLC	UHPLC coupled with UV detector	UHPLC gradient grade
High HPLC gradient	LC gradient coupled with UV detector	HPLC advanced grade
HPLC gradient	LC gradient coupled with UV detector	HPLC gradient grade
HPLC	LC coupled with UV detector	HPLC grade

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† Restrictions may apply in certain countries

Headspace autosampler compatibility chart

Cat No.	10680843	12971231 1552340	10681033 10195012	10070952 12971231	10510323	11506114 11526114	12941221 12951221	10663303	10080822 12981241	10152512	10192652 11520545
For use on instruments	Agilent, Carlo Erba, DANI, Fisons	Agilent, Carlo Erba, DANI, Fisons	Carlo Erba, CTC PAL (Varian, Gerstel, Atas, Shimadzu), Disons, 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	CTC Combi PAL (Varian, Gerstel Atas, Shimadzu), PerkinElmer*, Agilent	PerkinElmer**	PerkinElmer, Tekmar	PerkinElmer, Tekmar	Varian

*** not suitable for Thermo Scientific HS250/HS500 - * for TurboMatrix™ 16,40, and 110, produced after the 01.09.2006 / ** not suitable for TurboMatrix™ 110

AUTOSAMPLERS											
Agilent G1888A, Agilent HS7694 (DANI HS 39.50/HS 86.50)	11778246 11590505 11788246	11778246 11590505 11788246					11853912 (only for G1888A)				
Agilent CTC combi Pal	11580505	11580505					11853912				
CTC Combi Pal (HS mode) (Gerstel MPS 2 / Varian) CTC Pal HTC-xt, CTC HTS-xt, CTC HTX-xt, CTC PAL Combi-xt Liquid Mode, CTC Combi.xt Option, CTC GC-xt HS Option			11805963 11825050	11805963 11825050		11778256 11865000 11853912	11778256 11865000 11853912				
CTC Combi Pal (SPME Mode) (Gerstel MPS 2 / Varian) CTC combi-xt SPME Options					11927071 11895040	11778256 11865000 11853912 11713027	11778256 11865000 11853912 11713027				
CTC HS 500			10472804	10472804							
HTA HT200H	11778246 11590505			11778246 11590505							
PerkinElmer HS6								11835030 11758246 11747617 11747617 11885030 11580505 11845030 11742458 11778246 11793127 11891653 11590505			
PerkinElmer HS40/HS100/HS101								see PerkinElmer HS6	see PerkinElmer HS6	see PerkinElmer HS6	
TurboMatrix™ HS16/HS40/HS40XL/HS40Trap/HS110/ HS110 Trap							11865000 11767607 11895000	see PerkinElmer HS6	see PerkinElmer HS6	see PerkinElmer HS6	
Shimadzu AOC-5000 (HS Mode) Shimadzu SIL-30 ACMP			11805963 11825050	11805963 11825050		11778256 11865000 11853912	11778256 11865000 11853912				
Shimadzu AOC-5000 (SPME Mode)					11927071 11895040	11778256 11865000 11853912 11713027	11778256 11865000 11853912 11713027				
Thermo Scientific HS250 / HS500 (Carlo Erba/Fisons/Thermo Scientific)			11825040 10472804 11821603								
Thermo Scientific HS800 (Carlo Erba/ Fisons/Thermo Scientific)			11825040 10472804 11821603	11825040 10472804 11821603							
Thermo Scientific HS850 (Carlo Erba/ Fisons/Thermo Scientific)			11793127 11590505 11845030 11778246 11742458	11793127 11590505 11845030 11778246 11742458							
Thermo Scientific HS2000, Thermo Scientific TriPlus (HS Mode), Thermo Scientific TriPlus 300, Thermo Scientific TriPlus RSH			11793127 11590505 11845030 11778246 11742458	11793127 11590505 11845030 11778246 11742458							
Thermo Scientific TriPlus (SMPE Mode)			11793127 11590505	11793127 11590505							
Tekmar HT 3									11778246 11742458 11793127 11590505	11778246 11742458 11793127 11590505	
Varian CP-920/9025, CP-9060 Varian Genesis		11793127 11590505 11778246 11742458	11793127 11590505 11778246 11742458								

This compatibility chart will help you to identify the appropriate vial and closure for your autosampler.

Several caps could be compatible with the headspace vial you select. This colour-code will help you to find the closure type you are looking for.

- Aluminium, crimp cap, plain, 10mm centre hole

- Headspace cap clear lacquered (pressure release cap)

- Magnetic crimp cap, gold, 5mm centre hole

- Magnetic crimp cap, gold, 8mm centre hole

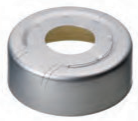
- Magnetic crimp bimetal-cap red/silver, 8mm centre hole

- Magnetic precision thread, screw cap, silver, 8mm centre hole

Aluminium crimp caps and liners ND20

Our range of aluminium crimp caps is featured below, all of which can be used with a broad variety of different liners.

Centre hole cap
plain, red, blue, gold, green 10mm centre hole



Headspace cap
clear lacquered, scorelines break open at 3.0 ± 0.5 bar for pressure release

Centre tear-off cap
clear lacquered, red, blue, gold, green

Complete tear-off cap
clear lacquered, red, blue, gold, green

Magnetic crimp cap
gold, 5mm centre hole CE HS500/HS800, CTC 500, Fisons HS500/HS800

Magnetic crimp cap
gold, 8mm centre hole CTC Combi PAL

Magnetic bimetal crimp cap
red, 8mm centre hole CTC Combi PAL

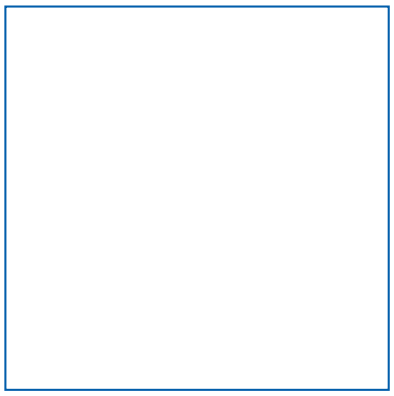
Crimp caps with butyl seals ND20, non-laminated

- Temperature resistant from -40°C up to +120°C
- N.B. Liners do not possess a PTFE lamination so only suitable for non-critical analyses
- Budget product

		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	**11845030**	Aluminium cap, plain, 10mm centre hole	Chloro-butyl, dark grey	55° Shore A	3.0	1000
2	**11835030**	Headspace cap, clear lacquered				1000
3	**11865030**	Centre tear-off cap, clear lacquered				1000
4	**11875030**	Complete tear-off cap, clear lacquered				1000
5	**11825040**	Magnetic cap, gold, 5mm centre hole				1000
6	**11845040**	Magnetic cap, gold, 8mm centre hole				1000

Crimp caps with butyl/PTFE seals ND20, laminated

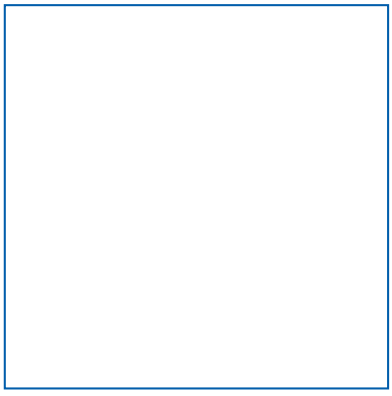
- Temperature resistant from -40°C up to +120°C
- Completely laminated with PTFE



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11742458	Aluminium cap, plain, 10mm centre hole	Bromo-Butyl/PTFE, grey	50° Shore A	3.0	1000
2	11758246	Headspace cap, clear lacquered				1000
3	11855030	Centre tear-off cap, clear lacquered				1000
4	11893781	Complete tear-off cap, clear lacquered				1000
5	10182174	Magnetic cap, gold, 5mm centre hole				1000
6	11768246	Magnetic cap, gold, 8mm centre hole				1000
7	12970981	Magnetic bimetal cap, red, 8mm centre hole				100

Crimp caps with Pharma-fix seals ND20, partially laminated

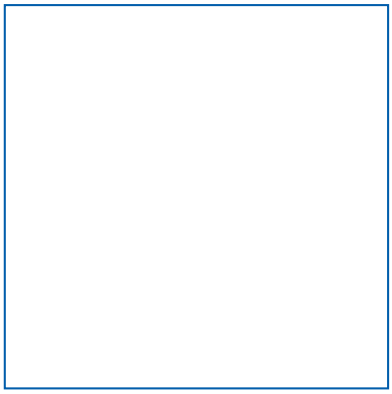
- Special moulded butyl/PTFE liner that is only laminated where the liner is in direct contact with the sample. On the periphery, the unlaminated elastic butyl achieves a very tight seal with the vial top
- Temperature resistant from -40°C up to +120°C
- Achieves a tighter seal than completely laminated butyl/PTFE liners



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11778246	Aluminium cap, plain, 10mm centre hole	Pharma-fix-septa, bromo-butyl/PTFE	50° Shore A	3.0	1000
2	11788246	Headspace cap, clear lacquered				1000
3	11825030	Centre tear-off cap, clear lacquered				1000
4	11737617	Complete tear-off cap, clear lacquered				1000
5	11821603	Magnetic cap, gold, 5mm centre hole				1000
6	11798246	Magnetic cap, gold, 8mm centre hole				1000

Crimp caps with silicone/PTFE seals ND20, fully laminated

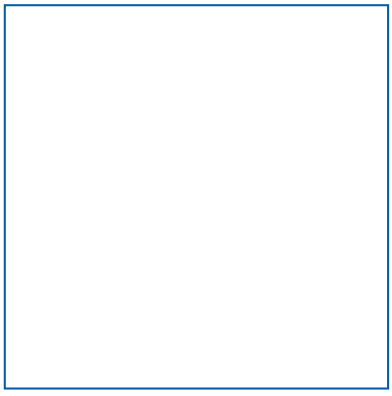
- Temperature resistant from -60°C up to +200°C
- Clean/UltraClean liners for sensitive analyses
- White/beige liner corresponds to competitor HT liner
- Completely laminated with PTFE
- Soft liners for easy penetration



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11793127	Aluminium cap, plain, 10mm centre hole	Silicone blue transparent/PTFE white UltraClean	45° Shore A	3.0	1000
2	11747617	Headspace cap, clear lacquered				1000
3	10666364	Centre tear-off cap, clear lacquered				1000
4	12370180	Complete tear-off cap, clear lacquered				1000
5	10472804	Magnetic cap, gold, 5mm centre hole	Silicone blue transparent/PTFE transparent UltraClean	45° Shore A	3.0	1000
6	11805963	Magnetic cap, gold, 8mm centre hole				1000
7	11825050	Magnetic bimetal cap, red, 8mm centre hole				1000
8	11590505	Aluminium cap, plain, 10mm centre hole				1000
9	11580505	Headspace cap, clear lacquered				1000
10	12696775	Magnetic cap, gold, 8mm centre hole	Silicone white/PTFE beige (HT Quality)	45° Shore A	3.2	1000
11	11368641	Magnetic bimetal cap, red, 8mm centre hole				100

Crimp caps with silicone/aluminium foil seals ND20

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



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11891653	Aluminium cap, plain, 10mm centre hole	Silicone white/ aluminium foil silver	50° Shore A	3.0	1000
2	11885030	Headspace cap, clear lacquered	Silicone white/ aluminium foil silver	50° Shore A	3.0	1000
3	11815040	Magnetic cap, gold, 5mm centre hole	Silicone white/ aluminium foil silver	50° Shore A	3.0	1000

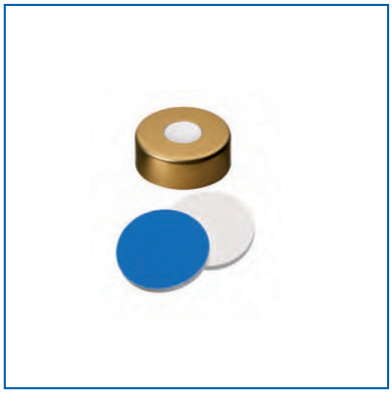
Crimp caps with Ultra-High Temperature (UHT) seal (silicone/PTFE) ND20

- 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)

	Description	Septa material	Durometer	Thickness, mm	Pack qty
15303168	Ultra High Temperature seal: 20mm steel crimp cap, silver, with 5mm centre hole	Ultra High Temperature septa 20mm silicone dark red/PTFE	45° Shore A	3.0	100

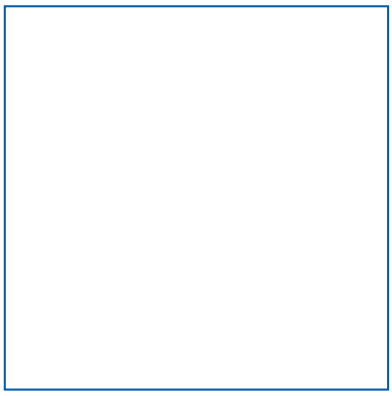
Crimp cap, magnetic, with seal for SPME vial (10510323) for CTC

- Special silicone/PTFE liner with a thin 0.05mm PTFE film instead of the standard 0.13mm PTFE lamination, allowing even easier needle penetration
- Should only be used in combination with the SPME vial (10510323) which has a much thicker crimp neck than all standard headspace vials



	Description	Septa material	Durometer	Thickness, mm	Pack qty
11927071	Magnetic cap, gold, 8mm centre hole	Silicone white/PTFE blue	55° Shore A	1.5	1000

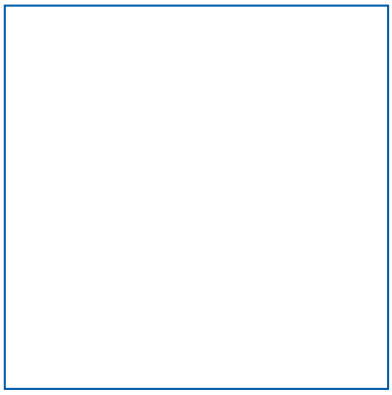
Septa/stoppers 20mm only, for vials ND20



		Septa material	Durometer	Thickness, mm	Pack qty
1	10255044	Moulded septa butyl, dark grey	55° Shore A	3.0	1000
2	11825020	Moulded septa butyl/PTFE, grey	50° Shore A	3.0	1000
3	11815020	Pharma-fix-septa (butyl/PTFE)	50° Shore A	3.0	1000
4	10602245	Silicone blue transparent/PTFE white	45° Shore A	3.0	1000
5	12666505	Silicone blue transparent/PTFE transparent	45° Shore A	3.0	1000
6	11805030	Silicone white/PTFE beige (HT quality)	45° Shore A	3.2	1000
7	11895020	Silicone white/aluminium foil silver	50° Shore A	3.0	1000
8	11845060	20mm Butyl injection stopper, grey			1000

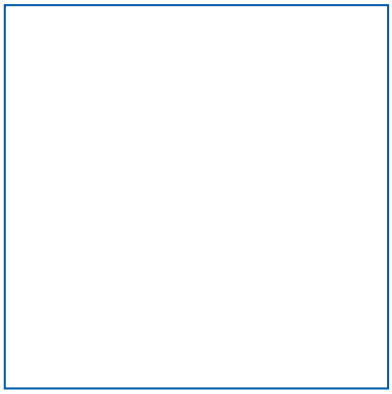
Autosampler washer bottle caps and seals ND20

- Seals for washer bottles on autosampler instruments
- Intermediate closure when collecting samples out in the field



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11869420	PE cap, transparent, 22 x 8.4mm, 4.3mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11809430	PE cap, transparent, 22 x 8.4mm, 4.3mm centre hole	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11879420	PE cap, transparent, 22 x 8.4mm, 4.3mm centre hole	Silicone blue transparent/PTFE white	45° Shore A	1.3	1000
1	11889420	PE cap, transparent, 22 x 9.1mm, 4.3mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11899420	PE cap, transparent, 22 x 9.1mm, 4.3mm centre hole	Butyl red/PTFE grey	55° Shore A	1.3	1000
4	11837281	PE cap, transparent, 22 x 9.1mm, 4.3mm centre hole	Silicone blue transparent/PTFE white	45° Shore A	1.3	1000
5	11829430	PE cap, transparent, 22 x 9.1mm, 4.3mm centre hole	Silicone blue transparent/PTFE white, Y-slitted	45° Shore A	1.3	1000
5	11819430	PE cap, transparent, 22 x 9.1mm, 8.0mm centre hole	Silicone blue transparent/PTFE white,Y-slitted	45° Shore A	1.3	1000

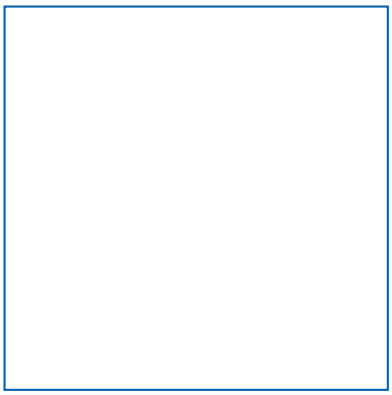
Septa 19.5mm for seals ND20



		Septa material	Durometer	Thickness, mm	Pack qty
1	11855010	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11875010	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11865010	Silicone blue transparent/PTFE white	45° Shore A	1.3	1000

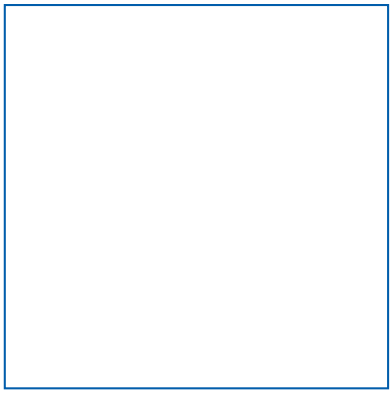
Crimp caps magnetic universal screw and seals ND18

- For precision thread vials 11506114, 11526114, 12941221, 12951221 for CTC, Agilent, Shimadzu, Varian, Gerstel and PerkinElmer instruments
- 11865000 and 11853912 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 autosamplers constructed after 01.09.2006
- 11713027* especially suitable for SPME due to the pre-cut septa



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11778256	Magnetic screw cap silver, 8mm centre hole	Silicone white/PTFE red	45° Shore A	1.3	1000
2	11865000	Magnetic screw cap silver, 8mm centre hole	Silicone blue transparent/PTFE white	45° Shore A	1.3	1000
3	11853912	Magnetic screw cap silver, 8mm centre hole	Silicone white/PTFE blue	55° Shore A	1.5	1000
4	11787607	Magnetic screw cap silver, 8mm centre hole	Butyl red/PTFE grey	55° Shore A	1.6	1000
5	11895000	Magnetic screw cap silver, 8mm centre hole	Silicone white/aluminium foil silver	50° Shore A	1.3	1000
6	11713027	Magnetic screw cap silver, 8mm centre hole (SPME)	Silicone white/PTFE red, pre-cut star (*)	55° Shore A	1.5	1000
7	11875000	Magnetic screw cap silver, closed top	Silicone white/PTFE red	45° Shore A	1.3	1000
8	11885000	Magnetic screw cap silver, closed top	Butyl red/PTFE grey	55° Shore A	1.6	1000

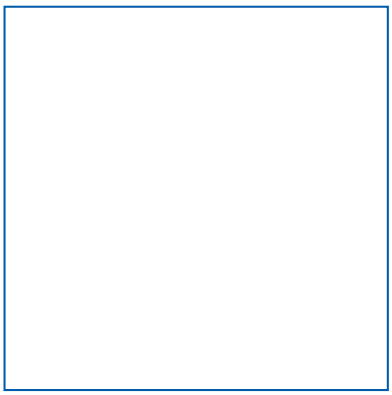
Septa 17.5mm for magnetic universal screw seals ND18



		Septa material	Durometer	Thickness, mm	Pack qty
1	11825000	Silicone white/PTFE red	45° Shore A	1.3	1000
2	11815000	Silicone blue transparent/PTFE white	45° Shore A	1.3	1000
3	11894990	Silicone white/PTFE blue	55° Shore A	1.5	1000
4	11805000	Butyl red/PTFE grey	55° Shore A	1.6	1000
5	11835000	Silicone white/aluminium foil silver	50° Shore A	1.3	1000

Polypropylene screw cap seal ND18

- Especially for headspace vial 12990951
- These screw seals are not suitable for the following vials: 11506114, 12941221, 11526114 and 12951221



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	11899040	Polypropylene screw cap black, 12mm centre hole	Butyl red/PTFE grey	55° Shore A	1.6	1000
2	11845010	Polypropylene screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.6	1000
3	12900961	Polypropylene screw cap black, 12mm centre hole	Butyl red/PTFE grey	55° Shore A	2.0	100
2	12910961	Polypropylene screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	2.0	100
4	12686755	Polypropylene screw cap black, 12mm centre hole	Silicone white/PTFE red	55° Shore A	1.5	1000
5	12676755	Polypropylene screw cap black, closed top	Silicone white/PTFE red	55° Shore A	1.5	1000
6	11835010	Polypropylene screw cap black, 12mm centre hole	Silicone blue transparent/PTFE white	45° Shore A	1.7	1000

Septa 16mm for vial seals ND18

		Septa material	Durometer	Thickness, mm	Pack qty
1	11844990	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11917061	Butyl red/PTFE grey	55° Shore A	1.6	1000
2	11874990	Butyl red/PTFE grey	55° Shore A	2.0	1000
3	15592330	Silicone white/PTFE red	55° Shore A	1.5	1000
4	11854990	Silicone blue transparent/PTFE white	45° Shore A	1.7	1000
5	11777607	PTFE red/silicone white/PTFE red	45° Shore A	1.0	1000

SNAP CAP VIALS ND18 AND ND22

- Different volumes of 5mL, 10mL, 15mL and 25mL 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

		Description	Dimensions, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	10495982	5mL Snap cap vial ND18, 3rd hydrolytic class	40 x 20	Clear	9.1	8	0.6	0.3	100
2	10749644	10mL Snap cap vial ND18, 3rd hydrolytic class	50 x 22	Clear	14	12.7	1	0.5	100
3	11580535	15mL Snap cap vial ND22, 3rd hydrolytic class	48 x 26	Clear	19.3	18.5	1	0.6	100
4	10335582	25mL Snap cap vial ND22, 3rd hydrolytic lass	65 x 26	Clear	27	25	1	0.6	100

PE snap caps ND18/ND22

		Description cap	Dimensions, mm	Colour	Pack qty
1	11797607	18mm PE snap cap, closed top, for ND18	19.8 x 5.2	Transparent	1000
2	11510565	22mm PE snap cap, closed top, for ND22	23.5 x 5.5	Transparent	100

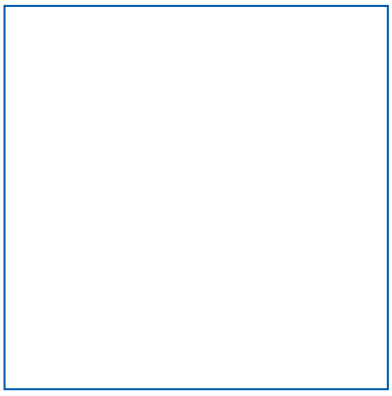
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

SCREW NECK VIALS ND24 (EPA)

The vials are preferentially used on autosampler models from the following manufacturers: Agilent, Dionex, Shimadzu, Tekmar, Thermo Scientific and Varian

- All types of EPA vials can be delivered against a small surcharge with a certificate of cleanliness that might be needed especially for TOC analysis.
- EPA Vials can be obtained with any type of screw seal ND24 already screwed on
- Broad range of EPA vials in clear and amber glass
- Volumes of 20mL, 30mL, 40mL and 60mL available

Screw neck vials ND24 (EPA)



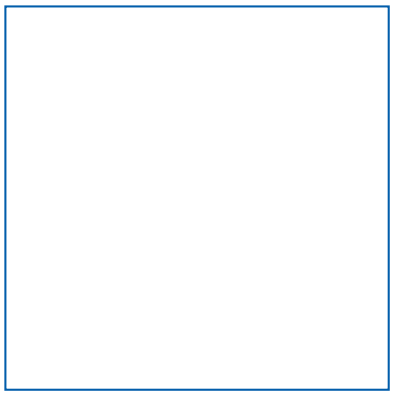
		Description cap	Dimensions, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
	10000782	20mL EPA screw neck vial, 1st hydrolytic class	57 x 27.5	Clear	23.3	20	1	0.5	100
	10458082	20mL EPA screw neck vial, 1st hydrolytic class	57 x 27.5	Amber	23.3	20	1	0.5	100
	10758874	30mL EPA screw neck vial, 1st hydrolytic class	72.5 x 27.5	Clear	31.1	27.4	1.4	0.7	100
	11510585	30mL EPA screw neck vial, 1st hydrolytic class	72.5 x 27.5	Amber	31.1	27.4	1.4	0.7	100
1	10465982	40mL EPA screw neck vial, 1st hydrolytic class	95 x 27.5	Clear	42.9	40	1.4	0.7	100
2	11530585	40mL EPA screw neck vial, 1st hydrolytic class	95 x 27.5	Amber	42.9	40	1.4	0.7	100
	11540585	60mL EPA screw neck vial, 1st hydrolytic class	140 x 27.5	Clear	64.4	60	1.4	0.7	100
	11550585	60mL EPA screw neck vial, 1st hydrolytic class	140 x 27.5	Amber	64.4	60	1.4	0.7	100

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

SCREW NECK VIALS ND24 (EPA)

- Ready to use combination seals; no time consuming and “tricky” assembly.
- No contamination of the liner sometimes caused by manual assembly
- Broad variety of different septa materials for almost all applications
- UltraBond seals ND24 have a bonded cap and silicone/PTFE liner forming an inseparable unit which avoids the problem of liners detaching from the cap. UltraBond is achieved by a patented process that requires no adhesives but instead relies on molecular fusion of both components to achieve unity

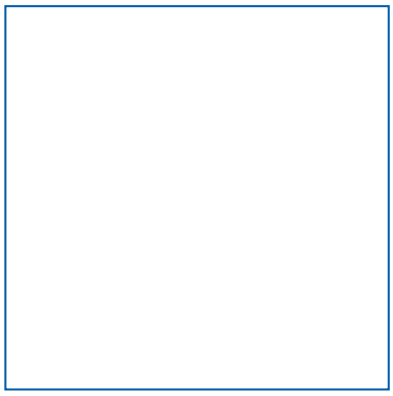
PP screw cap seals ND24 (assembled)



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11530595	PP screw cap white, 12.5mm centre hole	Butyl red/PTFE grey	55° Shore A	2.5	100
2	10090962	PP screw cap white, closed top	Butyl red/PTFE grey	55° Shore A	2.5	100
3	10541013	PP screw cap white, 12.5mm centre hole	Silicone white/PTFE beige (EPA-Quality)	45° Shore A	3.2	100
4	10132422	PP screw cap white, closed top	Silicone white/PTFE beige (EPA-Quality)	45° Shore A	3.2	100
5	12921001	PP screw cap white, closed top	PTFE/EPDM/PTFE	65° Shore A	2.0	100

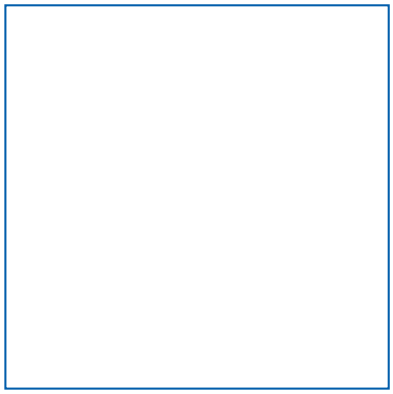
UltraBond seals ND24

- With UltraBond, cap and liner form a bonded and inseparable unit, so that the liner cannot detach



		Description	Septa material	Durometer	Thickness, mm	Pack qty
1	10729454	PP screw cap white, centre hole	Silicone natural/PTFE beige (EPA-Quality)	45° Shore A	3.2	100
2	10132322	PP screw cap white, closed top	Silicone natural/PTFE beige (EPA-Quality)	45° Shore A	3.2	100

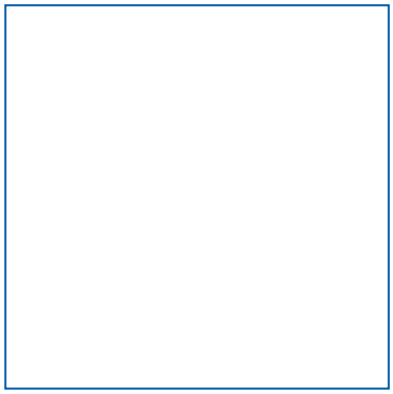
Septa 22mm for vial seals ND24



		Septa material	Durometer	Thickness, mm	Pack qty
1	11835070	Butyl red/PTFE grey	55° Shore A	1.6	1000
2	11845070	Butyl red/PTFE grey	55° Shore A	2.5	1000
3	11787617	Silicone white/PTFE beige	45° Shore A	3.2 (EPA-Quality)	1000
4	11815070	Silicone white/PTFE blue	55° Shore A	1.5, cross-slitted	1000
5	12950991	Silicone white/aluminium foil silver	50° Shore A	3.0	1000

Polypropylene screw caps ND24

- With UltraBond, cap and liner form a bonded and inseparable unit, so that the liner cannot detach



		Description cap	Pack qty
1	10590053	Polypropylene screw cap, white, 12.5mm centre hole	100
2	10759644	Polypropylene screw cap, white, closed top	100

Specially assembled EPA vials with screw seals ND24

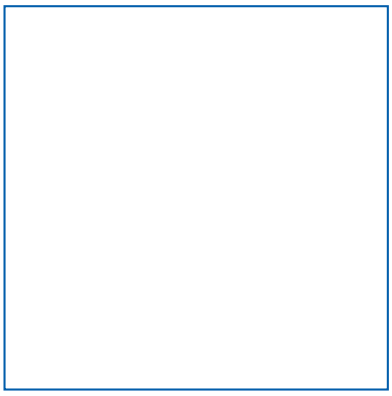
	Description vial	Description assembled seal	Durometer	Thickness, mm	Pack Qty
12901001	20mL Screw neck vial, 57 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.10000782)	UltraBond seal, white, centre hole, silicone natural/PTFE beige (EPA-Quality) (seal Cat.No 10729454)	45° Shore A	3.2	100
12970991	40mL Screw neck vial, 95 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.10465982)	PP screw cap, white, centre hole, silicone white/PTFE beige (seal Cat.No 10541013)	45° Shore A	3.2	100
11510595	40mL Screw neck vial, 95 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.10465982)	UltraBond seal, white, centre hole, silicone natural/PTFE beige (EPA-Quality) (seal Cat.No. 10729454)	45° Shore A	3.2	100
11500595	40mL Screw neck vial, 95 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.10465982)	UltraBond seal, white, closed top, silicone natural/PTFE beige (EPA-Quality) (seal Cat.No. 10132322)	45° Shore A	3.2	100
12911251	40mL Screw neck vial, 95 x 27.5mm, amber glass, 1st hydrolytic class, EPA (vial Cat.No.11530585)	PP screw cap, white, centre hole, silicone white/PTFE beige (seal Cat.No. 10541013)	45° Shore A	3.2	100
12980991	60mL Screw neck vial, 140 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.11530585)	PP screw cap, white, centre hole, silicone white/PTFE beige (seal Cat.No. 10541013)	45° Shore A	3.2	100
12990991	60mL Screw neck vial, 140 x 27.5mm, clear glass, 1st hydrolytic class, EPA (vial Cat.No.11530585)	UltraBond seal, white, centre hole, silicone natural/PTFE beige (seal Cat.No. 10729454)	45° Shore A	3.2	100

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

Screw Neck Vials for Storage Purposes

- Clear and amber vials
- Separate caps and seals also available from a range of different materials (see below)

Screw neck vials for storage purposes



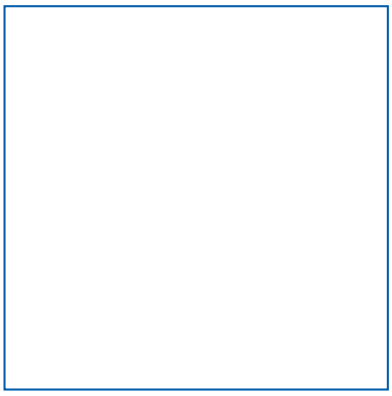
		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11565874	1.5mL Screw neck vial, 8-425	32 x 11.6	Clear	1.9	1.5	200	<110	100
2	10560053	1.5mL Screw neck vial, 8-425	32 x 11.6	Amber	1.9	1.5	200	<110	100
	10571013	4mL Screw neck vial, 13-425	45 x 14.7	Clear	5	4.1	800	<400	100
	11556044	4mL Screw neck vial, 13-425	45 x 14.7	Amber	5	4.1	800	<400	100
	10504463	8mL Screw neck vial, 15-425	61 x 16.6	Clear	8.9	8	1,500	800	100
	11596064	8mL Screw neck vial, 15-425	61 x 16.6	Amber	8.9	8	1,500	800	100
	11576064	12mL Screw neck vial, 15-425	66 x 18.5	Clear	12	11	1,500	800	100
	11506074	12mL Screw neck vial, 15-425	66 x 18.5	Amber	12	11	1,500	800	100
	10023672	16mL Screw neck vial, 18-400	71 x 20.6	Clear	17.4	16	1,500	800	100
	11590545	20mL Screw neck vial, 20-400	86 x 22.7	Clear	24.5	23	1,500	800	100
	10000782	20mL Screw neck vial, 24-400	57 x 27.5	Clear	23.3	20	1	0.5 (mL)	100
	10458082	20mL Screw neck vial, 24-400	57 x 27.5	Amber	23.3	20	1	0.5 (mL)	100
	10758874	30mL Screw neck vial, 24-400	72.5 x 27.5	Clear	31.1	27.4	1.4	0.7 (mL)	100
	11510585	30mL Screw neck vial, 24-400	72.5 x 27.5	Amber	31.1	27.4	1.4	0.7 (mL)	100
	10465982	40mL Screw neck vial, 24-400	95 x 27.5	Clear	42.9	40	1.4	0.7 (mL)	100
3	11530585	40mL Screw neck vial, 24-400	95 x 27.5	Amber	42.9	40	1.4	0.7 (mL)	100
	11570605	50mL Cylindrical jar, 3rd hydrolytic class with screw neck ND40	69.5 x 44	Clear	65.5	50	5	2.5 (mL)	85

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

Polypropylene screw cap seals for storage vials

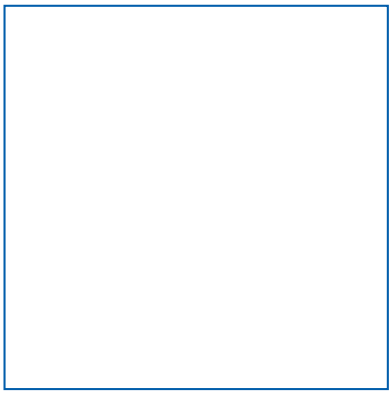
- Corresponding centre hole versions are partially available
- Packed with 10x100 pieces in tamper-proof evident zip-lock PE-bags
- Seals with different septa material are available.

Polypropylene screw cap seals ND8 for 11565874 and 10560053



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11747567	PP screw cap black, closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11884800	PP screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11864800	PP screw cap black, closed top	Silicone white/PTFE red	45° Shore A	1.3	1000

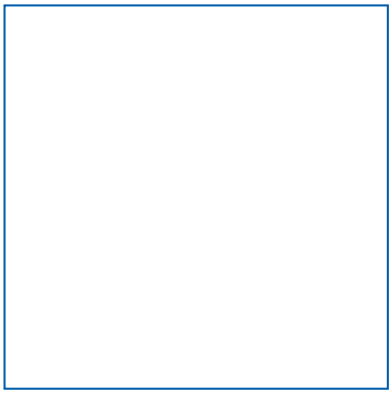
Polypropylene screw cap seals ND13 for 10571013 and 11556044



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11864970	PP screw cap black, closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11823861	PP screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11884970	PP screw cap black, closed top	Silicone cream/PTFE red	55° Shore A	1.5	1000

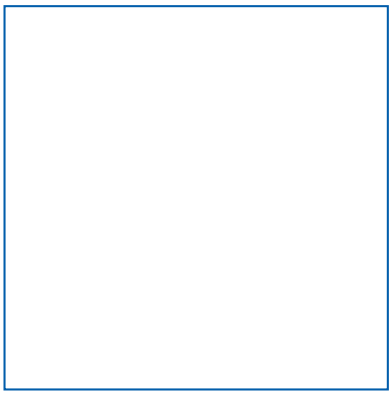
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Polypropylene screw cap seals ND15 for 10504463, 11596064, 11576064, 11506074



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	10530631	PP screw cap black, closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11814990	PP screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.6	1000
3	11804990	PP screw cap black, closed top	Silicone white/PTFE red	45° Shore A	1.3	1000
4	11824990	PP screw cap black, 9mm centre hole	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
5	11804233	PP screw cap black, 9mm centre hole	Butyl red/PTFE grey	55° Shore A	1.6	1000
6	11814233	PP screw cap black, 9mm centre hole	Silicone white/PTFE red	45° Shore A	1.3	1000

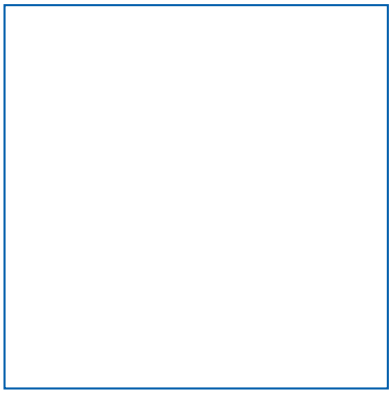
Polypropylene screw cap seals ND18 for 10023672



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11845010	PP screw cap black, closed top	Butyl red/PTFE grey	55° Shore A	1.6	1000
2	11896371	PP screw cap black, closed top	Silicone blue transparent/PTFE white	45° Shore A	1.7	1000
3	12676755	PP screw cap black, closed top	Silicone white/PTFE red	55° Shore A	1.5	1000

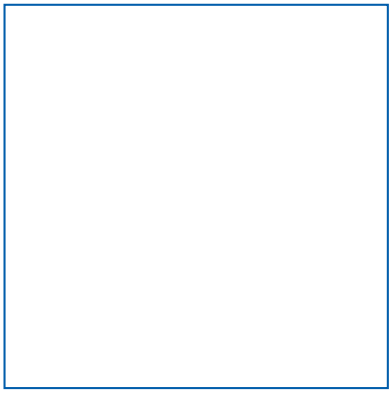
TFVol. = Total Volume/Filling Volume (mL) UsVol. = Usable Volume (mL) MWVol. = Minimum Working Volume (µL) Res. Vol. = Residual Volume (µL)

Polypropylene screw cap seals ND20 for 11590545



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	12696785	Polypropylene screw cap white, closed top	Natural rubber red-orange/TEF transparent	60° Shore A	1.3	1000
2	11805070	Polypropylene screw cap white, closed top	Butyl red/PTFE grey	55° Shore A	1.3	1000
3	11855060	Polypropylene screw cap white, closed top	Silicone white/PTFE red	45° Shore A	1.3	1000

Polypropylene screw cap seals ND24 for 10000782, 10458082, 10758874, 11510585, 10465982, 11530585, 11540585, 11550585



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	10090962	PP screw cap white, closed top	Butyl red/PTFE grey	55° Shore A	2.5	100
2	10132422	PP screw cap white, closed top	Silicone white/PTFE beige	45° Shore A	3.2	100
3	12921001	PP screw cap white, closed top	PTFE/EPDM/PTFE	65° Shore A	2.0	100
2	10132322	UltraBond seal white, closed top	Silicone natural/PTFE beige	45° Shore A	3.2	100

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

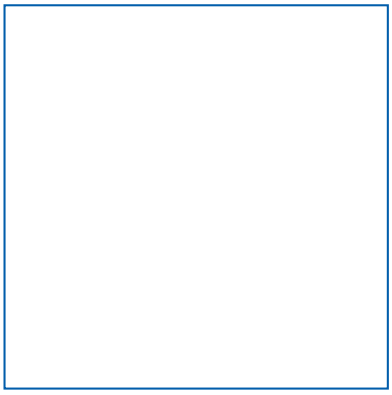
Polypropylene screw cap seals ND40 for 11570605

	Description cap	Septa material	Durometer	Thickness, mm	Pack qty
11580605	40mm Polypropylene screw cap black, closed top	PTFE virginal	53° Shore D	0.5	100

CRIMP NECK VIALS WITH THEIR COMPATIBLE CAPS AND SEALS

- Please note that products designated as 'Special' may be non-stock and may require a minimum order quantity
- See below for a range of compatible caps and seals

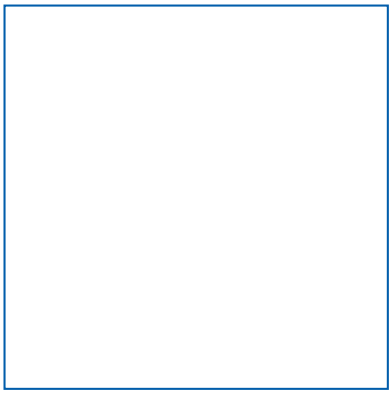
CRIMP NECK VIALS FOR STORAGE PURPOSES, ND11 AND ND13



		Description	Dimension, mm	Glass type	TFVol. (mL)	UsVol. (mL)	MWVol. (µL)	Res.Vol (µL)	Pack qty
1	11555894	2.5mL Crimp neck ND11 vial, 1st hydrolytic class, wide opening	41 x 11.6	Clear	2.7	2.4	200	<100	100
2	11546044	2mL Crimp neck vial ND13, 1st hydrolytic class	32 x 16	Clear	3.6	3	800	<400	1000
3	15582330	4mL Crimp neck vial ND13, 1st hydrolytic class	45 x 14.7	Clear	5	4.1	800	<400	100

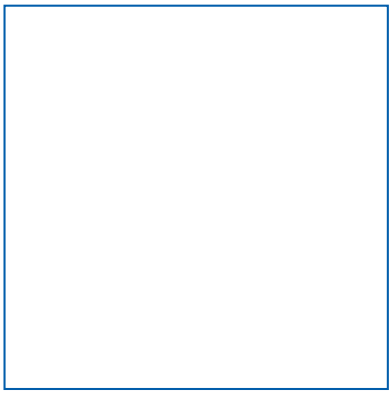
For vial 11555894 refer to crimp seal ND11

Septa for Schott screw caps



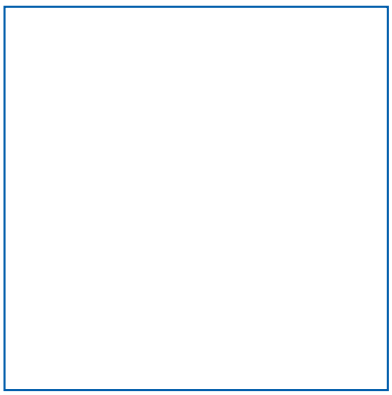
		Septa material	Durometer	Thickness, mm	Pack qty
1	11884950	12.9mm Septa, silicone cream/PTFE beige for Schott screw cap GL14	55° Shore A	3.2mm	1000
1	11834990	16.8mm Septa, silicone cream/PTFE beige for Schott screw cap GL18	55° Shore A	3.2mm	1000
1	11849430	23.4mm Septa, silicone cream/PTFE beige	55° Shore A	3.2mm	1000
1	11859440	30.3mm Septa, silicone cream/PTFE beige for Schott screw cap GL32	55° Shore A	3.2mm	1000
1	12941011	43.2mm Septa, silicone cream/PTFE beige for Schott screw cap GL45	55° Shore A	3.2mm	100
2	11510615	43.2mm Septa, butyl red/PTFE grey for Schott screw cap GL45	55° Shore A	2.5mm	100

Special caps seals for crimp neck storage vials ND13



		Description cap	Septa material	Durometer	Thickness, mm	Pack qty
1	11894960	13mm Aluminium cap clear lacquered, 6mm centre hole	Butyl red/PTFE grey	55° Shore A	2.0	1000
2	11997051	13mm Aluminium cap clear lacquered, 6mm centre hole	Pharma-Fix septa (butyl/PTFE)	50° Shore A	2.0	1000
3	11874960	13mm Aluminium cap clear lacquered, centre tear off	Pharma-Fix septa (butyl/PTFE)	50° Shore A	2.0	1000

Septa 13mm



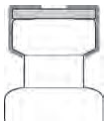
		Septa material	Durometer	Thickness, mm	Pack qty
1	11844960	13mm Septa, butyl red/PTFE grey	55° Shore A	2.0	1000
2	11814960	13mm Septa, Pharma-Fix (butyl/PTFE)	50° Shore A	2.0	1000

CHROMATOGRAPHY ACCESSORIES

Crimping tools

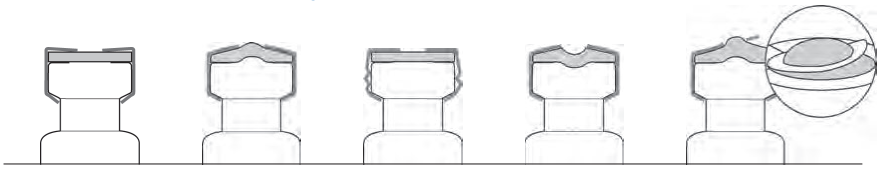
- For easy and convenient vial capping
- Chemically resistant surface finish especially designed for use in laboratories
- Hardened crimping jaws made of a special alloy that guarantees long life
- Adjustable crimping pressure
- Additionally 11mm, 13mm and 20mm crimpers are adjustable in crimping height by screwing up or down the pressure block in the crimping head with a hexagon key

Correct Crimp
Flat cap surface
Flat septa surface



Tight fitting of the aluminium edge.
Plain and undeformed cap sides.

An inappropriate crimp can be recognised by:



Untight aluminium edge
Adjust crimping pressure with the screw handle **and** adjust crimping height with the hexagon key (see below)

(undercrimped)

Upward bulge of crimp cap
Adjust crimping pressure with the screw handle **and** adjust crimping height with the hexagon key (see below)

(overcrimped)

Deformation of crimp cap sides
Adjust crimping height with the hexagon key (see below)

(overcrimped)

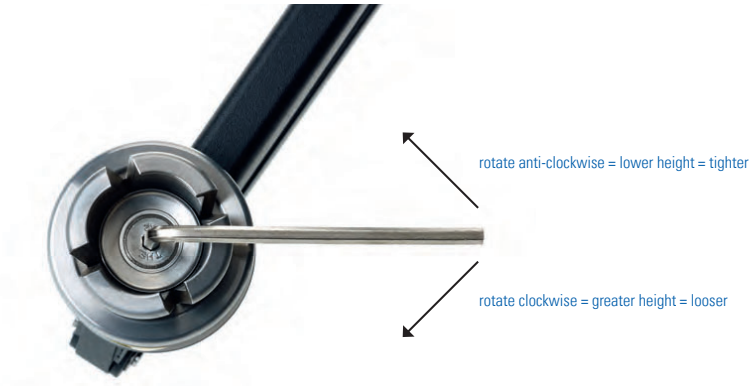
Convex looking liner
Adjust crimping pressure with the screw handle

(overcrimped)

Rounded edges/upward bulge of cap/liner
It is important not to overcrimp, especially with headspace CPAs. If the aluminium 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 cases - can even tear apart

(overcrimped)

Note that a poor crimp cannot be recognised by simply trying to turn the seal, because PTFE-laminated liners have a very slippery surface, which permits even correctly crimped caps to be rotated if sufficient force is used. Correctly crimped caps can also be turned easily when the liner is in contact with the reduced surface area of a headspace (bevelled top) glass rim.



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

	Description	Pack qty
11707567	Crimper for 8mm Aluminium caps	1
11757577	Crimper for 11mm Aluminium caps	1
11748276	Crimper for 13mm Aluminium caps	1
11550525	Crimper for 20mm Aluminium caps	1
11839440	Crimper for 28mm Aluminium caps	1
11815863	Crimper for 32mm Aluminium caps	1
11777597	Crimper for 13mm flip top/flip off seals	1
11844970	Crimper for 13mm flip tear up seals	1
11801613	Crimper for 20mm flip top/flip off seals	1
11875050	Crimper for 20mm flip tear up seals	1
11829440	Crimper for 28mm flip top/flip off seals	1

Manual decapping tools

	Description	Pack qty
11758276	Decapper for 8mm Aluminium caps	1
11768276	Decapper for 11mm Aluminium caps	1
11787597	Decapper for 13mm Aluminium caps	1
11500535	Decapper for 20mm Aluminium caps	1
11849440	Decapper for 28mm Aluminium caps	1
10621210	Decapper for 32mm Aluminium caps	1

Stainless steel cleanroom crimping and decapping 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 sterilisation for cleanroom use without the risk of damaging the tool
- Available in 11mm,13mm and 20mm sizes
- Crimping tools have adjustable 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 crimper can be used in cleanroom environments without limitation

Manual crimping tools

	Description	Pack qty
11737746	11mm crimper made of stainless steel, sterilisable, for cleanroom applications	1
11747746	13mm crimper made of stainless steel, sterilisable, for cleanroom applications	1
11757746	20mm crimper made of stainless steel, sterilisable, for cleanroom applications	1

Manual decapping tools

	Description	Pack qty
11845722	11mm decapper made of stainless steel, sterilisable, for cleanroom applications	1
11586034	13mm decapper made of stainless steel, sterilisable, for cleanroom applications	1
11520535	20mm decapper made of stainless steel, sterilisable, for cleanroom applications	1

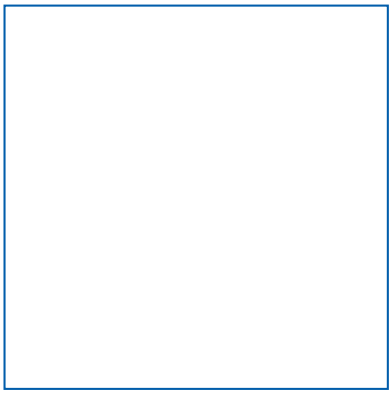
Pneumatic AIRGO ergonomic crimper

- New, ergonomically designed handheld 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
- Weight reduced by 50% over previous generation of handheld pneumatic tools
- The optional balancer helps to save space on the lab bench and keeps the crimper clean and ready to use in reach

	Description	Pack qty
15592290	11mm AIRGO crimper high pressure min. 5 bar/72,5 psi stable working pressure	1
15502300	11mm AIRGO crimper low pressure min. 3 bar/43,5 psi stable working pressure	1
11808951	Hanging device with balancer	1

Pneumatic hand-held crimping and decapping tool

- Crimping and decapping tool, operated by compressed air (6.2bar = 90psi minimum net pressure)
- Easy handling; just by pushing the button the vial is crimped or decapped
- Interchangeable 'C'-heads for crimping and decapping also available in various sizes (see below)
- 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 G¼" 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



	Description	Pack qty
11898941	Pneumatic basic crimping tool, including pressure regulator, safety valve and nylon (PA) twisted hose	1
11808951	Hanging device with balancer	1
11818951	Stand with foot switch for pneumatic basic crimping tool	1

Crimping heads for pneumatic hand-held crimping tool

	Description	Pack qty
11868981	Crimping head for 8mm Aluminium caps	1
11844890	Crimping head for 11mm Aluminium caps	1
11834970	Crimping head for 13mm Aluminium caps	1
11865050	Crimping head for 20mm Aluminium caps	1
11869440	Crimping head for 32mm Aluminium caps	1
11824970	Crimping head for 13mm flip top/flip off seals	1
12980981	Crimping head for 20mm flip top/flip off seals	1
11879440	Crimping head for 32mm flip top/flip off seals	1

Decapping heads for pneumatic hand-held crimping tool

	Description	Pack qty
11878981	Decapping head for 8mm Aluminium caps	1
11854890	Decapping head for 11mm Aluminium caps	1
11854970	Decapping head for 13mm Aluminium caps	1
11885050	Decapping head for 20mm Aluminium caps	1
11889440	Decapping head for 32mm Aluminium caps	1

Electronic crimpers and decappers

- These electronic crimpers and decappers provide secure, reproducible crimps and quick and easy removal of aluminium seals with the push of a button
- Ergonomic design and push button operation eliminates wrist strain
- Built-in long life lithium ion rechargeable battery with low battery indicator
- Crimp force sensing assures consistent proper sealing
- Universal 100V–240V charger includes plug adaptors for most power outlets
- Crimpers and decappers can be operated while plugged in and recharging
- Vials can be crimped or decapped while they remain in most standard removable sample trays
- Adjustable crimp settings for compatibility with most vial/septum/seal combinations

Electronic crimpers

	Description	Vial diameter, mm	Volts	Pack qty
15532300	Electronic crimper	8	110 - 240V	1
15582300	Electronic crimper	11	110 - 240V	1
15542330	Electronic crimper	13	110 - 240V	1
15502340	Electronic crimper	20	110 - 240V	1

Electronic decappers

	Description	Dimension, mm	Volts	Pack qty
15552330	Electronic decapper	13	110 - 240V	1
15522340	Electronic decapper	20	110 - 240V	1

Replacement battery for electronic crimpers and decappers

	Description	Pack qty
15522300	Replacement battery, 6.4V lithium ion for electronic crimpers and decappers	1

Programmable electronic high power crimp station (basic tool)

- Fully programmable station with quick exchange crimp and de-crimp heads
- High power, perfect for magnetic steel caps
- Adjustable crimp settings for compatibility with most vial/septum/seal combinations including aluminium, steel and bi-metal seals
- Exchangeable crimp and decapping heads can be removed or installed in seconds
- For each head, a set of up to 10 adjustment programs is available and can be saved
- A reliable crimp is guaranteed when programmed, with various closures, septa thickness and vials
- Crimp-force sensing automatically determines when a proper seal has been formed and opens the jaws to release the vial

	Description	Pack qty
15512300	Programmable electronic high power crimper and 12 volt DC supply with power cord (accessory base is not included)	1

Programmable electronic high power crimp station, with accessory bases

	Description	Dimension, mm	Pack qty
15512340	Programmable electronic high power crimp station with variable accessory base, external power supply and two exchangeable jaw sets	20	1

Crimping heads for programmable electronic high power crimp station

	Description	Dimension, mm	Pack qty
15542300	Crimping head for 8mm crimp caps	8	1
15542310	Crimping head for 11mm crimp caps	11	1
15562330	Crimping head for 13mm crimp caps	13	1
15532340	Crimping head for 20mm crimp caps	20	1

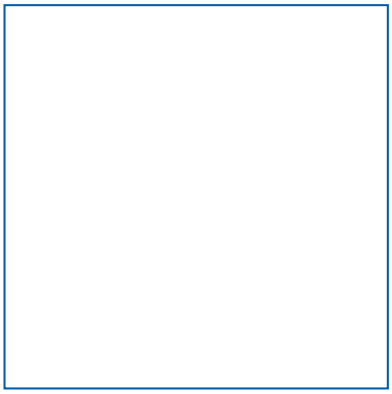
Decapping heads for programmable electronic high power crimp station

	Description	Dimension, mm	Pack qty
15552310	Decapping head for 11mm Aluminium caps	11	1
15572330	Decapping head for 13mm Aluminium caps	13	1
15542340	Decapping head for 20mm Aluminium caps	20	1

Vial Racks and Storage Boxes

- Easy handling and transportation of sample vials
- Acrylic racks allow clear visibility of contents
- Stable standing position because of solid construction
- Silicone base provides stability when stacked
- Racks for 8mm respectively 11mm vials can even hold conically shaped sample vials

Vial racks



		Description	Dimension, mm	Compatible with vials:	Pack qty
1	**11708256**	Vial rack, acrylic, 50 placements with a diameter of 8.5/3mm	173 x 95 x 20	11541364, 11561364, 11571364, 11521374, 11531374, 11541374, 11551374, 11561374, 10224852, 10306062, 10145424, 10506075, 10672733	1
1	**11767597**	Vial rack, acrylic, 50 placements with a diameter of 12mm	173 x 95 x 20	11511474, 10521593, 11531474, 11565874, 10560053, 10326042, 11595874, 11505884, 11515884, 11525884, 11525884, 11545884, 10162512, 11575884, 10080952, 11505894, 11515894, 11525894, 11535894, 11545894, 11555894, 11565894, 11575894, 11585894, 11595894, 10678005, 10145714, 12951011, 11535914, 11545914, 12672465, 11555914, 11565914, 11871653, 11585914, 11515924, 11525924, 11707597, 11717597, 11884930, 11894930, 11727597, 11814940, 11824940, 11834940	1
2	**11728256**	Vial rack, acrylic, 40 placements with a diameter of 15.1mm	175.8 x 115.5 x 20	10571013, 11556044, 11576044, 11586044, 15582330, 11516074, 10455982	1
3	**11738256**	Vial rack, acrylic, 25 placements with a diameter of 24mm	160 x 160 x 30	12990951, 10495982, 10749644, 11506114, 12941221, 11526114, 12951221, 10080822, 10663303, 10152512, 10680843, 12971231, 10192652, 11520545, 10070952, 10510323, 12981241, 10681033, 12910991, 10195012	1
4	**11767746**	Vial rack, PP, for 1.5mL vials, 50 placements, blue, stackable	200 x 105 x 17	11511474, 10521593, 11531474, 11565874, 10560053, 10326042, 11595874, 11505884, 11515884, 11525884, 11525884, 11545884, 10162512, 11575884, 10080952, 11505894, 11515894, 11525894, 11535894, 11545894, 11555894, 11565894, 11575894, 11585894, 11595894, 10678005, 10145714, 12951011, 11535914, 11545914, 12672465, 11555914, 11565914, 11871653, 11585914, 11515924, 11525924, 11707597, 11717597, 11884930, 11727597, 11727597, 11814940, 11824940, 11834940	1
4	**12672495**	Vial rack, PP, for 4mL vials, 50 placements, blue, stackable	230 x 117 x 28	10571013, 11556044, 11576044, 11586044, 15582330, 11516074, 10455982	1

Storage boxes, polypropylene

- Stable standing on the laboratory bench and secure vial containment during transport thanks to specific placement diameters tailored to vial sizes
- Ideal for space-saving storage in fridges
- Transparent lid helps prevents condensation and contamination
- Temperature resistant from -80°C up to +100°C
- Alphanumeric coding (1.5mL, 4mL) for clear sample identification
- Unbreakable polypropylene bottom and lid, stackable
- Chemically resistant and robust; autoclavable

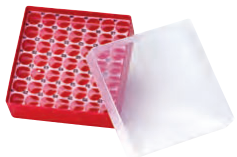
Storage boxes, polypropylene, for 1.5mL sample vials, 81 placements

	Description	Dimensions, mm	Colour	Pack qty
12692495	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Blue	1
12682495	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Orange	1
12602505	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Pink	1
12612505	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Yellow	1
12622505	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Green	1
12632505	Storage box for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 81 placements with alphanumeric coding on all four sides and on base for each placement	130 x 130 x 45	Transparent	1

Storage boxes, polypropylene, for 1.5mL sample vials, 16 placements

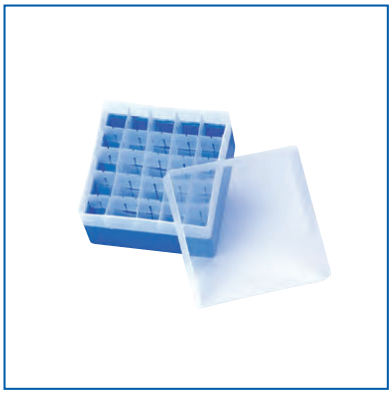
	Description	Dimensions, mm	Colour	Pack qty
15502330	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Blue	5
15512330	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Orange	5
15592320	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Pink	5
15522330	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Yellow	5
15582320	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Green	5
15532330	Storage box, polypropylene, for 1.5mL (1.8mL, 2mL) vials or 2mL Shell vials, with cover, 16 placements	67 x 67 x 45	Transparent	5

Storage boxes, polypropylene, for 4mL sample vials, 49 placements



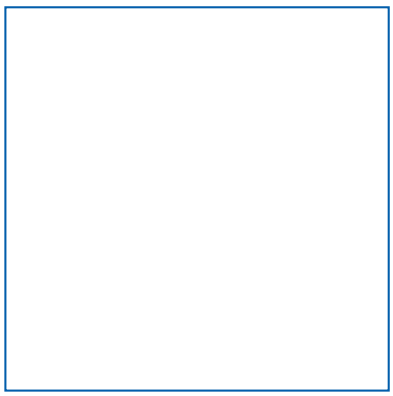
	Description	Colour	Pack qty
12642505	Storage box, polypropylene, for 4mL or 4mL Shell vials, red, with cover, (130 x 130 x 52mm), 49 placements with individual alphanumeric coding	Red	1

PP Storage boxes for 5mL, 10mL and 20mL Headspace vials, 25 placements



	Description	Colour	Pack qty
12381113	Storage box, polypropylene, for 5mL, 10mL and 20mL Headspace vials, blue with cover, (130 x 130 x 102mm), 25 placements	Blue	1

Storage boxes, polypropylene, for 20mL and 30mL EPA vials, 10 and 16 placements



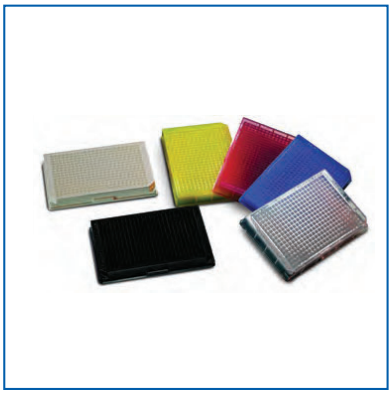
		Description	Colour	Pack qty
1	12652465	Storage box, polypropylene, for 30mL and 40mL EPA vials, with cover (130 x 130 x 105mm), 10 placements	Violet	1
2	12652505	Storage box, polypropylene, for 20mL EPA vials, with cover (130 x 130 x 80mm), 16 placements	Violet	1

Microplates

Microplates are primarily used in analytical research for screening or for multiple cell-based assays. They are ideal products for simultaneously manipulating and managing large numbers of different samples and can also be especially useful for sample storage.

Microplates, polypropylene, storage, 96 and 384 well plates

- Resistant to most reagents
- Withstand temperatures from -80°C to +121°C making these plates ideal for storage
- Choose round bottom wells for optimal sample recovery
- Come in a variety of colours for quick identification during storage



	Material	N° of wells	Colour	Well shape	Sterile	Well volume	Pack qty
11907954	PP	96	Natural	Round	N	500µL	80
11917954	PP	96	Red	Round	N	500µL	80
11927954	PP	96	Yellow	Round	N	500µL	80
11937954	PP	96	Blue	Round	N	500µL	80
13515450	PP	96	Natural	Round	Y	1mL	50
13535450	PP	96	Natural	Round	N	2mL	60
13545450	PP	96	Natural	Round	Y	2mL	60
13555450	PP	384	Natural	Flat	N	250µL	60
13565450	PP	384	Natural	Conical	N	35µL	100
13575450	PP	384	Natural	Conical	Y	35µL	100
13595450	PP	384	Black	Conical	N	35µL	100
13585450	PP	384	White	Conical	N	35µL	100
11957954	PP	384	Natural	Round	N	120µL	120
11967954	PP	384	Red	Round	N	120µL	120
11977954	PP	384	Yellow	Round	N	120µL	120
11987954	PP	384	Blue	Round	N	120µL	120

Microplates, polypropylene storage, 96 deep well microplates microplates

- Applications include SPE, HPLC, MS, liquid handling, automation, robotics
- Unique, patented sealing cap allows penetration of a needle through the cap into each well, with minimal needle coring thanks to reduced cap well thickness
- Choice of volumes, all with same external dimensions
- Manufactured from inert polypropylene giving heat and solvent resistant qualities
- Conical well base aids sample concentration, reconstitution and centrifugation
- Small radius on all corners to prevent sample precipitation and improve concentration
- DNase and RNase free

	Well volume, µL	Well shape	Pack qty
12439307	350	Square	50
12449307	1000	Square	50
11511963	2,000	Square	50
Accessory			
12439307	Pierceable sealing cap (EVA), square well, non-autoclavable		50

General Introduction to Chemicals

Fisher Chemical

In addition to the range of chromatography vials and closures featured in the first section of this brochure Fisher Scientific is also your partner of choice for chemicals. In this section you will discover the perfect chemicals for your chromatography applications as well as understanding the manufacturing capabilities and packaging innovations of Fisher Chemical. However, if you are unable to find the product you need or if you have any further questions regarding the Fisher Chemical range, then please contact our Product Support Advisors.

Chemical Grades

Table 6: Fisher Chemical Grades

Grade	Application	Definition
Optima™ LC-MS	LC-MS	Meets stringent purity requirements of LC/MS and UHPLC by addressing the need for minimal organic contamination with 0.1µm filtration to ensure particle free. Evaluated for 17 metal impurities at ppb concentrations for minimal metal mass adduct formation. High ionisation efficiency to detect organic contaminants at 50 ppb max (positive) and 300 ppb max (negative) in full scan MS. Screened for UV-absorbing contaminants at every wavelength in the 200 to 400 nm range to afford smooth baselines and to reduce interferences.
LC-MS	LC-MS	Ideal mobile phase for routine LC-MS applications. Guaranteed for low level of trace metals and non-volatile residue. Low level of absorbance, performance under gradient conditions. Filtered at 0.2µm.
UHPLC Gradient Grade	UHPLC-UV	Solvent certified for UHPLC analysis with high UV transmission. Low background noise at 210nm and 254nm. Filtered at 0.1µm for ultra-low particulates.
Advanced HPLC Gradient Grade	HPLC gradient analysis	Advanced HPLC gradient grade specifically manufactured to guarantee a very low level of gradient baseline drift. Includes lot analysis and absorbance curve on the label.
HPLC Gradient Grade	HPLC gradient analysis	HPLC solvents suitable for gradient analysis. Guaranteed for low absorbance/high UV transmission and low concentration of non-volatile impurities. In some instances may be suitable for fluorescence detection. Includes lot analysis and absorbance curve on the label.
HPLC	HPLC isocratic analysis	HPLC grade solvents and reagents show low UV absorbance as guaranteed suitability for isocratic HPLC applications
HPLC Fluorescence	HPLC with fluorescence and UV detectors	HPLC solvents suitable for fluorescence and UV detectors. Guaranteed for low fluorescence between 250nm and 750nm emission and excitation wavelengths.
HPLC Electrochemical	HPLC with electrochemical and UV detectors	HPLC solvents suitable for electrochemical and UV detectors. Guaranteed for low electrochemical activity and low UV absorbance/high transmission. Includes lot analysis and absorbance curve on label.
GPC	GPC - Gel Permeation Chromatography	Solvents manufactured for gel permeation chromatography. Filtered to 0.2µm. Low water, residue and colour. Actual lot analysis on the pack label.
GC-Headspace	Gas Chromatography Headspace	High purity solvents for accurate and reliable analysis of organic volatile impurities (OVIs) by gas chromatography headspace (GC-HS)
Distol	GC - Gas Chromatography	Range of solvents suitable for pesticide and petroleum residue analysis. Guaranteed to meet the ECD, NPD and FID detectors requirement.
Optima™ Grade	ICP-MS	Highest purity acids, bases and water specifically qualified for ultra-trace elemental analysis by ICP-MS instruments. Ultra-pure quality tested for up to 65 parameters at 1-100 ppt level.
Trace Metal™ Grade	ICP	TraceMetal™ grade qualified for trace elemental analysis by ICP instruments. Acids and reagents tested for up to 65 parameters at ppb levels.
Primar Plus™ Grade	AAS	Primar Plus™ grade suitable for trace elemental analysis by AAS instruments. Acids and reagents are tested for up to 40 parameters at 1 to 10 ppb level.
For Analysis	General analytical application	Certified reagents for analytical application. Tested for up to 18 guaranteed parameters. Actual lot analysis on the pack label.
For Analysis Conform Eur. Ph.	General analytical application	Certified reagents for analytical application meeting the Eur.Ph requirement. Tested for up to 18 guaranteed parameters. Actual lot analysis on the pack label
Specified Laboratory Reagent (SLR)	General laboratory applications	Specified Laboratory Reagents for general laboratory applications. Tested for up to 13 parameters.
Technical	General use	For general use in the laboratory.
Buffer	pH-Metry	Buffer NIST Standard solutions certified for pH measurement. Ready to use, with an accuracy factor of ±0.02 pH at 20°C. Also available as concentrates, packaged in ampoules.
Volumetric Solution	Volumetry	Standard solutions for volumetric analysis. Accuracy factor up to 0.999 - 1.001 NIST traceability. Ready to use.
Solutrate	Volumetry	Concentrated standard solutions for volumetric analysis. NIST traceability. Supplied in singles or pack of six sealed ampoules.
Aqualine™	Karl Fischer titration	Karl Fischer reagents for the determination of moisture. Volumetric and coulometric reagents and standards. Pyridine free, rapid titration and a stable end-point. Supplied in single packs or in ampoules.

For up to date GHS information on Fisher Chemical products listed please refer to the safety data sheet available from www.eu.fishersci.com

Packaging Innovations

Fisher Chemical products come in a variety of innovative packaging options designed for safety, environmental protection, convenient handling and storage, and preservation of product integrity. Our packaging is compliant with all government regulations.

Amber glass and borosilicate glass bottles

- Amber glass is used to package photosensitive chemicals to protect them from light
- Borosilicate glass significantly reduces leaching of metal cations

HDPE plastic bottles

- A proprietary surface treatment is applied to HDPE bottles to create a barrier between the bottle and chemical, thus preventing contamination by plasticisers

Ampoules

- Fisher Chemical Optima™ LC/MS additives are now custom-packaged in amber borosilicate ampoules
- Available in sizes from 0.5mL to 2mL
- Manufactured under inert atmospheric conditions to provide the freshest additives for preparing aqueous and organic mobile phase blends

Aluminium bottles

- Providing optimum material characteristics to avoid interactions between solvents and packaging material
- Lightweight bottles allow easy handling and low transport costs

High volume solvent container systems

- High-volume solvent delivery container systems, available in 10L to 1000L
- Enhanced solvent safety - the bottle-free, closed container system eliminates the potential for glass bottle breakage and makes the risk of spills and exposure to vapours negligible
- Increases lab efficiency by eliminating
  - Repeated solvent testing
  - Multiple lots of material
  - Bottle rinsing
  - Disposal costs
- Environmentally friendly
  - Reduces the amount of solid waste generated
  - Minimises the release of flammable or toxic solvent liquids and vapours
  - Eliminates bottle rinsing – empty containers are returned, cleaned and refilled
- Applications include:
  - High-performance liquid chromatography (HPLC)
  - Preparative chromatography and high-volume gas chromatography sample preparation
  - Process synthesis and extractions

Custom Blends and Specifications

Take advantage of solvents, reagents and solutions tailored to your individual needs

Utilising our dedicated manufacturing sites, Fisher Chemical can tailor-make solvents to meet the specifications you need for your application. Our experience in manufacturing, processing and testing high-purity solvents therefore enables complete customisation to your requirements. Our Specialised Chemical Services (SCS) team serves customers who require something different:

- Semi-bulk and bulk chemicals
- Tailored solvents and solvent blends
- Special solutions
- Additional testing services
- Customised packaging and labelling

Custom blending process

Fisher Chemical can tailor make solvents to meet your specifications for your application. In addition, their dedicated solvent-mixing facilities are available to produce high-quality blends. Solvents are charged by weight and passed through a 0.2µm filter by air-driven pump and/or by nitrogen pressure. Small amounts of solid and liquid additives are added via charge-ports. All blending and mixing operations are carried out according to written procedures. The mixing vessels are cleaned (CIP) before and after the mixing/blending operation and are left in a dry condition, filled with nitrogen, between operations.

Quality and testing

For bespoke products, a sample will be prepared and the specification finalised before production commences. This specification will be formally defined in a document called a 'quality schedule'. The quality schedule will be a full description of the customer's quality requirements, including packaging and labelling. On manufacture, the components are charged and blended, and the resulting material is sampled to ensure the product quality. The material is then discharged into the final product containers by nitrogen pressure. The final product containers are then re-sampled and subjected to final testing and approval.

Packaging

The final product can be supplied in packaging from 1L glass bottles to stainless steel containers up to 1000L

For up to date GHS information on Fisher Chemical products listed please refer to the safety data sheet available from www.eu.fishersci.com

Chromatography Solvents and Reagents

Take advantage of solvents, reagents and solutions tailored to your individual needs

Research, quality control or routine analysis – whatever the field of activity, the Fisher Chemical range of solvents meet the challenges of chromatography from HPLC to UHPLC-MS
applications. Fisher Chemical can supply the type of solvents, blends and reagents in the grades, sizes and packaging that meet your requirements for the most challenging applications, including:

- Forensic toxicology
- Environmental analysis
- Pharmaceutical and biopharmaceutical research
- Proteomics and metabolomics
- Clinical research

The Fisher Chemical range of chromatography solvents, blends and reagents is extensive. However, if you are unable to find the product you need or if you have any further questions, please contact our Product Support Advisors.

Table 7: Fisher Chemical chromatography solvent selection guide

Chromatography Application	Instrument and Detector Type	Fisher Chemical Solvent Grade
High HPLC-MS	LC and UHPLC coupled with mass detector	Optima™ LC/MS
HPLC-MS	LC coupled with mass detector	LC/MS Grade
UHPLC	UHPLC coupled with UV detector	UHPLC Gradient Grade
High HPLC Gradient Analysis	LC gradient coupled with UV detector	HPLC Advanced grade
HPLC Gradient Analysis	LC gradient coupled with UV detector	HPLC Gradient grade
Isocratic HPLC	LC coupled with UV detector	HPLC Grade

OPTIMA™ SOLVENTS FOR LC-MS

The certified performance of our Optima™ LC-MS solvents offers the most reliable product range for today's scientist. For consistent, reproducible performance in the mobile phase of LC-MS, choose Optima™ LC/MS grade products:

- Solvents
- Mobile phase blends
- Reagents and additives

Key Features

- Higher signal intensity and lower metal ion content (up to 17 metals level tested)
- Innovative LC-UV gradient test with photo diode array detector
- Sub-micron filtration for maximum purity

Advantages

- Ensure extremely low levels of UV-absorbing impurities – peak height with PDA (from 200 to 400 nm) with 2mAU max
- Range of pack sizes available to suit application requirements
- Lower particulate levels from < 0.1µm filtration to protect columns and components from clogging

	Description	Filter size	Pack size
10055454	Acetonitrile	0.1µm	500mL
10489553	Acetonitrile	0.1µm	1L
10001334	Acetonitrile	0.1µm	2.5L
10636545	Methanol †	0.1µm	500mL
10031094	Methanol †	0.1µm	1L
10767665	Methanol †	0.1µm	2.5L
10095164	Water	0.03µm	500mL
10728098	Water	0.03µm	1L
10505904	Water	0.03µm	2.5L

† Restrictions may apply in certain countries

For up to date GHS information on Fisher Chemical products listed please refer to the safety data sheet available from www.eu.fishersci.com

BLENDED OPTIMA™ SOLVENTS FOR LC-MS

Fisher Chemical Optima™ LC-MS solvents have set the standard of excellence for consistent, reproducible performance in the mobile phase of LC-MS. Now these same high purity solvents are pre-blended with Optima™ LC-MS modifiers, such as formic acid (FA) or trifluoroacetic acid (TFA), to provide ready to use aqueous and organic mobile phase blends for LC-MS applications.

Key Features

- Low mass spectrometry background noise (LC-MS)
- Minimal metal impurities
- Lowest impurity background using diode array reduction (LC-UV)

Advantages

- Minimise safety risks associated with storing, blending and disposing of hazardous solvents
- Eliminate overhead costs associated with preparing blends
- Eliminates the need to clean glassware or measure corrosive acids
- Extend LC-MS column life due to low impurity level and low residue value

Optima™ LC-MS blends

	Description	Pack size
10468704	Acetonitrile with 0.1% formic acid	500mL
10678935	Acetonitrile with 0.1% formic acid	1L
10118464	Acetonitrile with 0.1% formic acid	2.5L
10270455	Acetonitrile with 0.1% trifluoroacetic acid	500mL
10230125	Acetonitrile with 0.1% trifluoroacetic acid	1L
10585635	Acetonitrile with 0.1% trifluoroacetic acid	2.5L
10429474	Water with 0.1% formic acid	500mL
10229884	Water with 0.1% formic acid	1L
10188164	Water with 0.1% formic acid	2.5L
10362055	Water with 0.1% trifluoroacetic acid	500mL
10311725	Water with 0.1% trifluoroacetic acid	1L
10516625	Water with 0.1% trifluoroacetic acid	2.5L

OPTIMA™ REAGENTS AND ADDITIVES FOR LC-MS

Optima™ LC-MS grade reagents are used as ultra-pure additives in the formulation of solvent blends for the mobile phase of LC-MS applications. Fisher Chemical mobile phase additives are use-tested to ensure suitability and are also protease-free.

Key Features

- Low spectrometry background noise
- Minimal metal impurities
- Lowest impurity background using diode array detection (LC-UV)

Advantages

- Available in ampoules for small volumes and HDPE bottles for larger quantities
- Convenient, ready to use ampoules for easy dilution
- Ampoules are pre-scored for easy opening – no need to fill the ampoules

	Description	Pack size
11337540	Acetic acid	1mL ampoule
11377540	Acetic acid	10 x 1mL ampoules
10860701	Acetic acid	50mL
11317490	Ammonium acetate	50g
11377490	Ammonium formate	50mL
10780320	Formic acid	0.5mL
10473038	Formic acid	1mL
10063427	Formic acid	2mL
10797488	Formic acid	10 x 1mL ampoules
10155347	Trifluoroacetic acid	0.5mL
10266617	Trifluoroacetic acid	1mL
10378747	Trifluoroacetic acid	2mL
10125637	Trifluoroacetic acid	10mL

Solvents for routine LC-MS applications

Mobile phase solvents for routine LC-MS applications are guaranteed for low level of trace metals and non-volatile residue. Products are filtered at 0.2µm and show low level of absorbance under gradient conditions.

	Description	Pack size
10799704	Acetonitrile	1L
10616653	Acetonitrile	2.5L
10532213	Methanol †	1L
10653963	Methanol †	2.5L
10434902	Water	1L
10777404	Water	2.5L

† Restrictions may apply in certain countries

SOLVENTS FOR UHPLC-UV

The UHPLC (Ultra High Pressure Liquid Chromatography) pump has become an indispensable instrument to get shorter run times while maintaining chromatographic integrity. In addition to low filtration, these solvents display a remarkably high UV transmission rate making them the ideal for UHPLC applications using UV detection.

For those working at high pressure, where high sensitivity and a fast run rate are key to successful analysis, we have raised the bar by providing solvents that are ideally specified for this application.

Key Features

- Outstanding high UV transmission - Interference-free
- Low acidity and alkalinity level
- Filtered to 0.1µm

Advantages

- Ensure an extremely low baseline noise at 210nm and 254nm
- Improved UV resolution
- Lower particulate levels protecting columns and components from clogging

	Description	Filter size	Pack size
11317080	Acetonitrile	0.1µm	1L
11373230	Acetonitrile	0.1µm	2.5L
11357080	Methanol †	0.1µm	1L
11313240	Methanol †	0.1µm	2.5L
11307090	Water	0.1µm	1L
11357090	Water	0.1µm	2.5L

† Restrictions may apply in certain countries

SOLVENTS FOR GRADIENT HPLC

Suitable for HPLC gradient grade pumps for essential and routine analysis. For everyday use and technical applications, these solvents are the benchmark that ensure we can meet the needs of all of our end users. Several packaging innovations, such as Contain™ plastic coated bottles and 5L aluminium cans have ensured that we maintain a reputation for providing customers with enhanced safety features and flexibility.

Key Features

- High UV transmission
- Low acidity/alkalinity level
- Filtered to 0.2µm

Advantages

- Wide range of packaging styles available to suit customer requirements
- Actual Lot analysis is printed on label for ease of reference

	Description	Filter size	Pack size
10794741	Acetonitrile	0.2µm	1L
10660131	Acetonitrile	0.2µm	2.5L
10630131	Acetonitrile*	0.2µm	2.5L
10500911	Acetonitrile	0.2µm	5L
10010280	Methanol †	0.2µm	1L
10499560	Methanol †	0.2µm	2.5L
10000280	Methanol* †	0.2µm	2.5L
10487322	Methanol †	0.2µm	5L
10367171	Water	0.2µm	1L
10449380	Water	0.2µm	2.5L
10257243	Water*	0.2µm	2.5L

*2.5L coated glass bottle (safety bottle)

† Restrictions may apply in certain countries

SOLVENTS FOR ADDITIONAL HPLC APPLICATIONS

To support other HPLC chromatographic techniques and applications, Fisher Chemical also offer a diverse range of solvents, all specified and tested for HPLC:

- Advanced Gradient Grade featuring a very low baseline drift for method development
- HPLC grade for electrochemical detection
- HPLC grade for fluorescence detection
- GPC (Gel Permeation Chromatography) grade

Advantages

- Broad range of solvents, blends, buffers, additives and other reagents
- Developed and guaranteed according to specific detector requirement
- Wide range of packaging styles available to suit customer requirements
- Actual Lot analysis is printed on label for ease of reference

GHS information

Product specific information

Lot analysis

Solvents, Blends and Reagents Selection Guides

The tables below will guide you to the most suitable Fisher Chemical solvents, blends and reagents grade for your chromatography application. However, if you are unable to find the product you need or if you have any further questions regarding the Fisher Chemical range, then please contact our Product Support Advisors.

These tables feature only the most popular pack sizes. For further information on the complete ranges available visit eu.fishersci.com.

Table 8: Isocratic HPLC grade solvents

Solvent		Pack size
Acetone	10417440	1L
	10131560	2.5L
Acetonitrile	10754361	1L
	10407440	2.5L
	10010010	2.5L
	10181460	5L
1-Chlorobutane	11448113	1L
	10795321	2.5L
Chloroform, stabilised with amylene	10050090	1L
	10615492	2.5L
	10427060	2.5L
Cyclohexane	10365360	1L
	10766091	2.5L
	10030060	2.5L
1,2-Dichloroethane	10764751	1L
	10764941	2.5L
Dichloromethane, stabilised with amylene	10468210	1L
	10626642	2.5L
	10010120	2.5L
	10030120	5L
Dichloromethane, stabilised with methanol	10580442	1L
	10373082	2.5L
Dichloromethane, unstabilised	10110342	1L
	10343602	2.5L
	10601573	2.5L
1,4-Dioxane, stabilised with BHT	10540721	1L
	10111520	2.5L
Diethyl ether, stabilised with ethanol	10407830	1L
	10579950	2.5L
	10050100	2.5L
Dimethyl sulfoxide	10500151	250mL
	10122140	500mL
	10387791	2.5L
Dimethylformamide	10346180	1L
	10356180	2.5L
	10161660	2.5L
Ethanol absolute, duty free	10542382 †	1L
	10428671 †	2.5L
Ethyl acetate	10724181	1L
	10456870	2.5L
	10040140	2.5L
Ethyl acetate, dried with water content <100pm	11478273	2.5L

† Restrictions may apply in certain countries

Packaging colour codes

Glass bottle	Plastic coated glass bottle	Aluminium can	Borosilicate glass bottle

Table 8: Isocratic HPLC grade solvents continued

Solvent		Pack size
Heptane, approx. 99% n-Heptane	10664912 †	1L
	10598800 †	2.5L
	10757704 †	2.5L
Hexanes, 95% n-Hexane approx.	10499170 †	1L
	10703611 †	2.5L
	10101910 †	2.5L
	10234150 †	5L
Isohexane, contains <5% n-Hexane	10479170 †	1L
	10214150 †	2.5L
	10306380 †	5L
Iso-propanol	10284250	1L
	10674732	2.5L
	10641203	2.5L
Methanol	10365710 †	1L
	10675112 †	2.5L
	10674922 †	2.5L
	10532503 †	5L
Methyl-tert-butyl ether	10273960	2.5L
Pentane, mixed isomers	10060280 †	1L
	10346000 †	2.5L
Propan-1-ol	10449760	1L
	10111440	2.5L
Tetrahydrofuran, unstabilised	10264350	1L
	10578070	2.5L
Toluene	10152830	1L
	10040500	2.5L
2,2,4-Trimethylpentane	10589580 †	1L
	10254210 †	2.5L
	10264210 †	5L

Packaging colour codes

Glass bottle	Plastic coated glass bottle	Aluminium can	Borosilicate glass bottle

† Restrictions may apply in certain countries

For up to date GHS information on Fisher Chemical products listed please refer to the safety data sheet available from www.eu.fishersci.com

Table 9: Solvents and blends for other liquid chromatography applications

Packaging colour codes

Glass bottle	Plastic coated glass bottle	Aluminium can	Borosilicate glass bottle

Solvent	Optima™ LC-MS	LC-MS	UHPLC-UV	Advanced HPLC Gradient	Gradient HPLC	HPLC Electrochemical	HPLC Fluorescence
Acetonitrile	10055454 - 500mL 10489553 - 1L 10001334 - 2.5L	10799704 - 1L 10616653 - 2.5L	11317080 - 1L 11373230 - 2.5L	10398233 - 1L 10629112 - 2.5L	10794741 - 1L 10660131 - 2.5L 10630131 - 2.5L 10500911 - 5L	11423503 - 1L 10427630 - 2.5L	10040010 -1L 10325120 - 2.5L
Acetonitrile with 0.1 % trifluoroacetic acid (v/v)	10270455 - 500mL 10230125 - 1L 10585635 - 2.5L				12397113 - 2.5L		
Acetonitrile with 0.1% formic acid (v/v)	10468704 - 500mL 10678935 - 1L 10118464 - 2.5L 10713337 - 4L				12327123 - 2.5L		
Heptane, approx. 99% n-Heptane							10684912 - 1L † 10355750 - 2.5L †
Hexanes, 95% n-Hexane approx.							10647602 -1L † 10409370 - 2.5L †
Isohexane, contains <5% n-Hexane							10181950 - 1L † 10713801 - 2.5L †
Iso-propanol	10783447 - 500mL 10091304 - 1L 10684355 - 2.5 L 10001314 - 4L				10561802 - 2.5L	10549010 - 2.5L	
Methanol	10636545 - 500mL † 10031094 - 1L † 10767665 - 2.5L †	10532213 - 1L † 10653963 - 2.5L †	11357080 - 1L † 11313240 - 2.5L †	10144953 - 1L † 10670263 - 2.5L †	10010280 - 1L † 10499560 - 2.5L † 10000280 - 2.5L † 10487322 - 5L †	10714191 - 2.5L †	10172100 - 2.5L †
Methanol with 0.1% formic acid (v/v)					12327083 - 2.5L †		
Water	10095164 - 500mL 10728098 - 1L 10505904 - 2.5L	10434902 - 1L 10777404 - 2.5L	11307090 - 1L 11357090 - 2.5L	10327873 - 1L 10221712 - 2.5.L	10367171 - 1L 10449380 - 2.5L 10257243 - 2.5L	10637042 - 2.5L	10706501 - 2.5L
Water with 0.1% formic acid (v/v)	10429474 - 500mL 10229884 - 1L 10188164 - 2.5L				12317123 - 2.5L		
Water with 0.1% trifluoroacetic acid (v/v)	10362055 - 500mL 10311725 - 1L 10516625 - 2.5L				12387113 - 2.5L		
Solvents starter kit	11988379 - 1 SET		11332693 - 1SET				

† Restrictions may apply in certain countries

Table 10: Reagents selection guide

Packaging colour codes

Glass bottle	Plastic coated glass bottle	Aluminium can	Borosilicate glass bottle	Amber borosilicate ampoule	Plastic jar	HDPE plastic bottle

Reagent	Isocratic HPLC	Optima™ LC-MS	HPLC for ECD
Acetic acid	10365020 - 500mL	11377540 - 10 x 1mL ampoules	10233800 - 500mL
	10060000 - 1L	11337540 - 1mL ampoule	
		10860701 - 50mL	
Ammonia solution, 35%	10508610 - 100mL		
Ammonia solution 0.25M	10144483 - 500mL		
Ammonium acetate	10598410 - 250g	11317490 - 50g	10395210 - 250g
Ammonium acetate solution 0.25M	10649633 - 500mL		
Ammonium carbonate	10785511 - 250g		
1-Butane sulfonic acid sodium salt	10191510 - 25g		
Di-n-butylamine	10418790 - 250mL		
Di-n-butylamine phosphate solution 1.0 M	10283180 - 100mL		
Citric acid monohydrate			10375360 - 500g
Ethylenediaminetetraacetic acid, disodium salt			10131430 - 2.5L
Formic acid		10780320 - 0.5mL ampoule	
		10797488 - 10 x 1mL ampoules	
		10473038 - 1mL ampoule	
		10063427 - 2mL ampoule	
		10596814 - 50mL	
Formic acid solution 0.25M	10000112 - 500mL		
Orthophosphoric acid, 85%			10644732 - 500mL
Orthophosphoric acid solution 1M	10072583 - 500mL		
Perchloric acid 60%	10254490 - 100mL		
Potassium dihydrogen orthophosphate	10429570 - 250g		10598250 - 250g
	10588250 - 1kg		
Sodium acetate trihydrate	10122400 - 250g		10539390 - 250g
	10733704 - 1kg		
Sodium chloride	10274392 - 500g †		
tri-Sodium citrate dihydrate			10030520 - 500g
Sodium dihydrogen orthophosphate dihydrate			10010340 - 500g
Sodium dihydrogen orthophosphate 0.25M solution	10082583 - 500mL		
Sodium formate	10102690 - 250g		
di-Sodium hydrogen orthophosphate dihydrate	10776491- 500g		
di-Sodium hydrogen orthophosphate, 0.25M solution	10503484 - 500mL		
Sodium hydrogen carbonate	10588820 - 250g		
Sodium hydroxide, 46-48% solution			10050470 - 2.5L
Sodium perchlorate	10336150 - 250g		
Tetrabutyl ammonium bromide	10214500 - 25g		
Tetra-n-butyl ammonium hydroxide solution 0.5M	10366150 - 250mL		
Tetra-n-butyl ammonium hydroxide, 0.1M solution phosphate buffered	10264590 - 250mL		
Tetradecyltrimethylammonium bromide	10743811 - 25g		
Tetraethylammonium bromide	10744001 - 25g		
Tetramethylammonium chloride	10447270 - 25g		
Tetramethyl ammonium hydrogen sulfate	10090410 - 5g		
Triethylamine	10625892 - 250mL		
Trifluoroacetic acid	10112740 - 25mL	10155347 - 0.5mL ampoule	
	10294110 - 100mL	10266617 - 1mL ampoule	
		10378747 - 2mL ampoule	
		10125637 - 10mL ampoule	
		10723857 - 50mL	
Trifluoroacetic acid 1% solution	10104953 - 500mL		
Tri-n-hexylamine	10656272 - 100mL		

† Restrictions may apply in certain countries

SOLVENTS FOR GC HEADSPACE

High purity solvents for accurate and reliable analysis of organic volatile impurities (OVIs) by gas chromatography headspace (GC-HS)

Fisher Chemical's GC Headspace solvents are performance tested to ensure absence of trace level ICH residual solvents.
Key Features

- Processed to high purity for accurate and repeatable determination of trace levels of Class 1, Class 2, and Class 3 residual solvents in pharmaceuticals
- Tested by UV absorbance to ensure low organic contamination
- Processed for low water content to facilitate the extraction of organic volatile impurities
- Packaged in an inert atmosphere to maximise shelf life in unopened containers

Solvent	Description	Pack qty
15552233	Water	1L
15572393	DMSO, Dimethyl Sulfoxyde	1L
15562393	DMF, Dimethylformamide	1L
15582393	DMAC, Dimethylacetamide	1L
15552413	NMP, N-Methylpyrrolidone	1L

Technical Resources

Here to give you a helping hand!

Fisher Scientific's Product Support Team is your dedicated information resource. Our Product Support Advisors are all highly qualified professionals who are here to support and guide you to the fastest, most effective and efficient answer to your enquiry.

Areas of technical expertise include:

- Bioreagents and Life Science
- Chemicals and Chromatography
- Consumables
- Equipment
- Safety

This section features FAQ's and useful compatibility charts. If, however, this information does not resolve the issue, or if you have any questions not covered below then please contact our Product Support Advisors.

Check out our Frequently Asked Questions

Contact our Product Support Advisors

Tel: +44 (0)1509 555888
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FAQ's - Chromatography vials and closures

Q. What type of glass are your chromatography vials made from?

A. Almost all Fisherbrand vials are made out of 1st hydrolytic class glass. 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.

Q. How clean are your vials and closures?

A. All Fisherbrand vials that carry a CleanPack label on the front side of the polypropylene box have been packed in a certified cleanroom after having passed the annealing oven at approx. 600°C. The CleanPack label on the box is a guarantee of clean, uncontaminated vials for a correct analysis. Additionally, tamper-proof evidence is given by the shrink-wrapping of the bottom part of the polypropylene box, plus its cover enables recloseability at any time during consumption in order to avoid any later contamination of the vials during usage.

Q. Why are glass vials available silanised?

A. Silanised 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 – 1st hydrolytic class glass is used. Through the silanisation process the glass surface is deactivated and so possible reactions between the polar compounds and the glass are eliminated.

Q. Which septa should I choose for my temperature range?

A. 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. To help you identify the most appropriate septa for your temperature range and application, please refer to the guide on page 13 of this brochure.

Q. Which septa are chemically compatible with my sample or solvents?

A. Please refer to table 4: Chemical compatibility of vial and closure materials on page 16 to 17 of this brochure. This table is for reference purposes only. Many factors affect the chemical resistance of vials and closures and we would kindly remind you that it is your responsibility to do a test under your own conditions to ensure that the product you are using is fully compatible.

Q. Why is seal hardness important?

A. The hardness testing of plastics is most commonly measured by the Shore (Durometer) test. This method measures the resistance of plastics toward indentation and provides an empirical hardness value. Shore hardness is measured using either the Shore 'A' or 'D' scales. It is the preferred method for rubbers/elastomers and is also commonly used for 'softer' plastics such as polyolefins, fluoropolymers and vinyl. The Shore A scale is used for 'softer' rubbers while the 'D' scale is used for 'harder' ones. Most septa hardness values are covered by Shore A, although exceptions are some PTFE and PE hardnesses measured using Shore D. The results obtained from this test are a useful measure of relative resistance to piercing of various grades of polymers. This gives guidance on the type of needle that will penetrate the seal and whether thinner gauge needles may be used.

Q. What are the different certifications available? Are these really beneficial?

A. Certifications become more and more important in order to make processes more reproducible and avoid possible sources of errors right from the beginning. Highest quality, consistency and quality control have always been very important and are highlighted in three certifications, 'Specification Certified', 'HPLC and GC Certified Kits' and 'LC/MS and GC/MS Certified Kits'. For further information please refer to page 15 of this brochure.

Q. What is the difference between the types of closures? Is there an impact on evaporation rate?

A. At the moment the market offers, in general, three different closures systems for sealing an autosampler vial:

- Crimp cap in 8, 11, 13, 20mm diameter
- Screw cap; 8-425, 9mm short screw, 10-425, 13-425, 15-425, 18mm, 24-400, 24-414
- Snap cap: 8mm, 11mm, 13mm

From the evaporation rate point of view, a crimp cap provides the tightest seal, followed by the screw cap and then the snap caps. However, from the handling point of view, screw and snap caps are more convenient, as no crimper and de-crimper has to be used.

If convenience of handling is desired, together with high sample integrity and reproducibility of a crimped vial, then the screw thread vial with a stop ring is the best alternative. This screw thread vial not only offers the lowest evaporation rate, it also removes cap tilt and guarantees less autosampler interruptions due to mishandled vials.

Magnetic vial transport systems of state of the art autosampler require magnetisable closures. This type is available for crimp and screw thread closures.

Q. Is there a specific risk in reusing or using re-washed vials and closures?

A. Re-use or washing of vials is definitely a risk for your sample integrity, as the surface of the vial changes during the cleaning process (grade of adsorption of critical compounds increases) and the complete removal of the former analytes cannot be guaranteed 100%, so cross-contamination and/or ghost peaks can be the consequence. Chromatographers requiring uncompromising sample integrity would be best advised to always use new vials and septa for each analysis.

FAQ's - Chromatography solvents and reagents

Q. Why do I need to run my LC-MS analysis with Optima™ LC-MS grade?

A. Optima™ LC-MS products (solvents, blends, additives and reagents) have been specifically developed to allow the most sensitive of instruments to operate to the peak of their performance. Smooth baselines and background are assured through an LC gradient test with PDA detector. Testing also ensures neither positive nor negative ion impurities are present. As presence of metal anions and analytes complicate the spectra, our manufacturing process has been developed to ensure that impurities are minimal. For more routine analytical applications a 'standard' LC-MS grade product is offered.

Q. From amongst the many different grades that are available from Fisher Chemical, how can I choose the most suitable grade for my own chromatography application?

A. Diverse chromatographer requirements have led us to look for ways to improve our purification processes and to develop a series of solvents and buffers that meet the needs of specific instrumentation. Fisher Chemical solvent grades are developed and tested to optimize chromatography performance through choice of grade to suit both instrument and detector type.

Chromatography Application	Instrument and Detector Type	Fisher Chemical Solvent Grade
High HPLC-MS	LC and UHPLC coupled with mass detector	Optima™ LC/MS
HPLC-MS	LC coupled with mass detector	LC/MS grade
UHPLC	UHPLC coupled with UV detector	UHPLC gradient grade
High HPLC gradient	LC gradient coupled with UV detector	HPLC advanced grade
HPLC gradient	LC gradient coupled with UV detector	HPLC gradient grade
HPLC	LC coupled with UV detector	HPLC grade

Additionally, to support other specialty chromatography techniques, we also offer a range of specialty solvents, all specified and tested as appropriate: all specified and tested for HPLC:

- Advanced Gradient Grade featuring a very low baseline drift for method development
- HPLC grade for electrochemical detection
- HPLC grade for fluorescence detection
- GPC (Gel Permeation Chromatography) grade

Q. Why is Optima LC-MS grade formic acid packed in HDPE bottles?

A. Fisher Scientific Cat. No. 10596814 is packed in HDPE bottles for purposes of safety. Use of an HDPE bottle avoids the dangers of pressure build-up from carbon monoxide which is a natural decomposition product of formic acid. Customers should not be concerned about possible contamination by plasticisers because a proprietary surface treatment is applied to the HDPE bottle to create a barrier between the bottle surfaces and formic acid thus preventing contamination. It is good laboratory practice to store this product at 4°C to slow down this natural decomposition process.

Optima™ LC-MS grade formic acid is also available packaged in 0.5mL, 1mL and 2mL glass (borosilicate) ampoules, Fisher Scientific Cat. Nos. 10780320, 10473038 and 10063427 respectively. Note – the ampoules are pre-scored for easy opening.

Q. I notice the label on my formic acid and TFA bottles says store at 4°C. Will leaving the product out on the lab bench for a few days cause a problem?

A. No, temporary storage under ambient conditions will not impact the reagent. However, for long term storage, we again recommend that the product is held in cool conditions at 4°C in order to maintain product integrity longer.