



**PAL** SYSTEM  
Consumables

# Trusted solutions

## uncompromised analysis

Our portfolio includes 150 Thermo Scientific™ Chromacol™ vials and closure products designed for CTC PAL Autosamplers and suitable for any application. Our pages have been arranged by product line and vial size, allowing you to quickly find the most appropriate products for your lab.

**Thermo**  
SCIENTIFIC

# Thermo Scientific Chromacol Vials and Closures

- Innovative products in micro- and precision sampling
- High quality, stringent manufacturing tolerances, extensive testing for comprehensive autosampler compatibility
- Products developed in close technical cooperation with CTC Analytics
- Detailed information regarding material specifications and compatibility
- Custom manufactured capabilities
- Competent and experienced worldwide distributor network

## Featured Products

### Electronic Crimpers and De-Cappers

- One hand secure, reproducible crimps of 8, 11, 13 and 20mm vials with the push of a button
- Reduces hand strain compared to manual crimper operation
- Quick and easy removal of aluminum seals with the push of a button



### Ultra High Recovery & Fixed Insert Microsampling Vials

- Residual sample volumes as low as 1µL
- Working volumes up to 1.2mL
- Stable base profiles prevent tipping
- Variety of closure options available



### Magnetic Closure Headspace Vials

- Superior quality (Type 1, Class A) glass
- Headspace vials are available with a round base
- Aluminum seals are available in standard center hole
- Pre-assembled caps and septa are convenient and minimize contamination from handling



### Snap Caps

- Inexpensive single use closure for snap cap vials
- New double snap feature provides improved resistance to sample evaporation and a positive indication of proper cap fit
- Secondary sealing bead under the cap rim improves cap roundness for improved pickup by robotic autosamplers

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## Your guide to consumables

This brochure is designed to help you find the correct consumables for use with your CTC PAL Autosampler.

Consumables listed in the individual chapters have been approved by CTC Analytics to be suitable for usage on the indicated type of the PAL autosampler.

Cost-free samples can be requested any time for testing.

All products of this brochure are standard products and thus normally deliverable ex stock. Upon request we can provide you with addresses of dealers that distribute our products.

The brochure includes only the most common products for PAL autosampler. You will find further seals and vials in our general catalogue, which you can request by visiting our website at [www.thermoscientific.com/vials](http://www.thermoscientific.com/vials).

	PAL SYSTEM		
	COMBI PAL GC PAL	HTS PAL HTC PAL	LC PAL
OEM	Combi PAL/GC PAL	HTS/HTC PAL	LC PAL/IFC PAL
AB Sciex / Eksigent	–	expert™ microLC200 Tempo ht LC System ExpressLC HTC/HTS PAL	–
Agilent Technologies / Varian	CombiPAL / GC PAL PAL Auto Sampler Systems	HTC PAL / HTS PAL 1290 Infinity LC Injector HTC/HTS	–
AlphaMOS	PROMETHEUS FOX KRONOS GEMINI HERACLES	–	–
Antek / PAC	–	–	Autosampler 748
ATAS GL Sciences	FOCUS	–	–
Bruker / Michrom	GC / COMBI PAL	HTC / HTS PAL	–
Formulation	PAL FActF	–	APS
Gerstel	MPS2 / MPS2L / MPS2 XL	MPS3 / MPS3C / MPS 3XL	–
Perkin Elmer	GC / COMBI PAL	–	–
Shimadzu	AOC-5000 / AOC-5000Plus	SIL-5000	–
Thermo Scientific	TriPlus RSH TriPlus HS	UltiMate 3000 XRS Autosampler Thermo Scientific TLX-1, TLX-2, TLX-4 Accela Open Autosampler Cohesive Technologies Aria	APS
Waters	–	2777/2777C	–

## Chromacol 8mm Crimp Top Vials

- The SCI-VI system gives the chromatography user the ability to inject reproducibly from glass vials with residual volumes as low as 1µL to 5µL in a full range of autosampler instruments.
- Precision-machined sleeves that allow the vials to be used in the vast majority of commercial autosamplers.
- Sleeves are re-usable and support the crimped, sealed vials in the correct position within both the autosampler carousel or racks
- Allow movement of the vials as a unit to injection positions in both GC and HPLC autosamplers.
- GOLD glass quality, a low expansion high purity glass with an extremely low concentration of active sites.
- Available in both clear and amber glass these vials can be used with crimp and snap caps



PAL Tray 1mL



### Approximate Chemical Composition for Borosilicate Glass

Description	SiO <sub>2</sub>	B <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	BaO
33 expansion Glass	80%	13%	3%	0.1%	–	4%	0.1%	<0.1%
N-51A Glass	72%	12%	7%	1%	–	6%	2%	<0.1%
Neutral Borosilicate-GOLD Grade	80.6%	13%	2.3%	–	–	4%	–	–



### Chromacol 8mm Crimp Top Vials

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume (µL)	Usable Volume (µL)	Residual (µL)	Cat. No.	Pack of
0.3mL Sci-Vi Crimp Top Vial - GOLD Grade Glass	Clear	No	6x32	Round Bottom	325	250	<5	<b>03-CVVG</b>	500
0.2mL Sci-Vi Crimp Top Vial - GOLD Grade Glass	Clear	No	6x32	Conical	250	200	<5	<b>02-CTVG</b>	500
0.2mL Sci-Vi Crimp Top Vial	Amber	No	6x32	Conical	250	200	<5	<b>02-CTV(A)</b>	500
0.1mL Sci-Vi Crimp Top Vial - GOLD Grade Glass	Clear	No	6x32	Round Bottom	125	80	<1	<b>01-CVVG</b>	500
0.8mL Crimp Top Vial	Clear	No	7x40	Flat Bottom	775	650	<70	<b>08-CPV</b>	500
0.7mL Crimp Top Tapered Vial	Clear	No	7x40	Conical	575	450	<5	<b>07-CPV</b>	500
	Amber	No	7x40	Conical	575	450	<5	<b>07-CPV(A)</b>	500
PTFE Vial Support Sleeve for 6x32mm vials, fits most autosamplers	PTFE	No	12x31	Flat Bottom	–	–	–	<b>SV-S1</b>	50
PTFE Vial Support Sleeve for 6x32mm vials, fits robotic autosamplers	PTFE	No	12x32	Flat Bottom	–	–	–	<b>SV-S11A</b>	25
Glass Vial Support Sleeve for 6x32mm vials, fits robotic autosamplers	Clear	Yes	12x32	Flat Bottom	–	–	–	<b>SV-S11G</b>	25

Sleeves adapt 6x32mm vials for use in autosamplers designed for 12x32mm vials. Use sleeve SV-S1 for autosamplers that do not lift the vial from the tray. Use SV-S11A or SV-S11G for autosamplers that move the vial during sampling.

## Chromacol 8mm Closures

- Aluminum crimp seals with prefitted septa
- Provide a secure leak-resistant seal
- Pre-assembled caps and septa are convenient and minimize contamination from handling

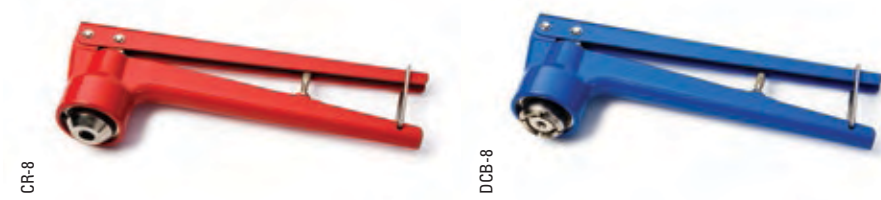


### Chromacol 8mm Crimp Top Closures

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
8mm Crimp Cap, 4mm hole, Type 6 Rubber/PTFE Liner	Silver	Aluminum	Red Natural Rubber/Clear PTFE	38	1.0	<b>8-AC6</b>	1000
	Blue	Aluminum	Red Natural Rubber/Clear PTFE	38	1.0	<b>8-AC6(B)</b>	1000
	Red	Aluminum	Red Natural Rubber/Clear PTFE	38	1.0	<b>8-AC6(R)</b>	1000
8mm Crimp Cap, 4mm hole, Type 7 Rubber/PTFE Liner	Silver	Aluminum	Red Natural Rubber/Clear PTFE	60	1.0	<b>8-AC7</b>	1000
8mm Crimp Cap, 4mm hole	Silver	Aluminum	Gray Chlorobutyl Rubber/Clear PTFE	52	1.0	<b>8-AC-CBT1</b>	500
	Blue	Aluminum	Blue Silicone/Red PTFE	20	1.4	<b>8-AC(B)-ST144</b>	500
	Silver	Aluminum	White Silicone/Red PTFE	50	1.3	<b>8-AC-ST15</b>	500
	Silver	Aluminum	Blue Silicone/PTFE	30	1.0	<b>8-AC-ST101</b>	500
	Silver	Aluminum	Blue Silicone/PTFE, Pre-slit	30	1.0	<b>8-AC-ST101X</b>	500
	Silver	Aluminum	Red PTFE/White Silicone/Red PTFE	57	1.0	<b>8-AC-TST1</b>	500

## Chromacol Crimping and Decrimping Tools

- Crimping tools provide a reproducible, secure closure
- High quality construction for durability and long life
- Painted, plated and coated for maximum corrosion resistance



Items not shown to scale

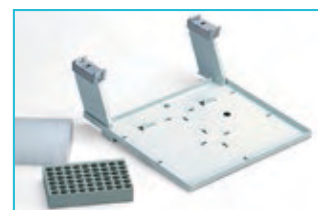
### Chromacol Crimping and Decrimping Tools

Description	Use	Cat. No.	Pack of
Manual Crimper	Attaches 8mm aluminum crimp seals	<b>CR-8</b>	1
Manual Decrimper/De-capper	Removes 8mm aluminum crimp seals without vial damage	<b>DCB-8</b>	1

For electronic crimpers and decappers look on page 21

## Chromacol 2mL, 8-425 Standard Opening Screw Thread Vials and Inserts

- Manufactured from clear, Type 1 Class A or amber, Type 1 Class B borosilicate glass
- GOLD grade glass quality is a low expansion high purity glass with an extremely low concentration of active sites.
- Available with a graduated, write-on patch for convenient sample identification
- Small opening requires Micro-Inserts with a diameter of 5mm
- While maintaining the standard outer dimensions the internal volumes of these vials range from below 300µL to 2mL
- Where levels of inorganic ions have to be kept to an absolute minimum the use of plastics may be preferred to the more conventional glass vials



PAL Tray 2mL



### Chromacol 2mL, 12x32 Standard Opening Screw Thread Vials and Inserts

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume (µL)	Usable Volume (µL)	Residual (µL)	Cat. No.	Pack of
8-425 Screw Thread Vial	Clear	Yes	12x32	Flat Bottom	2.0	1.5	<170	<b>2-SV</b>	500
	Amber	Yes	12x32	Flat Bottom	2.0	1.5	<170	<b>2-SV(A)</b>	500
8-425 Screw Thread Vial - GOLD Grade Glass	Clear	No	12x32	Flat Bottom	2.0	1.5	<170	<b>2-SVG</b>	500
8-425 Screw Thread 1.1mL Vial - GOLD Grade Glass	Clear	No	12x32	Conical	1.2	1.1	<5	<b>1.1-STVG</b>	500
8-425 Screw Thread 0.6mL Vial, White	HDPE	No	12x32	Insert Vial	0.6	0.4	<3	<b>06-PESV</b>	500
200µL Insert	Clear Glass	No	5x31	Flat Bottom	250µL	200µL	<12	<b>02-NV</b>	1000
	Clear Glass	No	5x30	Conical	200µL	160µL	<4	<b>02-MTV</b>	1000
Self-centering support device for tapered glass inserts	Polyethylene	-	-	-	-	-	-	<b>MTS-1</b>	500
Support Sleeve for 1.1-STVG	PTFE	-	-	-	-	-	-	<b>TTS-312</b>	50

Support sleeve allows conical tip vial to be used in standard 12x32mm autosampler trays

## Chromacol Screw Thread Caps and Septa

- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 8-425 Screw Thread Caps and Septa

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
8mm Open Top Screw Cap, 8-425 thread, 5mm hole, Type 8 Rubber/PTFE Liner	Black	Polypropylene	Red Natural Rubber/Clear PTFE	50	1.3	<b>8-SC-8RT1</b>	500
8mm Open Top Screw Cap, 8-425 thread, 5mm hole	Black	Polypropylene	White Silicone/Red PTFE	57	1.3	<b>8-SC-ST15</b>	500

## Chromacol Standard Opening Screw Thread Vial Convenience Kits

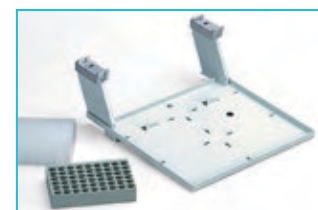
- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Caps feature pre-inserted septa for added convenience during sample preparation

### Chromacol Standard Opening Screw Thread Vial Convenience Kits

Kit Type	Glass	Patched	Cap Color	Septum	Vial Cat. No.	Cap/Septum Cat.No.	Cat. No.	Pack of
Convenience Kit, Standard Opening Screw Vial	Clear	Yes	White, flanged	Blue Silicone/PTFE	2-SV	8-SCJ(W) + 8-ST101	<b>2-SVJ(W)101-CP</b>	100

## Chromacol 2mL, Wide Opening Screw Thread Vials and Inserts

- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Manufactured from clear, Type 1 Class A or amber, Type 1 Class B borosilicate glass
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts



PAL Tray 2mL



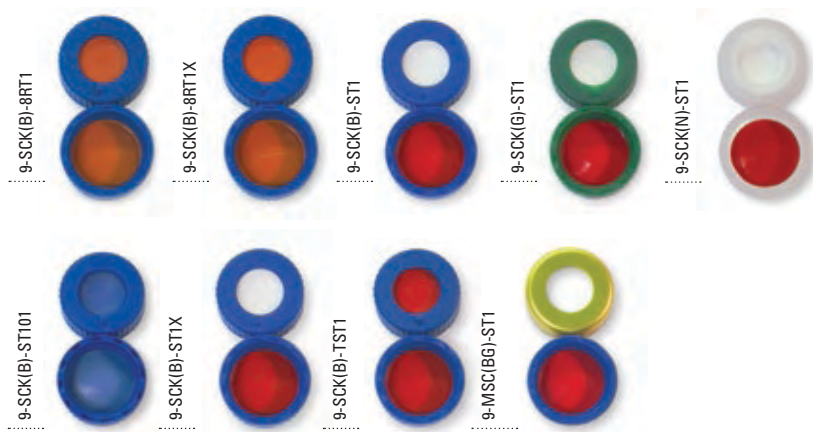
### Chromacol 9mm Wide Opening Screw Thread Vials and Inserts

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume	Usable Volume	Residual (µL)	Cat. No.	Pack of
9mm Screw Thread Vial	Clear	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-SVW</b>	500
	Amber	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-SVW(A)</b>	500
9mm Screw Thread Vial, High Recovery with 30µL Reservoir	Clear	No	12x32	Tapered Base	1.5mL	1.3mL	<4	<b>1.5-HRSV</b>	100
9mm Screw Thread Vial, Ultra High Recovery with 10µL Reservoir	Clear	No	12x32	Mandrel Base	1.2mL	1.0mL	<2	<b>1.2-UHRSV</b>	100
9mm Screw Thread Vial 300µL, Fused Insert	Clear	Yes	12x32	Insert Vial	0.3mL	250µL	<3	<b>03-FISV</b>	500
	Amber	Yes	12x32	Insert Vial	0.3mL	250µL	<3	<b>03-FISV(A)</b>	500
9mm Screw Thread Vial 200µL, Fused Insert-GOLD grade glass	Clear	Yes	12x32	Insert Vial	0.2mL	180µL	<2	<b>02-FISVG</b>	500
300µL Insert	Clear	–	6x31	Flat Bottom	300µL	200µL	<12	<b>03-NV</b>	1000
200µL Insert - GOLD Grade Glass	Clear	–	6x30	Pulled Point	200µL	160µL	<4	<b>02-MTVWG</b>	1000
Self-centering support device for tapered glass inserts	Polyethylene	–	–	–	–	–	–	<b>MTS-1</b>	500
9mm Screw Thread Vial	Polypropylene	No	12x32	Insert Vial, Mandrel	300µL	200µL	<4	<b>03-PPSVW</b>	500



## Chromacol 9mm Screw Thread Closures

- Easy-on, easy-off convenience with just one turn
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Polypropylene caps are chemically inert and suitable for most chromatography applications
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 9mm Screw Thread Closures

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
9mm Open Top Short Screw Cap, 6mm hole	Blue	Polypropylene	Red Natural Rubber/Clear PTFE	58	1.0	<b>9-SCK(B)-8RT1</b>	500
	Blue	Polypropylene	Red Natural Rubber/Clear PTFE, Pre-slit	58	1.0	<b>9-SCK(B)-8RT1X</b>	500
	Blue	Polypropylene	White Silicone/Red PTFE	57	1.0	<b>9-SCK(B)-ST1</b>	500
	Green	Polypropylene	White Silicone/Red PTFE	57	1.0	<b>9-SCK(G)-ST1</b>	500
	Clear	Polypropylene	White Silicone/Red PTFE	57	1.0	<b>9-SCK(N)-ST1</b>	500
	Blue	Polypropylene	Blue Silicone/PTFE	30	1.0	<b>9-SCK(B)-ST101</b>	500
	Blue	Polypropylene	White Silicone/Red PTFE, Y-Pre-slit	57	1.0	<b>9-SCK(B)-ST1X</b>	500
	Blue	Polypropylene	Red PTFE/White Silicone/Red PTFE	57	1.0	<b>9-SCK(B)-TST1</b>	500
9mm Open Top Short Screw Cap, 6mm hole, magnetic*	Blue/Gold	PP/Steel	White Silicone/Red PTFE	57	1.0	<b>9-MSCK(BG)-ST1</b>	500

\*for GC and Combi PAL

## Chromacol 9mm Wide Opening Convenience Kits

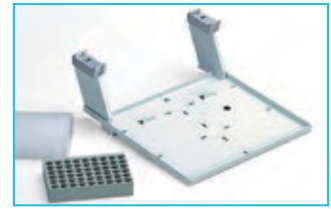
- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Caps feature pre-inserted septa for added convenience during sample preparation

### Chromacol 9mm Wide Opening Screw Thread Vial Convenience Kits

Kit Type	Glass	Patched	Cap Color	Septum	Vial Cat.No.	Cap Cat.No.	Cat. No.	Pack of
Convenience Kit, Wide Open Short Screw Vial	Clear	Yes	Blue	Red Natural Rubber/Clear PTFE	2-SVW	9-SCK(B)-8RT1	<b>2-SVW8-CPK</b>	100
	Clear	Yes	Blue	White Silicone/Red PTFE	2-SVW	9-SCK(B)-ST1	<b>2-SVWST-CPK</b>	100
	Amber	Yes	Blue	Red Natural Rubber/Clear PTFE	2-SVW(A)	9-SCK(B)-8RT1	<b>2-SVW(A)8-CPK</b>	100
	Amber	Yes	Blue	White Silicone/Red PTFE	2-SVW(A)	9-SCK(B)-ST1	<b>2-SVW(A)ST-CPK</b>	100

## Chromacol 2mL, 12x32mm, 11mm Crimp Top Vials and Closures

- Chromacol GOLD™ glass quality, a low expansion high purity glass with an extremely low concentration of active sites.
- Manufactured from clear, Type 1 Class A or amber, Type 1 Class B borosilicate glass
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Where levels of inorganic ions have to be kept to an absolute minimum the use of plastics may be preferred to the more conventional glass vials



PAL Tray 2mL



### Chromacol 2mL 12x32mm Wide Opening Crimp Top Vials and Inserts

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume	Usable Volume	Residual (µL)	Cat. No.	Pack of
11mm Crimp Top Vial, Wide Opening	Clear	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-CV</b>	500
	Amber	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-CV(A)</b>	500
11mm Crimp Top Vial, Wide Opening - GOLD Grade Glass	Clear	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-CVG</b>	500
11mm Crimp Top Vial, Wide Opening	Clear	Yes	12x32	Round Bottom	2.0mL	1.5mL	<170	<b>2-CRV</b>	500
11mm Crimp Top 1.5mL High Recovery Vial	Clear	No	12x32	High Recovery	1.5mL	1.3mL	<4µL	<b>1.5-HRCV</b>	100



**Chromacol 2mL 12x32mm Wide Opening Crimp Top Vials and Inserts (Continued)**

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume	Usable Volume	Residual (µL)	Cat. No.	Pack of
11mm Crimp Top 1.1mL Vial, Wide Opening - GOLD Grade Glass	Clear	No	12x32	Conical	1.4mL	1.1mL	<5	<b>1.1-CTVG</b>	500
11mm Crimp Top 1.1mL Vial, Wide Opening	Amber	No	12x32	Conical	1.4mL	1.1mL	<5	<b>1.1-CTV(A)</b>	500
11mm Crimp Top 0.9mL Vial, Wide Opening	Clear	No	12x32	Insert Vial	0.9mL	830µL	<3	<b>09-FIV</b>	500
11mm Crimp Top 0.6mL Vial	HDPE	No	12x32	Internal Taper	0.6mL	0.5mL	<25	<b>06-PECV</b>	500
	Polypropylene	No	12x32	Internal Taper	0.6mL	0.5mL	<25	<b>06-PPCV</b>	500
11mm Crimp Top 0.3mL Vial, Fused Insert	Clear	Yes	12x32	Insert Vial	0.3mL	250µL	<3	<b>03-FIV</b>	500
	Amber	Yes	12x32	Insert Vial	0.3mL	250µL	<3	<b>03-FIV(A)</b>	500
11mm Crimp Top 0.2mL Vial, Fused Insert - GOLD Grade Glass	Clear	Yes	12x32	Insert Vial	0.2mL	180µL	<2	<b>02-FIVG</b>	500



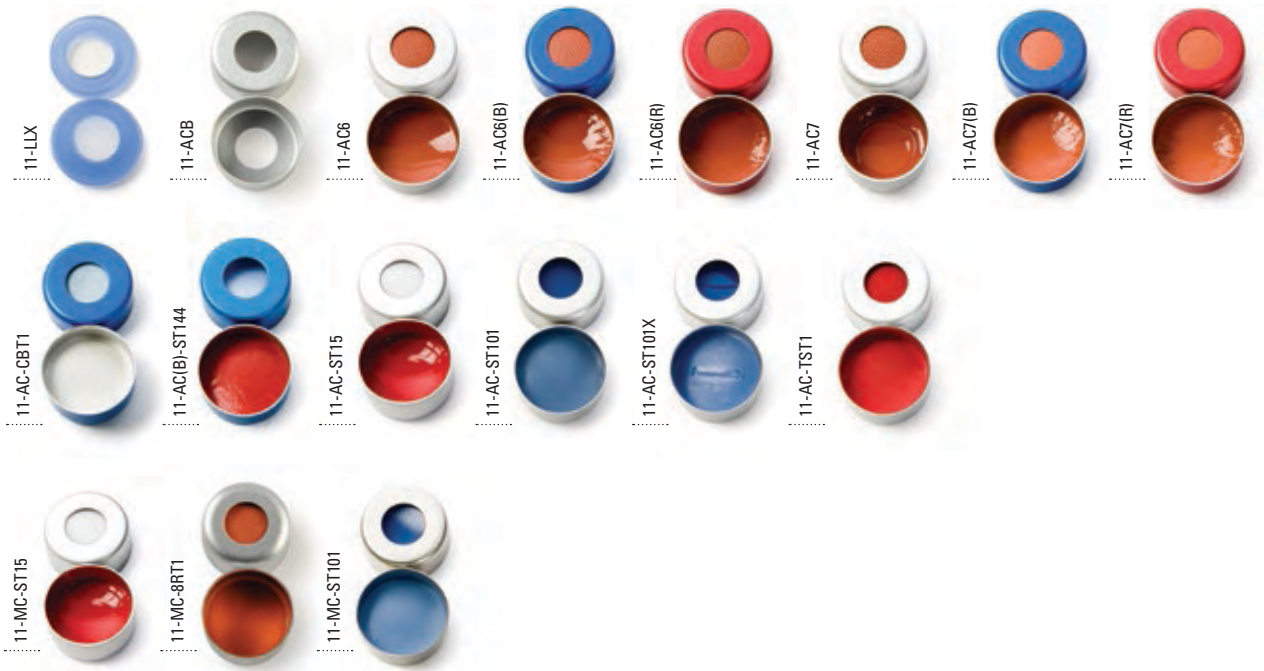
**Chromacol 2mL 12x32mm Wide Opening Crimp top Vials and Inserts (Continued)**

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume	Usable Volume	Residual (µL)	Cat. No.	Pack of
300µL Insert	Clear	-	6x31	Flat Bottom	300µL	200µL	<12	<b>03-NV</b>	1000
200µL Insert - GOLD Grade Glass	Clear	-	6x30	Pulled Point	200µL	160µL	<4	<b>02-MTVWG</b>	1000
Self-centering vial support device for tapered glass inserts	Polyethylene	-	-	-	-	-	-	<b>MTS-1</b>	500
PTFE Vial Support 1.1-CTVG	PTFE	-	-	-	-	-	-	<b>TTS-312</b>	50

Support sleeves allow conical tip vials to be used in standard 12x32mm autosampler trays

## Chromacol 11mm Crimp Top Closures

- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Crimp closures provide a secure leak-resistant seal
- Seals must be applied with a crimping tool
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 11mm Crimp Top Closures

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
Septum for 11mm Crimp Caps	–	–	Silicone/PTFE for liquid - liquid extraction	–	0.2	<b>11-LLX</b>	100
11mm Crimp Cap, 6mm centre hole	Silver	Aluminum	–	–	–	<b>11-ACB</b>	500
11mm Crimp Cap, 6mm centre hole, Type 6 Rubber/PTFE	Silver	Aluminum	Red Chloro Butyl Rubber/Clear PTFE, Sulphur free	38	1.0	<b>11-AC6</b>	500
	Blue	Aluminum		38	1.0	<b>11-AC6(B)</b>	500
	Red	Aluminum		38	1.0	<b>11-AC6(R)</b>	500
11mm Crimp Cap, 6mm centre hole, Type 7 Rubber/PTFE	Silver	Aluminum	Red Natural Rubber/Clear PTFE	60	1.0	<b>11-AC7</b>	500
	Blue	Aluminum		60	1.0	<b>11-AC7(B)</b>	500
	Red	Aluminum		60	1.0	<b>11-AC7(R)</b>	500
	Green	Aluminum		60	1.0	<b>11-AC7(G)</b>	500
	Gold	Aluminum		60	1.0	<b>11-AC7(GO)</b>	500
11mm Crimp Cap, 6mm centre hole	Blue	Aluminum	Gray Chlorobutyl/PTFE	52	1.0	<b>11-AC-CBT1</b>	500
	Blue	Aluminum	Blue Silicone/Red PTFE	20	1.4	<b>11-AC(B)-ST144</b>	500
	Silver	Aluminum	White Silicone/Red PTFE	50	1.3	<b>11-AC-ST15</b>	500
	Silver	Aluminum	Blue Silicone/PTFE	30	1.0	<b>11-AC-ST101</b>	500
	Silver	Aluminum	Blue Silicone/PTFE, Pre-slit	30	1.0	<b>11-AC-ST101X</b>	500
	Silver	Aluminum	Red PTFE/White Silicone/Red PTFE	57	1.0	<b>11-AC-TST1</b>	500
11mm Crimp Cap, magnetic*	Silver	Steel Alloy	White Silicone/Red PTFE	57	1.3	<b>11-MC-ST15</b>	500
11mm Crimp Cap, magnetic, Type 8 Rubber/PTFE*	Silver	Steel Alloy	Red Natural Rubber/Clear PTFE	38	1.0	<b>11-MC-8RT1</b>	500
11mm Crimp Cap, magnetic*	Silver	Steel Alloy	Blue Silicone/PTFE	30	1.0	<b>11-MC-ST101</b>	500

\*for GC and Combi PAL

## Chromacol 11mm Crimp Top Convenience Kits

- Convenience kits save time during sample preparation
- Include matched quantities of vials and aluminum seals with prefitted septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Caps feature pre-inserted septa for added convenience during sample preparation

### Chromacol 11mm Crimp Top Convenience Kits

Kit Type	Glass	Patched	Cap Color	Septum	Vial Cat.No.	Cap Cat.No.	Cat. No.	Pack of
Convenience Kit, Wide Opening Crimp Top Vial	Clear	Yes	Silver	Red Natural Rubber/Clear PTFE, Type 7	2-CV	11-AC7	<b>2-CV7-CP</b>	100
	Clear	Yes	Silver	White Silicone/Red PTFE	2-CV	11-AC-ST15	<b>2-CVST-CP</b>	100
	Amber	Yes	Silver	Red Natural Rubber/Clear PTFE, Type 7	2-CV(A)	11-AC7	<b>2-CV(A)7-CP</b>	100
	Amber	Yes	Silver	White Silicone/Red PTFE	2-CV(A)	11-AC-ST15	<b>2-CV(A)ST-CP</b>	100

## Chromacol Crimpers and Decappers

- Crimping tools provide a reproducible, secure vial closure for all 11mm vial and seal combinations
- Easy and convenient handling
- High quality construction for durability and long life
- Painted, plated and coated for maximum corrosion resistance



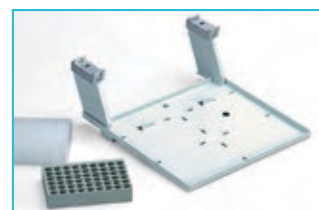
### Chromacol Crimpers and Decappers

Description	Use	Cat. No.	Pack of
Manual Crimper	Attaches 11mm aluminum crimp seals	<b>CR-11</b>	1
Decapping Pliers	Removes 11mm aluminum crimp seals, Protective gloves recommended	<b>DCR-11</b>	1
Manual Decrimper	Removes 11mm aluminum crimp seals without vial damage	<b>DCB-11</b>	1

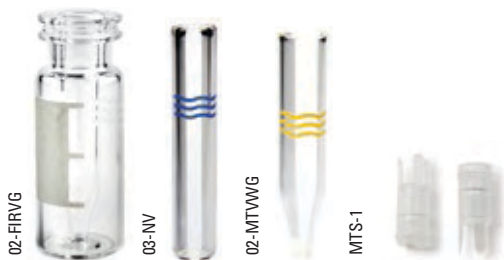
For electronic crimpers and decappers look on page [21](#)

## Chromacol 2mL, 32x12mm, 11mm Snap Cap Vials

- Superior quality borosilicate clear (Type 1, Class A) or 51A amber (Type 1 Class B) glass
- Available with a graduated, write-on patch for convenient sample identification
- Wide neck opening design, allows easy filling, requires Micro-Inserts with a diameter of 6mm
- Microsampling and High Recovery Vials allow maximum sample extraction without need for separate inserts
- Available silanized (deactivated) for optimal recovery of critical polar, labile or chelating compounds
- Snap-Cap vials can be used with snap caps or aluminum crimp seal closures



PAL Tray 2mL



### Chromacol 2mL, 12x32mm 11mm Snap Vials and Inserts

Description	Glass	Patched	Dimension (mm)	Profile	Total Volume	Usable Volume	Residual (µL)	Cat. No.	Pack of
11mm Snap Cap Vial	Clear	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-RV</b>	500
	Amber	Yes	12x32	Flat Bottom	2.0mL	1.5mL	<170	<b>2-RV(A)</b>	500
11mm Snap Cap 1.5mL Vial	Clear	No	12x32	High Recovery	1.5mL	1.3mL	<4	<b>1.5-HRRV</b>	100
11mm Snap Cap 1.5mL Vial, silanized	Clear	No	12x32	High Recovery	1.5mL	1.3mL	<4	<b>1.5-HRRV(S)</b>	100
11mm Snap Cap Vial, Ultra High Recovery with 10µL Reservoir	Clear	No	12x32	Mandrel Base	1.2mL	1mL	<2	<b>1.2-UHRRV</b>	100
11mm Snap Cap 300µL Vial, Fused Insert	Clear	Yes	12x32	Fused Conical	300µL	250µL	<3	<b>03-FIRV</b>	500
	Amber	Yes	12x32	Fused Conical	300µL	250µL	<3	<b>03-FIRV(A)</b>	500
11mm Snap Cap 200µL Vial, Fused Insert – GOLD grade glass	Clear	Yes	12x32	Fused Conical	200µL	180µL	<2	<b>02-FIRVG</b>	500
300µL Insert	Clear	–	6x31	Flat Bottom	300µL	200µL	<12	<b>03-NV</b>	1000
200µL Insert - GOLD Grade Glass	Clear	–	6x30	Pulled Point	200µL	160µL	<4	<b>02-MTVWG</b>	1000
Self-centering support device for tapered glass inserts	Polyethylene	–	–	–	–	–	–	<b>MTS-1</b>	500

## Chromacol 11mm Snap Closures

- Easy to apply and easy to remove from Snap vials
- Pre-assembled caps and septa are convenient and minimize contamination from handling
- Snap caps eliminate the need for crimping or de-capping tools
- Polyethylene caps are chemically inert and suitable for most chromatography applications
- Closures are shipped in sealed polybags to prevent contamination during transport



### Chromacol 11mm Snap Closures

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
11mm Snap Cap, thinned penetration area	Blue	Polyethylene	Integral Molded In Polyethylene	–	–	<b>11-PSN(B)</b>	500
11mm Snap Cap, 6mm hole	Blue	Polyethylene	Red Natural Rubber/Clear PTFE	58	1.0	<b>11-PSN(B)-8RT1</b>	500
	Blue	Polyethylene	White Silicone/Red PTFE	57	1.0	<b>11-PSN(B)-ST1</b>	500
	Blue	Polyethylene	Blue Silicone/PTFE	30	1.0	<b>11-PSN(B)-ST101</b>	500
	Blue	Polyethylene	White Silicone/Blue PTFE, Pre-slit	57	1.0	<b>11-PSN(B)-ST1X</b>	500
	Blue	Polyethylene	Red PTFE/White Silicone/Red PTFE	57	1.0	<b>11-PSN(B)-TST1</b>	500

## Chromacol 11mm Snap Cap Wide Opening Vial Convenience Kits

- Convenience kits save time during sample preparation
- Includes 100 vials and 100 caps with pre-assembled septa
- Reusable two compartment trays protect vials and closure while keeping matching supplies together
- Caps feature pre-inserted septa for added convenience during sample preparation

### Chromacol 11mm Snap Cap Wide Opening Vial Convenience Kits

Kit Type	Glass	Patched	Cap Color	Septum	Vial Cat.No.	Cap Cat.No.	Cat. No.	Pack of
Convenience Kit, Wide Opening Snap Vial	Clear	Yes	Blue	White Silicone/Red PTFE	2-RV	11-PSN(B)-ST1	<b>2-RVST-CP</b>	100
	Clear	Yes	Blue	Red Natural Rubber/Clear PTFE	2-RV	11-PSN(B)-8RT1	<b>2-RV8-CP</b>	100

## Chromacol Headspace Vials

- Superior quality borosilicate clear (Type 1, Class A) or 51A amber (Type 1 Class B) glass, meets all requirements of Pharm. US, EU, JPN
- Round bottom vials are compatible with most autosamplers and more easily handled by robotic arms that lift the vial from the tray
- Vials feature beveled edge 20mm crimp finish
- The bevel edge on the lip of the vial provides additional sealing power for greater leak resistance under high pressure
- Screw thread headspace vials are convenient and do not require tools
- Multiple turn threading maintains a tight seal through extreme heating cycles



PAL Tray 20mL



### Chromacol Headspace Vials

Description	Glass	Patched	Dimension (mm)	Finish	Profile	Total Volume (mL)	Usable Volume (mL)	Cat. No.	Pack of
20mm Headspace Crimp Vial	Clear	No	22.5x75	Beveled Edge	Round Bottom	21	20	<b>20-CV</b>	125
	Amber	No	22.5x75	Beveled Edge	Round Bottom	21	20	<b>20-CV(A)</b>	125
	Clear	No	22.5x45	Beveled Edge	Round Bottom	12	10	<b>10-CV</b>	125
	Amber	No	22.5x45	Beveled Edge	Round Bottom	12	10	<b>10-CV(A)</b>	125
18mm Screw Top Headspace Vial	Clear	No	22.5x76	Screw Thread	Round Bottom	21	20	<b>20-HSV</b>	125
	Clear	No	22.5x46	Screw Thread	Round Bottom	12	10	<b>10-HSV</b>	125



## Chromacol Crimping and Decrimping Tools

- Crimping tools provide a reproducible, secure vial closure for all 20mm vial and seal combinations
- Easy and convenient handling
- High quality construction for durability and long life
- Painted, plated and coated for maximum corrosion resistance



Items not shown to scale

### Chromacol Crimping and Decrimping Tools

Description	Use	Cat. No.	Pack of
Manual Crimper	Attaches 20mm crimp seals	<b>CR-20</b>	1
Decapping Pliers	Removes 20mm crimp seals, Protective gloves recommended	<b>DCR-20</b>	1
Manual Decrimper	Removes 20mm crimp seals without vial damage	<b>DCB-20</b>	1

For electronic crimpers and decappers look on page 21

## Chromacol Headspace Caps and Septa

- 20mm Crimp seals must be applied with a crimping tool
- Pre-assembled caps and septa are convenient and minimize contamination from handling



Images shown are 50% to scale

### Chromacol Headspace Caps and Septa

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
20mm Magnetic Crimp Cap, 6mm hole	Silver	Tin-plated	–	–	–	<b>20-MCB</b>	500
20mm Composite Magnetic Crimp Cap, 8mm hole	Blue	Alu/Tinplate	–	–	–	<b>20-MCBC</b>	500
	Red	Alu/Tinplate	–	–	–	<b>20-MCBC(R)</b>	500
18mm Magnetic Screw Cap, 8mm hole	Silver	Steel	–	–	–	<b>18-MSC</b>	125
Septum for 20mm Crimp Caps	–	–	20mm Gray Butyl Stopper	55	3.0	<b>20-B3P</b>	500
	–	–	20mm Molded Gray Chlorobutyl	52	3.0	<b>20-CB3</b>	1000
	–	–	20mm Molded Gray Chlorobutyl/Gray PTFE	52	3.0	<b>20-CBT3</b>	1000



### Chromacol Headspace Caps and Septa (Continued)

Description	Cap Color	Cap Material	Septum	Hardness °shore	Thickness (mm)	Cat. No.	Pack of
Septum for 20mm Crimp Caps	-	-	20mm Molded Blue Chlorobutyl/ Gray PTFE, Bellows Type	52	3.0	<b>20-CBT3B</b>	1000
	-	-	20mm Red Silicone/Aluminium Face Seal 3mm Thick, for >170°C.	45	3.0	<b>20-ASH3</b>	100
	-	-	20mm Silicone/ PTFE for liquid - liquid extraction	-	0.25	<b>20-LLX</b>	100
	-	-	20mm Blue Silicone/Natural PTFE	45	3.0	<b>20-ST3</b>	500
	-	-	20mm Red Silicone/Natural PTFE, high temperature	45	3.0	<b>20-ST3HT</b>	100
	-	-	20mm Blue Silicone/Red PTFE Seal 1.5mm Thick	20	1.5	<b>20-ST15</b>	500
	-	-	20mm Blue Silicone/PTFE	30	1.0	<b>20-ST101</b>	500
Septum for 18mm Screw Caps	-	-	18mm Blue Silicone/PTFE	30	1.0	<b>18-ST101</b>	125
20mm Composite Magnetic Crimp Cap, 8mm hole	Blue	Alu/Tinplate	20mm Blue Silicone/Natural PTFE	45	3.0	<b>20-MCBC-ST3</b>	500
	Red	Alu/Tinplate	20mm Blue Silicone/Natural PTFE	45	3.0	<b>20-MCBC(R)-ST3</b>	500
20mm Magnetic Tin Plate Crimp Cap	Silver	Tinplate	20mm Blue Silicone/Natural PTFE	45	3.0	<b>20-MCB-ST3</b>	500
18mm Magnetic Screw Cap, 8mm hole	Silver	Steel	18mm Molded Blue Chlorobutyl/Gray PTFE	52	3.0	<b>18-MSC-CBT3</b>	125
	Silver	Steel	18mm Blue Silicone/PTFE, not prefitted	30	1.0	<b>18-MSC-ST101</b>	125
	Silver	Steel	18mm Blue Silicone/Natural PTFE	45	3.0	<b>18-MSC-ST3</b>	125

## Chromacol Headspace Vial Combination Kits

- Include matched quantities of vials and seals with prefitted septa
- Caps feature pre-inserted septa for added convenience during sample preparation
- Convenience kits save time during sample preparation

### Chromacol Headspace Vials Combination Kits

Kit Type	Glass	Patched	Cap Color	Septum	Vial Cat.No.	Cap Cat.No.	Cat. No.	Pack of
Convenience Kit, 20mL Headspace Screw Vial, Round Bottom, Steel Screw Cap, 8mm hole	Clear	No	Silver	18mm Blue Silicone/ Natural PTFE	20-HSV	18-MSC-ST3	<b>20-HSVST3-CP</b>	125

## Thermo Scientific WebSeal

The WebSeal system is a comprehensive range of 96 well titer plates with glass inserts and a silicone/PTFE coated sealing mat. This system provides the analyst with 96 completely inert chambers and reduces the risk of cross-contamination from well to well when removing the cover. The products are ideal for High Throughput Screening, Combinatorial Chemistry, Life Science applications and HPLC.

### WebSeal Product Selection

- WebSeal mats are typically blue or clear silicone rubber in nature. The clear mats have no PTFE coating, making them ideal for use with aqueous mobile phases
- Blue mats have a thin protective film of sprayed PTFE, making them ideal for use with organic solvents
- Mats are available in standard and pre-cut versions for delicate autosampler needles
- The addition of vials to the 96 well plates allows the use of aggressive solvents in the WebSeal system
- Products are available in volumes from 500µL to 1.5mL



## WebSeal 500 $\mu$ L Kit and Accessories

Mid-depth polypropylene 96 well microtiter plate, pre-inserted 500 $\mu$ L glass vials and WebSeal silicone/PTFE mats

### WebSeal 500 $\mu$ L Kit

Description	Cat. No.	Quantity
96 well microtiter plate with 500 $\mu$ L glass vials and sealing mats	<b>05-MTPVC-96</b>	5 Pack
<b>Accessories</b>		
96 well mid-depth polypropylene plate for 500 $\mu$ L vials	<b>05-MTP-96</b>	5 Pack
500 $\mu$ L clear glass replacement vials for kit	<b>05-MTV-96</b>	500 Pack
96 round well silicone/PTFE sealing mat	<b>WSM-1</b>	5 Pack
96 round well silicone/PTFE sealing mat, pre-slit	<b>WSM-1X</b>	5 Pack



PAL Tray 2mL

## WebSeal 700 $\mu$ L Kit and Accessories

700 $\mu$ L kits available with clear glass, amber glass and PTFE vials pre-inserted into 96 well polypropylene microtiter plates

### WebSeal 700 $\mu$ L Kit

Description	Cat. No.	Quantity
96 well plate, 700 $\mu$ L clear glass vials, sealing mat and cutting tool	<b>MTPVC-96</b>	5 Pack
96 well plate, 700 $\mu$ L PTFE vials, sealing mat and cutting tool	<b>MTPVC-96</b>	1 Each
<b>Accessories</b>		
700 $\mu$ L clear glass vials for kit	<b>1-MTV-96</b>	500 Pack
700 $\mu$ L PTFE vials for kit	<b>1-MTV-96</b>	100 Pack
96 well polypropylene plate for 700 $\mu$ L vials	<b>MTP-96</b>	5 Pack
96 round well silicone/PTFE sealing mat	<b>WSM-1</b>	5 Pack
96 round well silicone/PTFE sealing mat, pre-slit	<b>WSM-1X</b>	5 Pack
Cutting tool	<b>MTPC-1</b>	1 Each

## WebSeal 1.1mL Kit and Accessories

1.1mL kits available as 8mm crimp top standard vials or with WebSeal silicone/PTFE sealing mats

### WebSeal 1.1mL Kit and Accessories

Description	Cat. No.	Quantity
96 well PP plate with 1.1mL glass vials, sealing mats	<b>1.1-MTPVC-96</b>	5 Pack
96 well PP plate with 1.1mL, 8mm crimp top vials	<b>1.1-CMTPVC-96</b>	5 Pack
<b>Accessories</b>		
1.1mL clear glass vials for kit	<b>1.1-MTV-96</b>	500 Pack
1.1mL clear glass crimp top vials for kit	<b>1.1-CRV</b>	500 Pack
96 deep well PP plate for 1.1mL shell vial	<b>1.1-MTP-96</b>	5 Pack
96 square deep well PP plate for 1.1mL crimp top vials	<b>1.1-MTPS-96</b>	5 Pack
Silicone/PTFE sealing mat	<b>WSM-6</b>	5 Pack
Silicone/PTFE sealing mat pre-slit	<b>WSM-6X</b>	5 Pack

## WebSeal 1.5mL Kit and Accessories

1.5mL kit available in 96 well polypropylene microtiter plate pre-inserted with 1.5mL clear glass vials and WebSeal silicone/PTFE sealing mats

### WebSeal 1.5mL Kit and Accessories

Description	Cat. No.	Quantity
96 well polypropylene plate, 1.5mL glass vials, sealing mat	<b>1.5-MTPVC-96</b>	5 Pack
<b>Accessories</b>		
1.5mL clear glass vials for kit	<b>1.5-MTV-96</b>	500 Pack
96 well polypropylene plate for 1.5mL glass vials	<b>1.5-MTP-96</b>	5 Pack
Silicone/PTFE sealing mat	<b>WSM-6</b>	5 Pack
Silicone/PTFE sealing mat pre-slit	<b>WSM-6X</b>	5 Pack

## MicroMat CLR Sealing Mats

Designed to fit 96 well plates to eliminate cross-contamination from well to well

### MicroMat CLR Sealing Mats

Description	Cat. No.	Quantity
96 round well; 7mm domed base	<b>WSM-2E</b>	5 Pack
96 round well sealing mat, 7mm domed base, silicone only pre-slit	<b>WSM-2XE</b>	5 Pack
384 square well sealing mat; silicone only	<b>WSM-5E</b>	5 Pack
384 square well sealing mat; silicone only pre-slit	<b>WSM-5XE</b>	5 Pack
96 square well sealing mat; silicone only	<b>WSM-3SE</b>	5 Pack
96 square well sealing mat; silicone only pre-slit	<b>WSM-3SXE</b>	5 Pack
96 round well sealing mat; 8mm flat base, silicone	<b>WSM-2FBE</b>	5 Pack
96 round well sealing mat; 8mm flat base, silicone pre-slit	<b>WSM-2FBXE</b>	5 Pack

## WebSeal MicroMat CLR Sealing Strips

Use where only partial plate capacity is required

### WebSeal MicroMat CLR Sealing Strips

Description	Cat. No.	Quantity
96 round well sealing strips; 8mm strips; silicone pre-slit	<b>WSMS-2XE</b>	12 Pack

## WebSeal Mats

Superior resealability after multiple injections

### WebSeal Mats

Description	Cat. No.	Quantity
96 round well silicone/PTFE sealing mat	<b>WSM-1</b>	5 Pack
96 round well silicone/PTFE sealing mat, pre-slit	<b>WSM-1X</b>	5 Pack
Silicone/PTFE sealing mat	<b>WSM-6</b>	5 Pack
Silicone/PTFE sealing mat pre-slit	<b>WSM-6X</b>	5 Pack

For use with WebSeal Glass and PTFE 96-position inserted vials

## WebSeal Mat Applicator

Handheld applicator for easy sealing of WebSeal mats

### WebSeal Mat Applicator

Description	Cat. No.	Quantity
Handheld mat applicator	<b>WSA-1</b>	1 Each

## WebSeal Silicone/PTFE Mats

Manufactured from silicone with PTFE coating on underside

### WebSeal Silicone/PTFE Mats

Description	Cat. No.	Quantity
96 round well; 7mm dome base; Dark Blue	<b>WSM-2</b>	5 Pack
96 round well; 7mm flat base; Light Blue	<b>WSM-2FB</b>	5 Pack
96 round well; 7mm flat base; Light Blue, pre-slit	<b>WSM-2FBX</b>	5 Pack
96 square well; 8mm square well; Light Blue	<b>WSM-3S</b>	5 Pack
96 square well; 8mm square well; Light Blue, pre-slit	<b>WSM-3SX</b>	5 Pack
96 square well; 8mm square well; Yellow, pre-slit	<b>WSM-3SXY</b>	5 Pack
384 round well; 4mm square well; Red	<b>WSM-5</b>	5 Pack
384 square well; 4mm square well; Light Blue, pre-slit	<b>WSM-5RX</b>	5 Pack

## WebSeal Glass-Coated Microplates

Lightweight, precision molded, cost-effective alternative to solid glass plates

- Polypropylene microplates coated with 200nm thick layer of silicone dioxide
- Chemically resistant with the qualities of glass and advantages of polypropylene
- Operating temperatures of -80° to +80°C

### WebSeal Glass-coated Microplates

Description	Cat. No.	Quantity
96 Well PP Plate 350µL Volume V-Bottom	<b>CLS-210003</b>	100 Pack
96 U deep-well design; 1mL glass-coated PP plate	<b>CLS-400042</b>	10 Pack
96 flat well design; 2mL glass-coated PP plate	<b>CLS-400046</b>	10 Pack
96 V-design 190µL; Glass coated PP plate	<b>CLS-400058</b>	10 Pack
384 square-rounded; 180µL glass-coated PP plate	<b>CLS-400156</b>	10 Pack
96 U-well design; 250µL glass-coated PP plate	<b>CLS-400054</b>	10 Pack
96 well flat bottom; 300µL glass-coated PP plate	<b>CLS-400062</b>	10 Pack
384 square/rounded well design; 90µL glass-coated PP plate	<b>CLS-400150</b>	10 Pack

# Thermo Scientific Crimpers and De-Crimpers

Electronic Crimpers and De-Crimpers provide an adjustable crimp with reproducible results.

Thermo Scientific Chromacol offers hand held electronic crimpers for crimping or removal of aluminum seals on 8, 11, 13 and 20mm vials. The crimper is a hand held device, which allows aluminum seals to be firmly attached to the vial while it remains in most sample trays with the touch of a button. A separate de-crimper allows the removal of the seal just as easily. The instruments have an adjustment for septa of varying thicknesses. Power is supplied by rechargeable Lithium Ion Cells. The 7.5 volt DC power supply comes with a set of plug adaptors to fit power outlets for most countries.

## Electronic Crimpers and De-Crimpers

- One hand secure, reproducible crimps of 8, 11, 13 and 20mm vials with the push of a button
- Reduces hand strain compared to manual crimper operation
- Quick and easy removal of aluminum seals with the push of a button
- Ergonomic design eliminates wrist strain
- Vials can be crimped while they remain in most standard removable sample trays
- Adjustable crimp settings for compatibility with most vial/septum/seal combinations
- Fully rechargeable Lithium Ion Battery
- Provided with universal power supply/recharger and international plug adaptors

### Electronic Hand-held Crimper and De-Crimper

Description	Cat. No.	Pack of
Electronic Hand-held Crimper for 8mm Crimp Caps, Generation 3	<b>ECR-8C</b>	1
Electronic Hand-held Crimper for 11mm Crimp Caps, Generation 3	<b>ECR-11C</b>	1
Electronic Hand-held Crimper for 13mm Crimp Caps, Generation 3	<b>ECR-13C</b>	1
Electronic Hand-held Crimper for 20mm Crimp Caps, Generation 3	<b>ECR-20C</b>	1
Electronic Hand-held De-Crimper for 11mm Crimp Caps, Generation 3	<b>EDCB-11C</b>	1
Electronic Hand-held De-Crimper for 13mm Crimp Caps, Generation 3	<b>EDCB-13C</b>	1
Electronic Hand-held De-Crimper for 20mm Crimp Caps, Generation 3	<b>EDCB-20C</b>	1
Replacement Battery, 6.4V Lithium Ion, For Generation 3 Electronic Crimpers and De-Crimpers	<b>ECR-CBATT</b>	1



## Seal Hardness

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 the preferred method for rubbers/ elastomers and is also commonly used for 'softer' plastics such as fluoropolymers. Most septa hardness values are stated in Shore A. 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.

### Seals in 8mm, 9mm, 11mm, 12mm Caps

Seal Material	Hardness °shore	Thickness (mm)
TST1 Red PTFE/white silicone/red PTFE	57	1.0
CBT1 Gray Chlorobutyl/PTFE	52	1.0
ST14 Blue silicone/PTFE	50	1.2
6RT1/AC6 Synthetic rubber/PTFE	38	1.0
ST101 Blue silicone/PTFE	30	1.0
ST143 White silicone/PTFE	20	1.4
ST144 Blue silicone/redPTFE	20	1.4
V1 Viton	62	1.0
AC7 Natural rubber/PTFE	60	1.0
8RT1 Synthetic rubber/PTFE	58	1.0
ST2 White silicone/red PTFE	57	2.0
ST18 White silicone/red PTFE	57	1.8
ST15 White silicone/red PTFE	57	1.5
ST1 White silicone/red PTFE	57	1.0

### Seals in 20mm Caps

Seal Material	Hardness °shore	Thickness (mm)	max. Temp °C
CBT3B Chlorobutyl/PTFE	52	3	120
CBT3 Chlorobutyl/PTFE	52	3	120
CB3 Chlorobutyl	52	3	120
ST3 Blue silicone/PTFE	45	3	200
ST3HT Red silicone/PTFE	45	3	250
AS3 White silicone/aluminium	45	3	<170
ASH3 Red silicone/aluminium	45	3	>170



## Seal properties

Rubber	Used primarily for routine analysis in gas chromatography. Offers moderate resealability and good chemical inertness. Not recommended for multiple injections or holding samples for further analysis. PTFE is protective layer that once broken exposes rubber to chemical attack.
PTFE/Red rubber – AC6, 8RT1	Low durometer of rubber allows ease of needle penetration. A popular and economical septa for general GC purposes.
PTFE/Rubber – AC7, 8RT1	Harder grade of rubber for use with piercing needle. Most popular and economical septa for general GC purposes in Agilent systems.
Pre-slit PTFE/red rubber – 8RT1X	Pre-slit, high quality red rubber with a thin (0.003") layer PTFE. For applications using a very thin-gauge syringe needle or in instances when a vacuum may form in the vial.
Silicone rubber	High quality, silicone rubber laminated to PTFE. Use when excellent resealing qualities are a must. Septum resists coring and is recommended when multiple injections are required. Preferred septa for use in liquid chromatography applications.
PTFE/silicone – ST1, ST15, ST18, ST2	A white medium hardness silicone with red PTFE protective layer available in a range of thickness.
PTFE/silicone – ST101, ST14	<ul style="list-style-type: none"> <li>• A very pure soft silicone laminated to PTFE. Septum resists coring and is recommended for instruments with fine gauge needles.</li> <li>• Also recommended for LC-MS and GC-MS due to high purity.</li> </ul>
PTFE /silicone – ST143, ST144	A very soft silicone laminated to PTFE. Use with flexible needle.
PTFE /silicone/PTFE – TST1, TST11	<ul style="list-style-type: none"> <li>• A layer of PTFE on each side of medium hardness silicone. Most resistant to coring with above average resealing characteristics.</li> <li>• Recommended for most demanding applications such as trace analysis, longer time between injections or for internal standards.</li> <li>• Use with any autosampler using large diameter, blunt-tip syringe needles.</li> </ul>
Pre-slit PTFE/Silicone – ST1X, ST101X, ST14X	Pre-slit, high quality pure white silicone faced with PTFE. For applications using a very thin-gauge syringe needle or in instances when a vacuum may form in the vial.
PTFE and fluoropolymers	Very good chemical resistance and used as a protective layer for less resistant elastomers.
PTFE – T, T02	For single injections and short sample cycles. This type of septa is not resealable.
Viton – V1	Viton provides the best chemical resistance with limited resealability. Recommended for chlorinated solvents. Due to Viton®'s intrinsic hardness, these septa are not suitable for finer-gauge syringe needles.
Integral plastic seal	Moulded as part of the cap.
Polyethylene – PE, Polypropylene – PP	Chemically resistant but for one time use only with no resealability.

## 20mm seal selection for Headspace and Sample Preparation applications

Butyl rubber/chlorobutyl rubber	An economical choice for low temperature (< 125°C) or low-pressure applications. Not suitable for alkanes, benzene, chlorinated solvents or cyclohexane without a protective PTFE layer.
Grey butyl stopper – B3P	Does not provide PTFE barrier. Use for gas sampling due to low permeability.
Blue chlorobutyl – CB3	Does not provide PTFE barrier. Use for gas sampling due to low permeability.
Blue chlorobutyl/natural PTFE – CBT3	Has PTFE barrier that makes it suitable for work with general organic solvents with low gas permeability.
Grey PTFE/chlorobutyl molded – CBT3B	Specially molded seal with PTFE insert. Sealing surface of Butyl and PTFE affects a more positive seal than non-PTFE-faced septa. Ideal choice for temperatures below 125°C. Good sealing characteristics, excellent resistance to most solvents and coring, and high puncture tolerance. PTFE provides increased chemical resistance.
Silicone rubber	Excellent septa choice for volatiles with very low background peaks and low permeability. Also ideal for alcohols and aqueous samples. Good resealing characteristics and resistant to coring.
Natural PTFE/blue silicone – ST3	Best septa choice when temperatures are over 125°C.
Natural PTFE/red silicone – ST3HT	High temperature formulated seal with low bleed. Best septa choice when temperatures are up to 250°C.
Blue Silicone/red PTFE – ST144	Thin 1.4mm seal with PTFE face for use with older CTC Instruments. Resealing capability limited due to thinner silicone layer.
Aluminium/white silicone – AS3	Reflective aluminium face protects the silicone seal. The white silicone is suitable for use up to 170°C
Aluminium/red silicone – ASH3	Reflective aluminium face protects the silicone seal. The red silicone is suitable for use at temperatures of >170°C
Blue silicone/natural PTFE – ST101	Soft silicone with clean formulation for minimal interference. Thinner seal suitable for solvent washing, solvent extraction and SPME applications with some resealing. Not for direct headspace applications.
Freezer bungs – 2FB3	Butyl bungs for sealing of lyophilized products. Compatible with low storage temperatures and low gas permeability.
PTFE/silicone ring – LLX	Thin PTFE layer with sealing ring to give secure closure for strong solvents. For use in liquid extraction or SPME stage during sample preparation. Does not reseal.

# Solvent Compatibility

## Sealing Material

Solvent	AC6	AC7	B3P	CBT1	CB3	CBT3	LDPE	HDPE	PP	PTFE
Acetic Acid Aqueous	A(A)	A(B)	A(B)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Acetone	A(A)	A(C)	A(A)	A(A)	A(A)	A(A)	D(D)	B(B)	B(B)	A(A)
Acetonitrile	A(A)	A(A)	–	A(A)	A(A)	A(A)	–	–	–	A(A)
Alcohols(Aromatic)	A(B)	A(D)	–	A(B)	B(B)	A(B)	D(D)	D(D)	B(B)	A(A)
Alcohols(Aliphatic)	A(A)	A(B)	A(B)	A(A)	A(A)	A(A)	D(D)	B(B)	B(B)	A(A)
Amyl Acetate	A(A)	A(D)	A(C)	A(A)	A(A)	A(A)	D(D)	D(D)	–	A(A)
Aqueous Solutions Dilute	A(A)	A(A)	–	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Benzene	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Butyl Alcohol	A(B)	A(A)	A(B)	A(B)	B(B)	A(B)	B(B)	B(B)	B(B)	A(A)
Carbon Disulphide	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Carbon Tetrachloride	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Chloroform	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Cyclohexane	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	–	–	–	A(A)
Cyclohexanol	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	B(B)	A(A)
Diethyl Ether	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Dimethyl Sulphoxide	A(C)	A(D)	D(D)	A(C)	C(C)	A(C)	–	–	–	A(A)
Dioxane	A(B)	A(D)	A(B)	A(B)	B(B)	A(B)	–	–	–	A(A)
Esters	A(B)	A(D)	A(C)	A(B)	B(B)	A(B)	D(D)	D(D)	B(B)	A(A)
Ethyl Acetate	A(B)	A(D)	A(B)	A(B)	B(B)	A(B)	D(D)	D(D)	B(B)	A(A)
Ethyl Alcohol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	D(D)	B(B)	B(B)	A(A)
Ethylene Chloride	A(D)	A(D)	A(C)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Ethylene Glycol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Formaldehyde	A(B)	A(B)	A(A)	A(B)	B(B)	A(B)	A(A)	A(A)	A(A)	A(A)
Glycol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Halogenated Hydrocarbons	A(D)	A(C)	A(B)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Hexane	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	–	–	–	A(A)
Hydrochloric Acid Dilute	A(A)	A(C)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Iso-Octane	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	–	–	–	A(A)
Ketones	A(A)	A(C)	A(B)	A(A)	A(A)	A(A)	D(D)	B(B)	B(B)	A(A)
MeOH/H2O/Acetonitrile	A(A)	A(–)	–	A(A)	A(A)	A(A)	–	–	–	A(A)
Methanol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	–	–	–	A(A)
Methyl Chloride	A(C)	A(D)	A(C)	A(C)	C(C)	A(C)	D(D)	D(D)	D(D)	A(A)
Methyl Acetate	A(B)	A(C)	A(A)	A(B)	B(B)	A(B)	D(D)	D(D)	B(B)	A(A)
Methyl Ethyl Ketone	A(A)	A(D)	A(B)	A(A)	A(A)	A(A)	D(D)	B(B)	B(B)	A(A)
Methylene Chloride	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Nitric Acid Dilute	A(A)	A(D)	A(B)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Pentane	A(D)	A(–)	–	A(D)	D(D)	A(D)	–	–	–	A(A)
Petroleum Ether	A(D)	A(–)	–	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Sodium Hydroxide	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Sulphuric Acid Dilute	A(D)	A(C)	A(B)	A(D)	D(D)	A(D)	A(A)	A(A)	A(A)	A(A)
Surfactants	A(A)	A(–)	–	A(A)	A(A)	A(A)	–	–	–	A(A)
Toluene	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	B(B)	A(A)
Trichloroethylene	A(D)	A(D)	D(D)	A(D)	D(D)	A(D)	D(D)	D(D)	D(D)	A(A)
Water	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)

Key: The first character indicates the characteristics of the seal prior to any injection.

The second character in ( ) indicates the potential characteristics of the seal after an injection.

A = Recommended B = Suitable for most purposes C = Use with care D = Not advisable – = Not tested

## Sealing Material

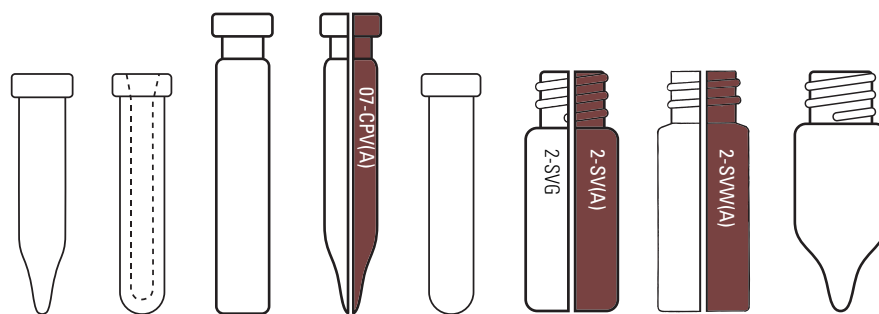
Solvent	ST3	ST2	ST18	ST15 and ST1	ST14	ST144	ST143	ST101	TST11	TST1	VITON
Acetic Acid Aqueous	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	D(D)
Acetone	A(D)	A(B)	A(A)	A(A)	A(A)	A(D)	A(B)	A(A)	A(A)	A(B)	D(D)
Acetonitrile	A(A)	A(-)	A(A)	A(A)	A(A)	A(A)	A(-)	A(A)	A(A)	A(-)	B(B)
Alcohols(Aromatic)	A(B)	A(A)	A(A)	A(A)	A(A)	A(B)	A(-)	A(A)	A(A)	A(-)	-
Alcohols(Aliphatic)	A(B)	A(-)	A(A)	A(A)	A(A)	A(B)	A(-)	A(A)	A(A)	A(-)	-
Amyl Acetate	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	D(D)
Aqueous Solutions Dilute	A(A)	A(-)	A(A)	A(A)	A(A)	A(A)	A(-)	A(A)	A(A)	A(-)	-
Benzene	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Butyl Alcohol	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(A)
Carbon Disulphide	A(D)	A(-)	A(A)	A(A)	A(A)	A(D)	A(-)	A(A)	A(A)	A(-)	A(A)
Carbon Tetrachloride	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Chloroform	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Cyclohexane	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Cyclohexanol	A(D)	A(-)	A(B)	A(B)	A(B)	A(D)	A(-)	A(B)	A(B)	A(-)	A(A)
Diethyl Ether	A(D)	A(-)	A(B)	A(B)	A(B)	A(D)	A(-)	A(B)	A(B)	A(-)	D(D)
Dimethyl Sulphoxide	A(D)	A(-)	A(A)	A(A)	A(A)	A(D)	A(-)	A(A)	A(A)	A(-)	C(C)
Dioxane	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	D(D)
Esters	A(B)	A(-)	A(B)	A(B)	A(B)	A(B)	A(-)	A(B)	A(B)	A(-)	-
Ethyl Acetate	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	A(B)	D(D)
Ethyl Alcohol	A(A)	A(B)	A(A)	A(A)	A(A)	A(A)	A(B)	A(A)	A(A)	A(B)	-
Ethylene Chloride	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	-
Ethylene Glycol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)
Formaldehyde	A(B)	A(B)	A(A)	A(A)	A(A)	A(B)	A(B)	A(A)	A(A)	A(B)	D(D)
Glycol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	-
Halogenated Hydrocarbons	A(D)	A(-)	A(A)	A(A)	A(A)	A(D)	A(-)	A(A)	A(A)	A(-)	-
Hexane	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	-
Hydrochloric Acid Dilute	A(D)	A(-)	A(A)	A(A)	A(A)	A(D)	A(-)	A(A)	A(A)	A(-)	A(A)
Iso-Octane	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	-
Ketones	A(D)	A(-)	A(B)	A(B)	A(B)	A(D)	A(-)	A(B)	A(B)	A(-)	-
MeOH/H2O/Acetonitrile	A(A)	A(A)	A(B)	A(B)	A(B)	A(A)	A(-)	A(B)	A(B)	A(-)	-
Methanol	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	D(D)
Methyl Chloride	A(D)	A(D)	A(A)	A(A)	A(A)	A(D)	A(D)	A(A)	A(A)	A(D)	A(A)
Methyl Acetate	A(D)	A(D)	A(B)	A(B)	A(B)	A(D)	A(D)	A(B)	A(B)	A(D)	D(D)
Methyl Ethyl Ketone	A(D)	A(D)	A(A)	A(A)	A(A)	A(D)	A(D)	A(A)	A(A)	A(D)	D(D)
Methylene Chloride	A(D)	A(B)	A(B)	A(B)	A(B)	A(D)	A(-)	A(B)	A(B)	A(-)	-
Nitric Acid Dilute	A(D)	A(B)	A(B)	A(B)	A(B)	A(D)	A(B)	A(B)	A(B)	A(B)	A(A)
Pentane	A(D)	A(C)	A(C)	A(C)	A(C)	A(D)	A(-)	A(C)	A(C)	A(-)	-
Petroleum Ether	A(D)	A(-)	A(C)	A(C)	A(C)	A(D)	A(-)	A(C)	A(C)	A(-)	-
Sodium Hydroxide	A(A)	A(B)	A(A)	A(A)	A(A)	A(A)	A(B)	A(A)	A(A)	A(B)	D(D)
Sulphuric Acid Dilute	A(D)	A(D)	A(B)	A(B)	A(B)	A(D)	A(D)	A(B)	A(B)	A(D)	A(A)
Surfactants	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(-)	A(A)	A(A)	A(-)	-
Toluene	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Trichloroethylene	A(D)	A(D)	A(C)	A(C)	A(C)	A(D)	A(D)	A(C)	A(C)	A(D)	A(A)
Water	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	A(A)	B(B)

Key: The first character indicates the characteristics of the seal prior to any injection.

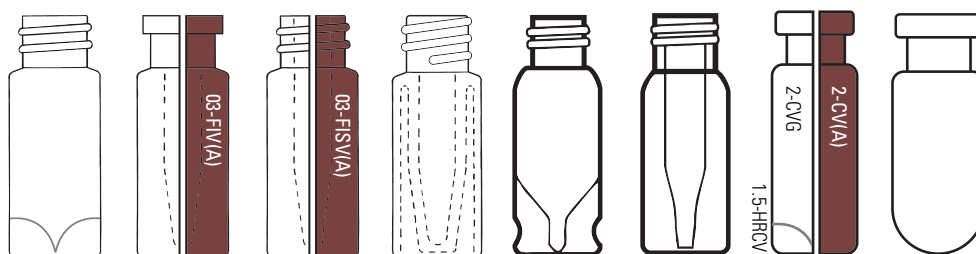
The second character in ( ) indicates the potential characteristics of the seal after an injection.

A = Recommended B = Suitable for most purposes C = Use with care D = Not advisable - = Not tested

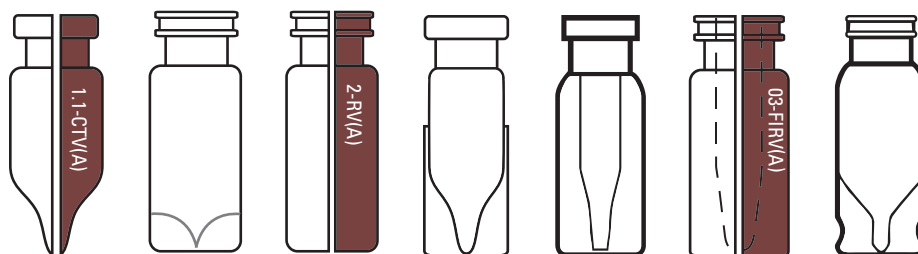
# Chromacol Vials Comparison Chart



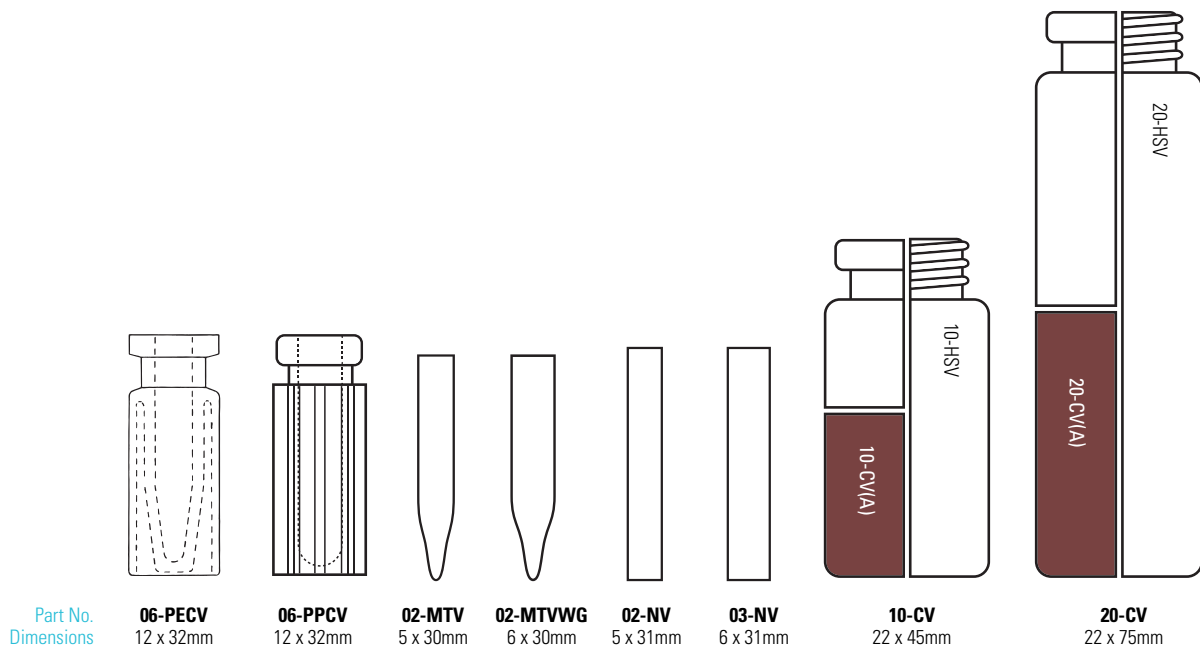
Part No.	<b>02-CTVG</b>	<b>01-CVG</b>	<b>08-CPV</b>	<b>07-CPV</b>	<b>03-CVG</b>	<b>2-SV</b>	<b>2-SVW</b>	<b>1.1-STVG</b>
Dimensions	6 x 32mm	6 x 32mm	7 x 40mm	7 x 40mm	6 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm



Part No.	<b>1.5-HRSV</b>	<b>03-FIV</b>	<b>03-FISV</b>	<b>06-PESV</b>	<b>1.2-UHRSV</b>	<b>02-FISVG</b>	<b>2-CV</b>	<b>2-CRV</b>
Dimensions	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm



Part No.	<b>1.1-CTV(A)</b>	<b>1.5-HRRV</b>	<b>2-RV</b>	<b>09-FIV</b>	<b>02-FIVG</b>	<b>03-FIRV</b>	<b>1.2-UHRRV</b>
Dimensions	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm	12 x 32mm



## Chromacol Caps and Septa Comparison Chart

Part No. Dimensions	<b>*8-AC6</b> 8 x 5mm	<b>8-AC7</b> 8 x 5mm	<b>8-AC-CBT1</b> 8 x 5mm	<b>8-AC-ST15</b> 8 x 5mm	<b>8-AC-ST101</b> 8 x 5mm	<b>8-AC-ST101X</b> 8 x 5mm	<b>8-AC(B)-ST144</b> 8 x 5mm
Part No. Dimensions	<b>8-AC-TST1</b> 8 x 5mm	<b>8-SC-8RT1</b> 8 x 9mm	<b>8-SC-ST15</b> 8 x 9mm	<b>*9-SCK(B)-8RT1</b> 9 x 6.5mm	<b>9-SCK(B)ST101</b> 9 x 6.5mm	<b>*9-SCK(B)-ST1</b> 9 x 6.5mm	<b>9-SCK(B)-TST1</b> 9 x 6.5mm
Part No. Dimensions	<b>*11-AC6</b> 11 x 6mm	<b>*11-AC7</b> 11 x 6mm	<b>11-ACB</b> 11 x 6mm	<b>11-AC-CBT1</b> 11 x 6mm	<b>11-AC-ST101</b> 11 x 6mm	<b>11-AC-ST101X</b> 11 x 6mm	<b>11-AC(B)-ST144</b> 11 x 6mm
Part No. Dimensions	<b>11-AC-ST15</b> 11 x 6mm	<b>11-AC-TST1</b> 11 x 6mm	<b>11-LLX</b> 11 x 3mm	<b>11-PSN(B)</b> 11 x 6.5mm	<b>11-PSN(B)-ST101</b> 11 x 6.5mm	<b>11-PSN(B)-TST1</b> 11 x 6.5mm	<b>11-PSN(B)-8RT1</b> 11 x 6.5mm

\*Cap available in alternative colors. See over for more details



Part No. **\*11-PSN(B)-ST1X**  
Dimensions 11 x 6.5mm



Part No. **11-PSN(B)-ST1**  
Dimensions 11 x 6.5mm



Part No. **18-MSC**  
Dimensions 18 x 13mm



Part No. **\*18-MSC-ST3**  
Dimensions 18 x 13mm



Part No. **20-ACB**  
Dimensions 20 x 7mm



Part No. **20-MCB**  
Dimensions 20 x 7mm



Part No. **\*20-MCBC**  
Dimensions 20 x 7mm



Part No. **\*20-MCBC-ST3**  
Dimensions 20 x 7mm



Part No. **20-CB3**  
Dimensions 20 x 3mm



Part No. **20-CBT3**  
Dimensions 20 x 3mm



Part No. **20-CBT3B**  
Dimensions 20 x 3mm



Part No. **20-LLX**  
Dimensions 20 x 3mm



Part No. **20-ST3**  
Dimensions 20 x 3mm



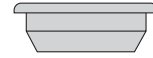
Part No. **20-ST3HT**  
Dimensions 20 x 3mm



Part No. **20-ST101**  
Dimensions 20 x 1mm



Part No. **18-ST101**  
Dimensions 18 x 1mm



Part No. **20-B3P**  
Dimensions 20 x 9mm



Part No. **20-ST15**  
Dimensions 20 x 10mm

\* Cap available in alternative colors. See below for more details

**Alternative Colors**

**8-AC6**

- 8-AC6(R)
- 8-AC6(B)

**9-SC(B)-8RT1**

- 9- SC(G)-8RT1
- 9- SC(N)-8RT1
- 9- SC(B)-8RT1X

**9-SC(B)-ST1**

- 9- SC(G)-ST1
- 9- SC(N)-ST1
- 9- SC(B)-STIX
- 9- SC(BLK)-BST1
- 9- SC(GY)-BST1X

**11-AC6**

- 11-AC6(R)
- 11-AC6(B)

**11-AC7**

- 11-AC7(R)
- 11-AC7(GO)
- 11-AC7(G)
- 11-AC7(B)

**18-MSC-ST3**

- 18-MSC-ST101
- 18-MSC-CBT3

**20-MCBC**

- 20-MCBC(R)

**20-MCBC-ST3**

- 20-MCBC(R)-ST3
- 20-MCBC(N)-ST3

## Properties of Glass

Vials and inserts are manufactured from the highest-quality borosilicate glass, selected for its purity and dimensional stability

**Clear glass type 33 expansion** products are manufactured from 33 expansion borosilicate glass, have a low coefficient of expansion and very high resistance to chemical attack. It has low alkali content and is free of elements from the calcium, magnesium, and zinc group of heavy metals. The total of combined oxides of arsenic and antimony is less than 0.005%. 33 expansion borosilicate glass meets the requirements for Type I Class A glass of ASTM E438.

**Chromacol GOLD™ glass** quality, a low expansion high purity glass with an extremely low concentration of active sites. This gives a low activity surface with high recovery of basic and polar samples that may show adsorption on more typical glass surfaces.

**Clear and Amber glass** products manufactured from N-51A borosilicate glass, have a relatively low coefficient of expansion and high chemical durability. N-51A

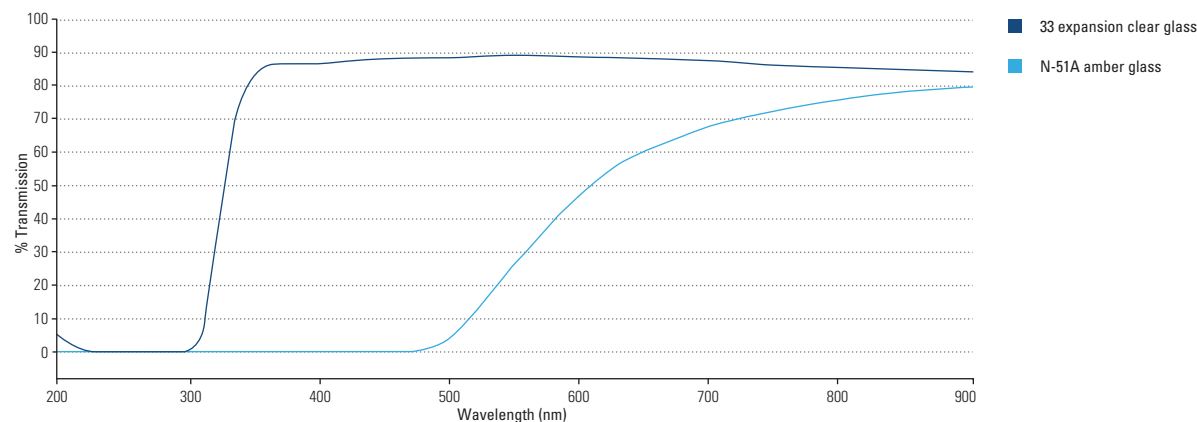
borosilicate glass meets the requirements for Type I Class B glass of ASTM E438.

Unless otherwise stated, all autosampler vials offered through this catalog (clear and amber glass) are classified as Type I in accordance with the U.S.Ph. 33th ed. and the European Ph. 7<sup>th</sup> ed, as well as other Pharmacopoeias or E.P. definitions of type 1 Hydrolytic Class Glass including e.g. the Japanese, Italian and DAB Pharmacopoeias.

### Approximate Chemical Composition for Borosilicate Glass

	33 expansion and Chromacol GOLD Grade Glass	N-51Clear Glass	N-51Amber Glass
Silicon Dioxide (SiO <sub>2</sub> )	80%	75%	72%
Boron Oxide (B <sub>2</sub> O <sub>3</sub> )	13%	11%	12%
Aluminum Oxide (Al <sub>2</sub> O <sub>3</sub> )	3%	5%	7%
Calcium Oxide (CaO)	0.1%	2%	1%
Magnesium Oxide (MgO)	Not Detected	Not Detected	Not Detected
Sodium Oxide (Na <sub>2</sub> O)	4%	7%	6%
Potassium Oxide (K <sub>2</sub> O)	0.1%	Not Detected	2%
Barium Oxide (BaO)	<0.1%	1%	<0.1%

### Optical Properties of Glass



## How to order

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For more information please visit our website: [www.thermoscientific.com/vials](http://www.thermoscientific.com/vials)

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