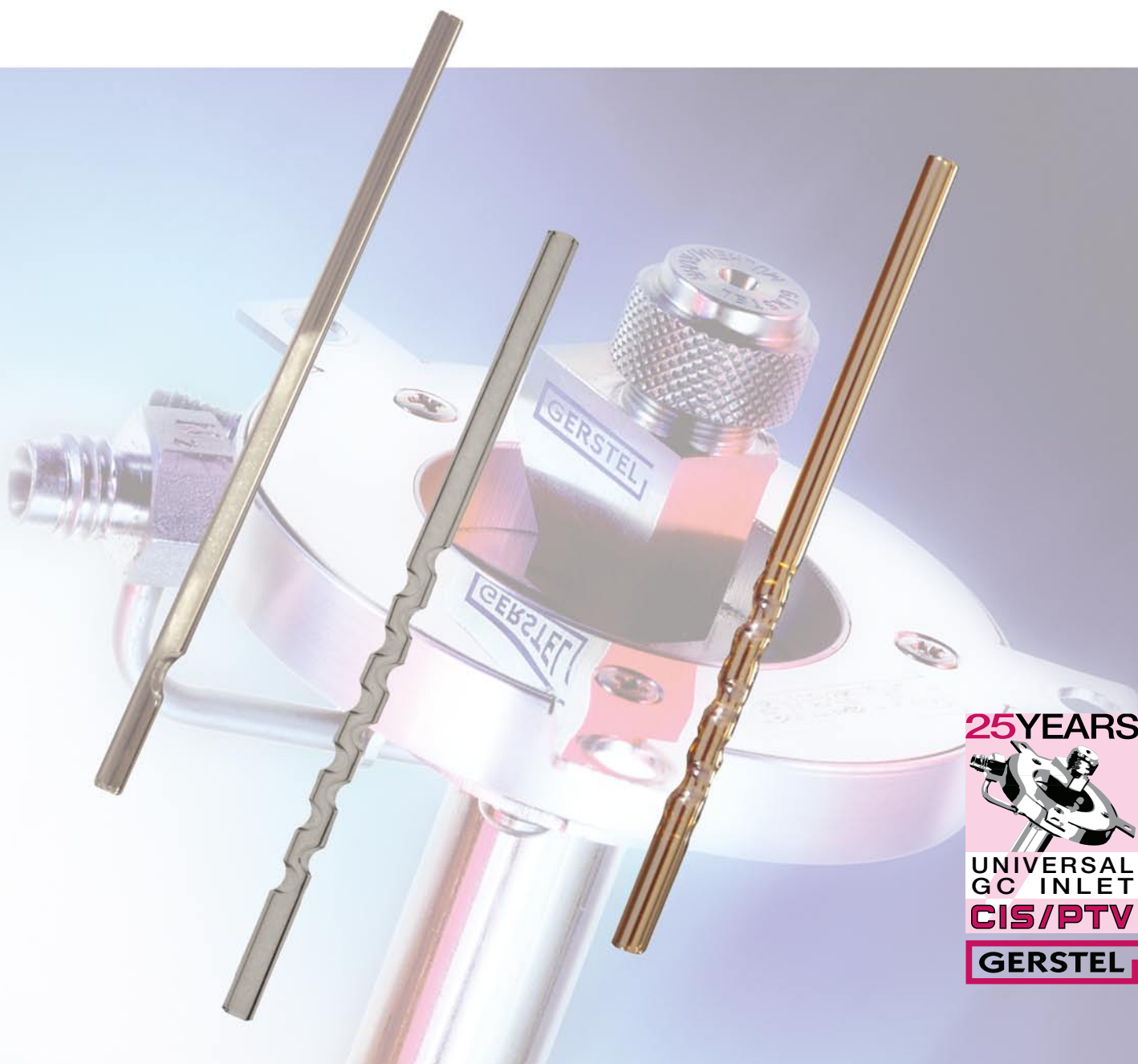




GERSTEL

GERSTEL glass liners for GERSTEL Cooled Injection System CIS



25 YEARS



**UNIVERSAL
GC INLET
CIS/PTV**

GERSTEL

The glass liners listed below are designed for the CIS 3 and CIS 4/6 respectively. Unless separately specified, the dimensions are:

- CIS 4/6** OD 3 mm (ID 2 mm); length 71 mm.
- CIS 3** OD 2 mm (ID 1.5 mm); length 93 mm.

For all liners for any particular type CIS inlet, the same GERSTEL® Graphpack® ferrules can be used.

Warning:

With exception of the Siltek™ coated liners, the deactivation is only stable at temperatures up to 275 °C. Higher temperatures can be used, but this will create more active sites inside the liner.

CIS glass liners straight with notch deactivated

For initial system evaluation. Recommended for splitless injection. Can be used for custom-packed liners.

- 1 package (10 units) **CIS 3 011708-010-00**
- CIS 4 011709-010-00**

CIS glass liners baffled deactivated

For cold split injections, baffles create good mixing of sample and carrier gas. For liquid injections of moderate/high boilers and for labile compounds.

- 1 package (10 units) **CIS 3 011710-010-00**
- CIS 4 011711-010-00**

CIS glass liners for SPME ID 1 mm

For SPME desorption. Due to the smaller inner diameter, the linear carrier gas velocity is increased, resulting in more efficient desorption. (For manual SPME or automated SPME using the GERSTEL MultiPurpose Sampler MPS)

- 1 package (10 units) **CIS 4 011712-010-00**

Siltek™ coated baffled liners

NEW!

For cold split injections, baffles create good mixing of sample and carrier gas. The Siltek™ coating withstands high temperatures up to 350 °C. It is also qualified for labile compounds.

- 1 package (5 units) **CIS 3 014758-005-00**
- 1 package (5 units) **CIS 4 014652-005-00**

CIS glass liners packed deactivated

with silanized glass wool

Suitable for large volume injections into the CIS. The large surface area helps retain analytes while solvent evaporates. Furthermore, the packing acts as a filter for particulates. For liquid injections of moderate/high boilers, stable compounds.

- 1 package (10 units) **CIS 3 010849-010-00**
- CIS 4 010850-010-00**

with quartz wool

Suitable for large volume injections into the CIS. The large surface area helps retain analytes while solvent evaporates. Furthermore the packing can act as a filter for particulates. More inert than glass wool. For liquid injections of difficult compounds (acidic, alkaline etc.).

- 1 package (10 units) **CIS 3 008420-010-00**
- CIS 4 007519-010-00**

with glass beads

Suitable for large volume injections into the CIS. Usage similar to the glass wool liner, but the glass beads provide a larger surface area and better retention of low boilers. The packing can also act as a filter for particulates

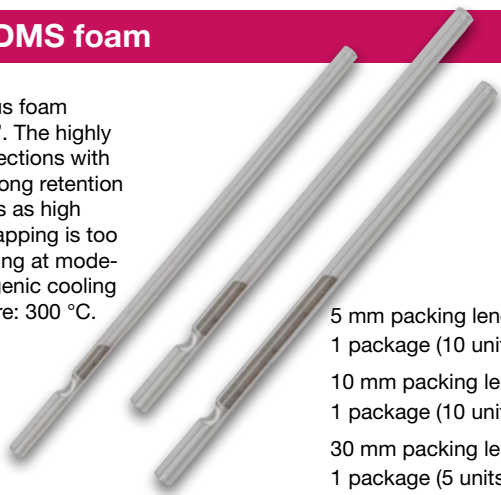
- 1 package (5 units) **CIS 4 011714-005-00**



CIS glass liners packed with PDMS foam

Polydimethylsiloxane (PDMS) is an open porous foam filling. It is suitable as a trap or "guard column". The highly inert material is well suited for large volume injections with analytes covering a wide range of volatility. Strong retention of non polar analytes. Can be used for analytes as high boiling as n-C₄₀. Ideal packing if glass wool trapping is too weak and Tenax TA™ too strong. Allows trapping at moderate temperatures, reducing the need for cryogenic cooling compared to glass wool. Maximum temperature: 300 °C. Minimum temperature -10 °C (glass transition temperature).

NEW!



- 5 mm packing length for semi volatiles
1 package (10 units) **CIS 4 014594-010-00**
- 10 mm packing length for intermediate volatiles
1 package (10 units) **CIS 4 014595-010-00**
- 30 mm packing length retains very volatile analytes
1 package (5 units) **CIS 4 014596-005-00**

with Tenax TA™

For PTV injection combined with solvent venting during large volume injections. Low affinity to methanol and water (Best water elimination at 40 °C). Usable for trapping from C₅ to C₂₆. Particularly suitable for headspace analysis.

1 package (5 units) **CIS 3 013249-005-00**
CIS 4 013247-005-00

with Carbotrap B™

For trapping of very volatile compounds in combination with large volume injections or headspace analysis.

1 package (5 units) **CIS 3 013250-005-00**
CIS 4 013248-005-00

with glass beads and Carbotrap C™

For trapping of analytes over a wide boiling point range in combination with large volume injections or headspace analysis.

1 package (5 units) **CIS 4 011716-005-00**



Adsorbent properties

Tenax TA™

Tenax TA™ is a porous material based on 2,6-diphenylene oxide polymer, with a specific surface area of 35 m²/g. The material has a low affinity for water and methanol and can be used to trap and thermally desorb compounds in the C₅-C₂₆ range. The particle size is 60/80 MESH.

Carbotrap B™

Carbotrap B™ has a mesh size of 20/40 MESH, with a specific surface area of 100 m²/g. This adsorbent is especially suited for trapping and thermally desorbing compounds in the range from C₅ to C₂₀ (depending on the structure of the molecule).

Carbotrap C™

Carbopack C™ has a mesh size of 20/40 MESH with a specific surface area of 10 m²/g. This adsorbent is especially suited for trapping and thermally desorbing compounds in the range from C₉ to C₃₀ (depending on the structure of the molecule).

PDMS

The GERSTEL PDMS foam has an open porous structure. The non polar material is very well suited for focusing non polar analytes (a distribution equilibrium occurs between the PDMS foam and the vapor phase). Maximum temperature: 300 °C! Minimum temperature: glass transition temperature -10 °C.

Quartz liners for CIS 6

straight with notch

For an initial system evaluation. Recommended for splitless injection. Can be used for custom-packed liners. Suitable for high temperature usage (up to 650 °C) with a CIS 6.

1 package (1 unit) **013238-000-00**
 1 package (5 units) **013238-005-00**

packed with quartz wool

Suitable for large volume injections into the PTV. The large surface area helps retain analytes while solvent evaporates. Furthermore the packing can act as a filter for particulates. More inert than glass wool. For liquid injections of difficult compounds (acidic, alkaline etc.). Suitable for high temperature usage (up to 650 °C) with a CIS 6.

1 package (1 unit) **013605-000-00**
 1 package (5 units) **013605-005-00**

baffled

For cold split injections, baffles create good mixing of sample and carrier gas. For liquid injections of moderate/high boilers and for labile compounds. Suitable for high temperature usage (up to 650 °C) with a CIS 6.

1 package (1 unit) **013148-000-00**
 1 package (5 units) **013148-005-00**



Important Information

GERSTEL Headspace:

For static headspace analysis we recommend a deactivated baffled liner. For splitless injection it may be necessary to refocus inside the liner. In this case liners filled with Tenax TA™, Carbotrap B™ or PDMS foam may be appropriate.

On-column injection is possible with the GERSTEL adapter kit (Order. No.: 005532-000-00 (CIS 3) or 008339-000-00 (CIS 4/6))

Maximum temperatures:

Liner type	maximum temperature
Deactivated liner	275 °C
Siltek™ coating	350 °C
Not deactivated	450 °C
Packed with Carbotrap B™	400 °C
Packed with Tenax TA™	350 °C
PDMS foam	300 °C

CIS glass liners straight with notch

For an initial system evaluation. Recommended for splitless injection. Can be used for custom-packed liners.

Warning:

liner is not deactivated. Unstable compounds may decompose.

1 package (10 units)	CIS 3 013886-010-00
	CIS 4 013881-010-00
1 package (100 units)	CIS 3 013886-100-00
	CIS 4 013881-100-00

CIS glass liners baffled

For cold split injections, baffles create good mixing of sample and carrier gas. For liquid injections of stable and unproblematic moderate/high boilers.

Warning:

liner is not deactivated. Unstable compounds may decompose. (Primary use in combination with the Automated Liner Exchange (ALEX) system)

1 package (10 units)	CIS 3 013887-010-00
	CIS 4 013882-010-00
1 package (100 units)	CIS 3 013887-100-00
	CIS 4 013882-100-00

CIS glass liners straight without notch

ID 2 mm

For special uses e.g. in combination with TDS. Enables analyte trapping on the column (For more information contact your local GERSTEL representative)

1 package (10 units)	CIS 4 013910-010-00
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CIS glass liners packed

with silanized glass wool

Suitable for large volume injections into the PTV. The large surface area helps retain analytes while solvent evaporates. Furthermore the packing can act as a filter for particulates. For liquid injections of moderate/high boilers, stable compounds.

Warning:

Glass body is not deactivated.

1 package (10 units)	CIS 3 002931-010-00
	CIS 4 014284-010-00

CIS glass liner kits

containing 2 of each of the following liner types:

Straight with notch, deactivated
Baffled, deactivated
Packed with silanized glass wool, deactivated
Packed with Tenax™
Packed with Carbotrap B™

CIS 3 013543-003-00
CIS 4 013543-004-00

CIS PDMS glass liner kits

containing 2 of each of the following liner types:

Packed with PDMS foam, 5 mm packing length
Packed with PDMS foam, 10 mm packing length
Packed with PDMS foam, 30 mm packing length

CIS 4 014601-004-00

GRAPHPACK® 3D ferrules for CIS glass liners

1 package (5 units)	CIS 3 002426-005-00
	CIS 4 007541-005-00
1 package (10 units)	CIS 3 002426-010-00
	CIS 4 007541-010-00

GRAPHPACK® 3D Kalrez™ ferrule

not for use in combination with TDU

1 package (2 units)	CIS 4 011868-002-00
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GRAPHPACK® 3D mounting tool for CIS glass liners

CIS 3 003079-000-00
CIS 4 007542-000-00



Trademarks

The following trade marks are property of the companies listed below:

Carbotrap B™, Carbotrap C™	Supelco, Inc.
Kalrez™	DuPont Dow Elastomers.
Siltek™	Restek Corporation
Tenax TA™	Buchem bv, Netherland

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