Product Information

ZU-Glas-CS-E

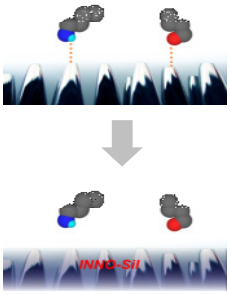
2024

from 01/01/24

Surface Treatment of Glass

Adsorption

Liquids and gases tend to adsorb on solid surfaces. While these properties are used for separation in some chromatographic techniques, adsorption effects are often undesirable. Adsorption can negatively influence the quality of a chromatogram. Peak shape and peak width can be altered and the separation power of the chromatographic system can thus be reduced. Even more problematic is irreversible adhesion of parts of the sample on the surface. This leads to insufficient reproducibility, severe quantification errors and, in the worst case, analytes are completely swallowed and disappear from the chromatogram.



Adsorption can occur anywhere where the sample comes in contact with a solid surface. This is especially true for **glass surfaces**. Polar groups of the analyte can interact with free OH groups on the glass surface, if it is not sufficiently **deactivated** by special procedures.

The Solution…

To avoid adsorption effects, we offer various types of silanization and siliconization for various applications. Such surface treatment procedures are already commonplace in the injection system of gas chromatographs (silanized liners!) and now reach the areas of sample preparation and storage. By the "sealing" of the glass surface achieved by these methods, the adsorption even of very sensitive compound classes such as pesticides, amines, phenols, steroids, proteins, and others, is significantly reduced or completely prevented. The denaturation of proteins on the glass surface can also effectively be avoided by these procedures. Finally, the wettability of the surface is reduced, so that more complete emptying of treated sample vials is possible. Accordingly, these methods provide an important contribution towards precise, reliable and reproducible analytical results.

Silanization

Glass surfaces of new liners and glass wool for GC are always deactivated by a standard procedure. This deactivation is sufficient for most applications. However, in some cases, e.g. for pesticide analysis, higher demands must be met. Choose the perfect deactivation for your analytical needs;

Sil **Standard silanization, non-polar**
This high temperature silanization process results in chemically and thermally stable, non-polar surfaces covering most free OH groups.

PM-Sil **Phenyl methyl silanization, medium polarity**
Analogous to the Sil method, but with medium polarity.

INNO-Sil **High quality silanization for the highest demands on inertness**
A new deactivation procedure developed by CS for **highest inertness of the glass surface**, prevents adsorption even for sensitive compounds such as **pesticides, amines, steroids, and phenols**.

Siliconization

Siliconization creates a durable and inert silicone protective layer on a glass surface. This effectively protects the contents of a siliconized bottle from changes through adsorption on the one hand and leaching of glass components (metal ions, alkaline substances) on the other hand. Additionally, the silicone layer decreases wetting of the glass and so facilitates complete emptying of the bottle. Therefore, siliconized bottles have long been indispensable e.g. as packaging for liquid pharmaceutical formulations.

Procedure adapted from "Siliconization with Dow Corning Medical Materials", Dow Corning Corp., Midland, USA (1983)

Acidic Surface Treatment – HCl Treatment

Glass surfaces are amphoteric; silanol groups at the surface can be either protonated or deprotonated, with the alkali content of the glass playing an important role. Depending on their pK_a values, different analytes can be adsorbed to such charged glass surfaces to varying degrees. Additionally, traces of basic compounds and metal ions can be released into the sample from the glass surface. Acid treatment of the glass reduces the number of basic groups on the surface, which is especially advantageous

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Surface Treatment of Glass – Sample Order Form 01/2043

Customer Address (Stamp):

_____

_____

_____

Cust. No.: _____

Contact: _____

Order No.: _____

Pricing Silanized, Siliconized, and HCl Treated Vials

Complete price list refer to catalogue, pages 8

Vial Size	Volume	Price Vial	Fee -Sil -HCl	Fee -PM-Sil	Fee -INNO-Sil	Fee -Silikonisierung
Crimp Top 11 mm	up to 2 ml	cf. price list	13,90	15,00	16,10	--
Crimp Top 13 mm	up to 2.5 ml	cf. price list	17,70	18,80	19,90	--
Crimp Top 20 mm	5 ml	cf. price list	22,10	23,20	24,30	88,30
Crimp Top 20 mm	10 ml	cf. price list	26,50	27,60	28,70	99,30
Crimp Top 20 mm	20 ml	cf. price list	44,20	46,40	48,60	110,30
Crimp Top 20 mm	50 ml	cf. price list	110,30	115,80	121,30	132,40
Screw Top 8 mm	up to 2 ml	cf. price list	13,90	15,00	16,10	55,20
Screw Top 9 mm	up to 2 ml	cf. price list	13,90	15,00	16,10	55,20
Screw Top 13 mm	up to 4 ml	cf. price list	19,90	21,00	22,10	77,20
Screw Top 18 mm	5 ml	cf. price list	22,10	23,20	24,30	88,20
Screw Top 15 mm	8 - 12 ml	cf. price list	26,50	27,60	28,70	99,30
Screw Top 18 mm	10 ml	cf. price list	26,50	27,60	28,70	99,30
Screw Top 18 mm	16 ml	cf. price list	39,70	41,90	44,20	104,80
Screw Top 18 mm	20 ml	cf. price list	44,20	46,40	48,60	110,30
Screw Top 20 mm	24 ml	cf. price list	53,00	55,20	57,40	121,30
Screw Top 24 mm	20 ml	cf. price list	44,20	46,40	48,60	110,30

Sample Ordering for Surface Treated Glass Vials

P/N	Description	Sil	PM-Sil	INNO-Sil	Siliconized	HCl Treated

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