

Preventing Septum Problems

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- Avoid extraneous peaks with proper septum handling & maintenance.
- Handy size chart & septum choice guidelines.
- Optimize performance by choosing the right septum for the job.

All septa, regardless of their composition, puncturability, or resistance to thermal degradation, will be a source of problems if they are mis-handled or used inappropriately. Poor septum choice and improper treatment can significantly compromise both qualitative and quantitative analytical results. Proper septum choice and careful handling can minimize septum bleed and septum coring, two of the most common septum problems that affect chromatography.

Septum bleed occurs when volatiles from the septum (e.g., silicone oils, phthalates) enter the column and then elute, creating elevated baselines (for isothermal analyses), baseline disturbances, or extraneous (but consistent) peaks in the chromatogram. Either baseline rise or extraneous peaks can interfere with identification and quantification of target analytes. This problem is prevalent in temperature-programmed analyses, because the septum volatiles collect on the column during the oven cool-down and initial hold periods.

To avoid septum bleed, either condition your septum prior to running your analysis, or use a pre-conditioned septum that is ready for immediate use. All Restek septa are preconditioned and ready to use. Allowing the septum to condition at operating temperatures for a few hours is an excellent way to assure optimum performance. Also always use clean forceps or wear clean powderless latex gloves, or cotton gloves when handling septa. Do not handle them with bare fingers or with powdered latex gloves since contaminants such as finger oils, perfumes, make-up, fingernail polish, skin creams, hand soaps, and talcum can be absorbed into the septum and bleed out during analysis.

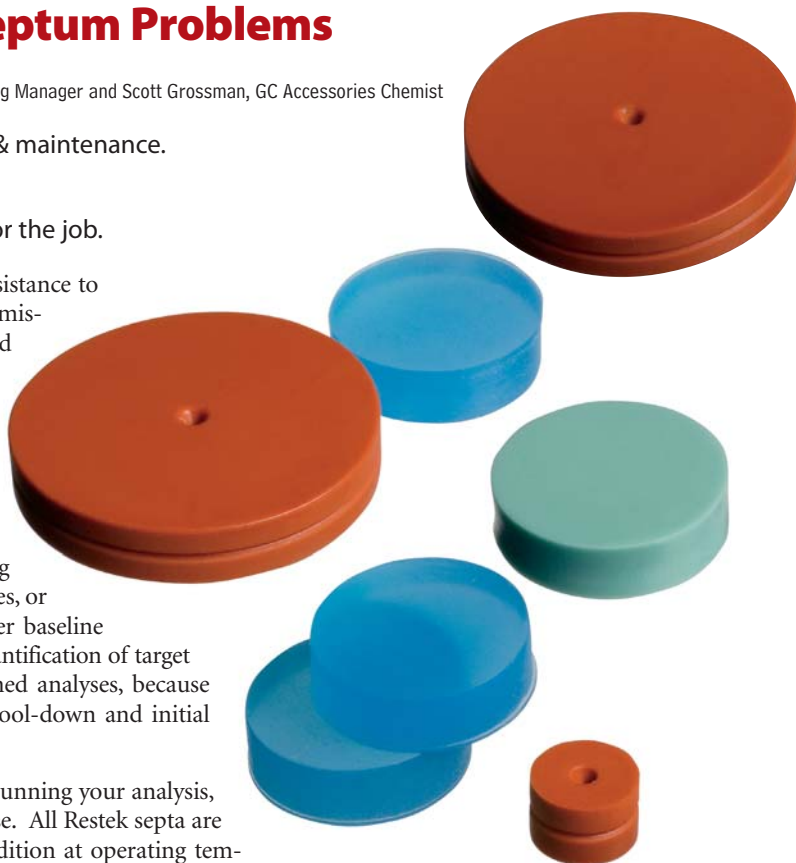
Septum coring is another common problem that can diminish chromatographic performance. Coring occurs when the septum has been punctured too many times, the needle is damaged, or the wrong needle tip type is used. In these cases, small particles may be cored from the body of the septum and fall into the inlet liner. Once in the liner, they are subjected to higher temperatures, causing the release of septum volatiles which are swept into the column and can appear on the chromatogram (see "How Hot is Your Septum?" on page 22).

To prevent septum coring, always follow the septum and instrument manufacturers' installation recommendations and take care not to over-tighten the septum nut. Over-tightening the septum nut invariably reduces septum lifetime by increasing coring and splitting. Routinely replacing your septum and inspecting your syringe needle (manual or autosampler) for tip damage also help prevent septum damage.

Softer septa, such as Ice-Blue™ septa, are less likely to core than firmer septa. However, softer septa usually have a lower maximum operating temperature than firmer septa, so consider your method requirements carefully before deciding to switch. Changing syringe needle styles also can help reduce coring. For example, a point-style #2 needle (beveled point) is much more likely to cause coring (especially when the tip has become bent or dull) than a point-style #5 needle (conical needle with side-port).

A septum that can be penetrated cleanly and easily by the needle is less prone to coring and has a longer life. Moreover, consistent injections made through such a septum help ensure accurate results. The soft silicone rubber from which all Restek septa are manufactured is specially formulated for chromatographic performance, which ensures our septa are easy to puncture. However, in cases in which a small degree of pliability is sacrificed for high-temperature optimization, the CenterGuide™ dimple will help guide the syringe, for clean, consistent injections, minimizing septum coring.

Careful consideration of instrument and method requirements should dictate your septum choice, but proper handling and maintenance are the keys to minimizing septum damage and maximizing the accuracy of your analyses. Restek offers septa for all major brands of gas chromatographs and injectors. Use our handy septum size chart to determine the septum diameter for your instrument or contact us at **1-800-356-1688 (ext. 4)** to discuss your application.



Restek Septa

- Precision molding assures consistent, accurate fit.
- Ready to use
- Do not adhere to hot metal surfaces.
- Packaged in non-contaminating glass jars.

Septum Diameter	25-pk.	50-pk.	100-pk.
Thermolite® Septa			
5mm (3/16")	27120	27121	27122
6mm (1/4")	27123	27124	27125
7mm	27126	27127	27128
8mm	27129	27130	27131
9mm	27132	27133	27134
9.5mm (3/8")	27135	27136	27137
10mm	27138	27139	27140
11mm (7/16")	27141	27142	27143
11.5mm	27144	27145	27146
12.5mm (1/2")	27147	27148	27149
17mm	27150	27151	27152
Shimadzu Plug	27153	27154	27155
IceBlue™ Septa			
9mm		27156	27157
9.5mm (3/8")		27158	27159
10mm		27160	27161
11mm (7/16")		27162	27163
11.5mm		27164	27165
12.5mm (1/2")		27166	27167
17mm		27168	27169
Shimadzu Plug		27170	27171
BTO® Septa			
5mm CenterGuide™		27100	27101
6mm (1/4")		27102	27103
9mm CenterGuide™		27104	27105
9.5mm (3/8")		27106	27107
10mm		27108	27109
11mm (7/16") CenterGuide™		27110	27111
11.5mm CenterGuide™		27112	27113
12.5mm (1/2") CenterGuide™		27114	27115
17mm CenterGuide™		27116	27117
Shimadzu Plug		27118	27119



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HANDY septum size chart

Instrument	Septum Diameter (mm)	Instrument	Septum Diameter (mm)
Agilent (HP)		Pye/Unicam	
5880A, 5890, 6890, 6850, PTV	11	All models	7
5700, 5880	9.5/10	Shimadzu	
On-Column Injection	5	All models	Plug
Thermo Scientific		SRI	
TRACE™ GC	17	All models	Plug
GQC w/TRACE™, PTV	17	Tracor	
8000 series	17	54011.5	
Finnigan (TMQ)		550,560	9.5
GC 9001	9.5	220,222	12.5
GQC9.5		Varian	
QCQ™9.5		Injector type:	
TRACE™ 2000	9.5	Packed column	9.5/10
Gow-Mac		Split/splitless	
6890 series	11	1078/1079	10/11
All other models	9.5	1177 9	
PerkinElmer		1075/1077	11
Sigma series	11		
900,990	11		
8000 series	11		
Auto SYS™	11		
Auto SYS™ XL	11		

