thermoscientific

Selection Guide for GC Consumables

GC Syringes

Syringe selection by needle tip style

Needle Tip Style	Features / Applications
Cone (Tapered tip)	Most versatile needle for autosampler use and resist coring of vial and inlet septa
Bevel (Sharp tip)	Typically used for manual injections. The tip shape helps reduce septa coring
Side Hole (Dome tip with a side hole for sample exit)	Usually used for headspace and large volume injections
Blunt End or 90° (flat top)	Used for injectors that do not contain an inlet septa
Dual Gauge	Narrow gauge part suitable for megabore on-column injection. Wider part suitable for autosampler use

Syringe selection by needle gauge size

- Gauge is a measure of the "thickness" of the needle
- The higher the gauge number, the thinner the needle e.g. a 23 gauge is thicker than a 26 gauge
- Suffix "s" e.g. 23s refers to a needle with a narrower internal diameter
- For on-column injection ensure that the column id is greater than the needle gauge

GC Liners

Liners are used as a vessel in which the injected liquid sample is vaporized into the gaseous state and then passed into the GC column.

Injection Method	Liner Requirements	Benefits
Split thermosoleratio 4534/256-U thermosoleratio 4534/256-U	 Typically openended Large surface area and volume Design to aid vaporization and mixing Low activity 	 High concentrated samples Less sample matrix into GC column High efficiency for capillary GC
Splitless thermoscientic 4534/825 gr thermoscientic 4534/825 gr	Typically taperedSmall volume to aid transferLow activity	Low concentrated samples or trace level analysis
PTV	 Small to aid sample transfer Good thermal properties for rapid heating & cooling 	 Most versatile injection including Split, Splitless, On-Column, Large Volume Broad boiling range

Vials and Closures

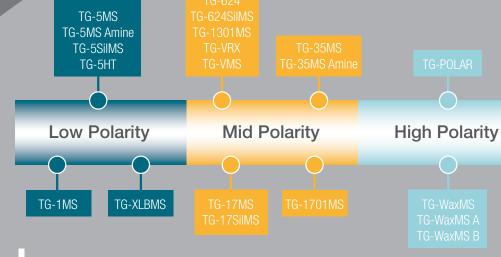
Nature of Sample	Vial Type Recommended		
Routine samples	Clear glass (with or without patch) as SureStop 9 mm screw thread or 11 mm crimp vial		
Light sensitive Amber glass (with or without patch) as SureStop 9 mm s samples thread or 11 mm crimp vial			
Low volume samples	Micro-Inserts or Microsampling and High Recovery vials with fixed inserts or reduced internal volume		
Trace levels	Thermo Scientific™ Chromacol™ GOLD Inert glass vials, silanized glass and/or Certified Kits		
Ultra Trace MS analysis	MSCERT kits: The first low particle, low background chromatography vials, pre-cleaned to provide unmatched consistency; tested and certified for up to 15 critical physical characteristics affecting vial performance for mass spectrometry		

A benefit of the **AVCS** closures together with **Thermo Scientific™ SureStop™** vials is to provide a "crimped-like" product tightness and reliable quantification even for low boiling compounds; you remove the subjectivity of "is it tight enough/is it too tight?" When the cap stops, it is right!

GC Septa

Material Max Operating Temperature		Key Features	
вто	400 °C (330 °C for 17 mm size)	Low bleed	
TR-Green	350 °C	Long lifetime	
Marathon 350 °C		High mechanical durability	
TR-Blue	200–250 °C	Easy to penetrate, for routine applications	

Used to isolate sample flow path from the outside world. Must be easily penetrated by the injector needle, whilst maintaining internal pressure.



GC Ferrules

Material	Uses	Advantages	Limitations	
100% Graphite	FID, NPD, high temperature	Easy-to-use stable sealHigher temperature limitCan be easily removedCan be re-used	 Not for MS or oxygen-sensitive detectors Soft, easily deformed or destroyed Possible system contamination 	
85% Vespel / 15% Graphite	MS and oxygen- sensitive detectors	Long lifetimeHigh temperature limitMS compatible	Cannot be re-usedMust be re-tightened after initial temperature cycles	
SilTite™ Metal	MS and oxygen- sensitive detectors	Long lifetimeHigh temperature limitMS compatible	Cannot be re-used	

Used to seal the connection of the column or liner to the system

GC Columns

Column Borometer	Parameters Affecting Resolution		Resolution	Daufaymanaa Changaa
Column Parameter	Efficiency	Retention	Selectivity	Performance Changes
Column Length (m)	/			Doubling column length increases resolution by ~ 40%
Internal Diameter (mm)	/	/		The smaller the column I.D., the greater the efficiency and better the resolution
Film Thickness (µm)		/		The thicker the film, the greater the retention e.g. ideal for highly volatile compounds. The thinner the film, the sharper the peaks and lower the bleed
Stationary Phase Chemistry			/	Altering the stationary phase can affect elution order and help separate closely, or co-eluting peaks

For application specific GC columns visit thermofisher.com/GCcolumns

Thermo Scientific™ GC consumables are available for both Thermo Scientific and Agilent™ instruments.

For application specific GC columns visit





