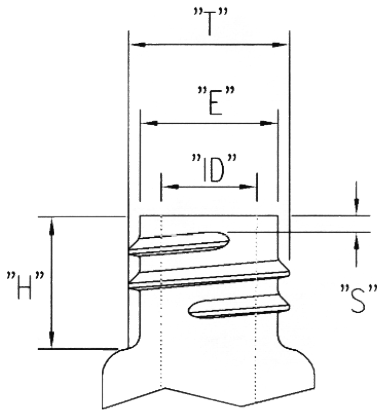


## Technical Information

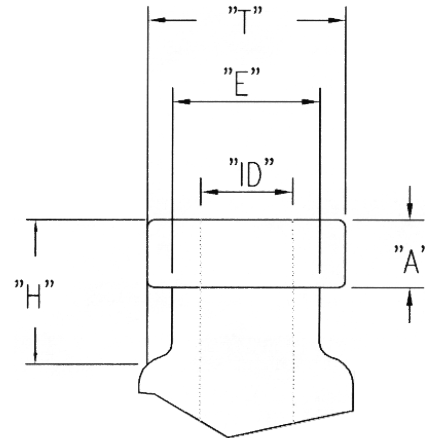
### Vial Finish Specifications



#### Standard Screw Thread Finish

##### Definitions

- "T" = Outer diameter of the thread
- "E" = Inside diameter of the thread
- "ID" = Inside diameter
- "S" = Start of thread
- "H" = Distance from top of finish to shoulder for closure clearance



#### Standard Crimp Seal Finish

##### Definitions

- "T" = Outer diameter of the thread
- "E" = Crimp tool and robotic arm clearance
- "ID" = Inside diameter
- "S" = Crimp seal thickness
- "H" = Distance from top of finish to shoulder for crimp and robotic arm clearance

### Screw Thread Finishes

**GPI** refers to the "Glass Packaging Institute."

The GPI is responsible for establishing and issuing standards for the types and finishes produced by American glass manufacturers.

For example, an 8-425 neck finish is approximately 8mm in diameter across the outside of the threads.

The 425 represents the finish (style of thread).

Typical **GPI** finishes found in the chromatography field are as follows:

8-425 Closure - Varian, Shimadzu

10-425 Closure - Waters Alliance 2690

13-425 Closure - Waters 48 position WISP™, Shimadzu

*Note: 9mm thread finish does not appear in the GPI finishes. It is not a standard finish. The 9mm closure and vial are used with Agilent equipment.*

### Glass Technical Information

#### Terminology

**Borosilicate** - A glass that is high in silicate and having at least 5% boron oxide.

**Linear Coefficient of Expansion** - Fractional change in length of glass per degree change in temperature.

**Strain Point** - Maximum temperature to which glass should be heated during use.

#### Types of Glass

**USP Type** - Pharmaceutical glass containers can be classified as USP Type I, II, III or NP.

**Type I** - Borosilicate glass represents the least reactive glass. Type I glass has the least pH shift. (Lowest leaching characteristics)

*Coefficient of Expansion* = 33 or 51 for Clear and 51 for Amber

**Type II** - is de-alkalized soda lime glass with higher levels of sodium hydroxide and calcium oxide.

**Type III** - soda lime glass - cannot be autoclaved.

**Type NP** - general purpose soda-lime glass used where chemical durability and heat shock are not factors.

*Coefficient of Expansion* = 92

# Technical Information

Ions	Type I Clear (33)	Type I Amber (51)
Na	0.3-0.5	0.4-1.4
K	ND*	ND-0.02
Ca	ND	ND-0.1
Mg	ND	ND
Al	ND	ND-0.5
Fe	ND	ND
Ba	ND	ND-0.2
Zn	ND	
Mn	ND	ND
Si	ND	ND-5

Results in µg/mL

\*Non detectable

Color	Clear	Amber
Linear Coefficient of Expansion	33	51
Strain Point (Degrees Celsius)	515	535
USP Class Type	Type 1	Type 1
Light Protection	No	Yes

## PLASTIC PROPERTIES

Type of Plastic	LDPE	HDPE	PP	PMP	PS
Max. use temperature, C/F	80°C/176°F	120°C/248°F	135°C/275°F	175°C/347°F	90°C/194°F
Transparency	Translucent	Translucent	Translucent	Clear	Clear
Sterilization					
Autoclaving	No	No	Yes	Yes	No
Disinfectants	Yes	Yes	Yes	Yes	No
Dry Heat	No	No	No	Yes	No
Radiation	Yes	Yes	No*	No	Yes
Specific Gravity	0.92	0.95	0.90	0.83	1.05
Flexibility**	Good	Rigid	Rigid	Rigid	Rigid

Note: Chart is general guideline only.

PP\* = Some radiation resistant polypropylene resins available.

\*\*Flexibility = Depends on thickness.

## SEPTA SELECTION GUIDE

Materials	Compatibility	Incompatibility	Resealability
Silicone	Alcohols, acetone, ether, DMF, DMSO	ACN, THF, chloroform, pyridine, benzene, toluene, hexane, heptane	VERY GOOD
PTFE / Silicone PFTE / Silicone / PTFE	PTFE resistance until punctured then septa or liner will have silicone compatibility		VERY GOOD VERY GOOD
Rubber (Natural Butyl)	ACN, Acetone, DMF, alcohols Diethylamine, DMSO, Phenol	Chlorinated solvents, aromatics, hydrocarbons, carbon disulfide	EXCELLENT
Natural PTFE / Natural Rubber Butyl PTFE / Butyl	PTFE resistance until punctured then septa or liner will have rubber compatibility		VERY GOOD VERY GOOD
Viton®	Chlorinated solvents, benzene, toluene, alcohols, hexane, heptane	DME, DMSO, ACN, THF, pyridine dioxidane, methanol, acetone	VERY GOOD