

## Septum Selection Guide

### Septa for use with general chromatography vials

#### PTFE/Red Rubber Septa: (PTFE/RR)

PTFE/Red Rubber septa are the most popular and economical choice for general GC applications. Used primarily for routine analysis in gas chromatography with FID, TCD and FPD detectors, PTFE/Red Rubber septa offer moderate resealability and excellent chemical inertness before puncture. The low durometer of red rubber allows for easy needle penetration even with thin bore GC needles. PTFE/Red Rubber septa are not recommended for multiple injections or retention of samples for further analysis.

**NOTE:** C4000-30 and C4000-51 Series feature high-quality red rubber with a thin 0.003" layer of PTFE. C4011-1A, C40911-98 Series, C4011-51 Series, C4008-1A Series, and C4008-98 Series feature high-quality medium durometer red rubber with a thin (0.015") layer of PTFE.

#### Seal 2000®: PTFE/High Performance Red Rubber

Seal 2000 is a highly pure, PTFE/synthetic red rubber septum that provides a reduced background level for specific GC applications, employing sensitive detectors such as ECD or NPD. Seal 2000 has resealing characteristics similar to PTFE/Red Rubber and is pre-inserted into an aluminum seal.

#### PTFE/Silicone Septa: (T/S)

High-quality, pure silicone is laminated to 0.005" thick PTFE for a pure, greatly inert septum with excellent resealing characteristics even after repeated punctures. PTFE/Silicone septa are ideal for use in most HPLC applications and GC applications where resealability and purity are critical.

#### PTFE/Silicone/PTFE Septa: (T/S/T)

A layer of 0.003" thick PTFE is laminated to each side of high-purity, medium durometer silicone to form a septum that is resistant to coring, but still maintains good resealing characteristics. T/S/T septa are recommended for the most critical applications such as ultratrace analysis, where there is a longer time between injections, or for internal standard methods. T/S/T septa provide superior performance with Agilent 1050, 1090, 1100, or any autosampler employing a large diameter, blunt-tip needle.

#### PTFE Septa

A solid disk of 0.010" thick PTFE offers superior chemical inertness against the most aggressive solvents. The thin membrane allows for easy penetration by most needles. PTFE septa are not resealable and should be used with relatively short cycle times and single injection methods.

#### Pre-slit PTFE/Red Rubber Septa:

A PTFE/Red Rubber septum is comprised of a thin 0.003" PTFE layer laminated to standard red rubber, and slit through the center for easier needle penetration and to release the vacuum that forms when a large volume of sample is withdrawn from a vial. This septum provides chromatographic characteristics similar to that of a septum without a slit, except that the ability to withstand exposure to aggressive solvents is slightly lessened.

#### Pre-slit PTFE/Silicone Septa:

A PTFE/Silicone septum is provided with a thin 0.005" PTFE layer laminated to highly pure silicone, and slit through the center for easier needle penetration and to release the vacuum that forms when a large volume of sample is withdrawn from a vial. This septum provides chromatographic characteristics similar to that of a septum without a slit, except that the ability to withstand exposure to aggressive solvents is slightly lessened. Pre-slit septa are highly recommended for Shimadzu®, Hitachi®, and other autosamplers with thin gauge needles.

#### Polyethylene (PE) Septa:

Chemically resistant polyethylene septa are usually molded into single-piece caps. The surface for needle penetration is 0.01" thick, allowing for use with thin gauge needles. Polyethylene septa are not resealable and are intended for single use.

#### Polypropylene (PP) Septa:

Chemically resistant polypropylene septa are available molded into single piece caps or as 0.01" thick disks. The surface for needle penetration is 0.01" thick, allowing for use with thin gauge needles. Polypropylene septa are not resealable and are intended for single use.

#### Viton® Septa:

Viton offers the maximum chemical resistance for a wide variety of solvents. Viton has limited resealing capacity and should not be used for applications requiring multiple injections with long run times. Viton septa are highly recommended for use with chlorinated solvents. Due to its intrinsic hardness, Viton septa are not suitable for use with 32 gauge needles.

### 20mm Headspace Septa

#### Gray Butyl Stopper: (C4020-30)

An economical septum for lower temperature (125°C) or low-pressure applications. Gray Butyl stoppers do not provide a PTFE barrier and are not suitable for use with alkanes, benzene, chlorinated solvents or cyclohexane.

#### Ivory PTFE/Red Rubber Septa: (C4020-34)

Good solvent resistance, good resealing characteristics, resistant to coring, and feature an operating temperature range of -40° to +100°C. An economical choice where a PTFE barrier is desired.

#### PTFE/White Silicone PurePak™ Septa: (C4020-32)

Excellent choice for volatiles. Septa are packed in a glass PurePak jar to assure low background, low permeability, and the highest performance of any headspace septum. PTFE/Silicone septa provide excellent resealing characteristics and broad chemical compatibility. The recommended operating temperature range is -60° to +200°C.

#### Gray PTFE/Molded Black Butyl Septa: (C4020-36)

C4020-36 is a molded septum featuring a PTFE-faced center surface that does not extend to the edges of the septum. The PTFE center area provides good resistance to a wide variety of solvents. The center puncture area is resistant to coring and will reseal after several punctures. The black butyl outer sealing edge conforms well to the rim of the vial affecting a more positive seal. The operating temperature range for this septum is -20° to +125°C.

#### Black Rubber Septa: (C4020-40)

Black Rubber septa are molded from a higher density rubber compound compared to the standard red rubber. This septum has characteristics similar to the Gray Butyl stopper with a slightly smaller temperature range of -20° to +100°C. The Black Rubber septum is an economical choice for applications where reduced levels of vapor penetration are desired.

#### Aluminum Foil/Silicone (High Temperature Septum): (C4020-37)

Aluminum backing on this septum provides an effective vapor barrier along with high temperature compatibility. The silicone layer is highly resealable and stable at high temperatures. The operating temperature range for this septum is -60° to +220°C.