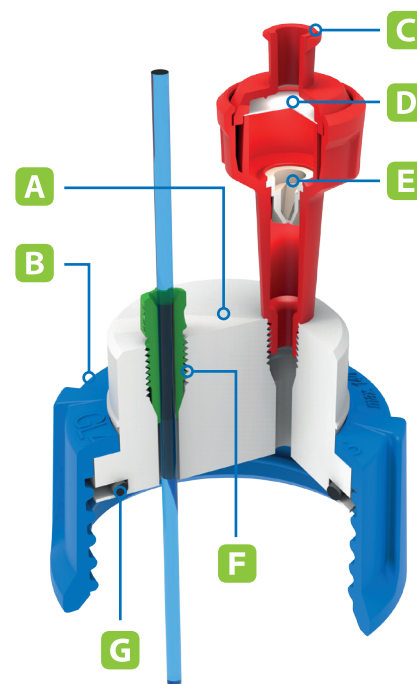


# Material Data Sheet

## S.C.A.T. SafetyCaps 2.0



<b>Product Group</b>	SafetyCaps for HPLC solvent supply, Generation 2.0
<b>Intended use / basic function</b>	Blocking solvent vapours during solvent supply to HPLC / UHPLC instruments, prevention of contamination and underpressure.
<b>Cap / bottle size(s)</b>	GL 45
<b>Max. flow rate (air valve)</b>	≤ 400 ml / min (suitable for preparative applications)
<b>Pore size (air valve)</b>	1 µm
<b>Tubing connector type</b>	One-piece fitting with integrated ferrule
<b>Tubing connector sizes</b>	1.6 / 2.3 / 3.2 / 4.76 / 6.35 mm OD tubing (depending on model)
<b>Number of tubing connectors</b>	1 / 2 / 3 / 4 / 6 (depending on model)



A Body: PTFE premium grade - medical grade		Test method
<b>Color</b>	White	-
<b>Specific gravity</b>	2.130 - 2.190 g/cm <sup>3</sup>	ASTM D 792
<b>Water absorption</b>	0.01 %	ASTM D 570
<b>Flammability</b>	V-0	UL 94
<b>Tensile strength</b>	≥ 25 MPa	ASTM D 4894
<b>Elongation</b>	≥ 280 %	ASTM D 4894
<b>Hardness</b>	≥ 54 Shore D	ASTM D 2240
<b>Ball hardness</b>	≥ 23 MPa	ASTM D 785
<b>Compression strength at 1% deformation</b>	≥ 4 MPa	ASTM D 695
<b>Deformation under load (140 kg/cm<sup>2</sup> for 24 hrs. at 23°C)</b>	10 - 13 %	ASTM D 621
<b>Permanent deformation (after 24 hrs. relaxation at 23°C)</b>	6 - 7.5 %	ASTM D 621
<b>Coefficient of static friction</b>	0.08 - 0.10	ASTM D 1894
<b>Coefficient of dynamic friction</b>	0.06 - 0.08	ASTM D 1894
<b>Wear factor K</b>	2,900	ASTM D 3702
<b>Wear coefficient</b>	20,000 - 25,000 cm <sup>3</sup> min 10-8 kg m h	
<b>Thermal conductivity</b>	0.34 W/m·k	ASTM C 177
<b>Coefficient of linear thermal expansion from 25 to 100 °C</b>	12 - 15 10 <sup>-5</sup> / °C	ASTM D 696
<b>Dielectric strength</b>	≥ 30 kV/mm	ASTM D 149
<b>Volume resistivity</b>	10 <sup>18</sup> Ohm·cm	ASTM D 257
<b>Surface resistivity</b>	10 <sup>17</sup> Ohm	ASTM D 257

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**Legal Information**  
Registered Office: 64546 Mörfelden-Walldorf  
District Court: Darmstadt  
Comm. Register: HRB 55045  
Managing Director: Peter Rebehm  
VAT-ID-No.: DE 227617033

### Statement on suitability for contact with foodstuff

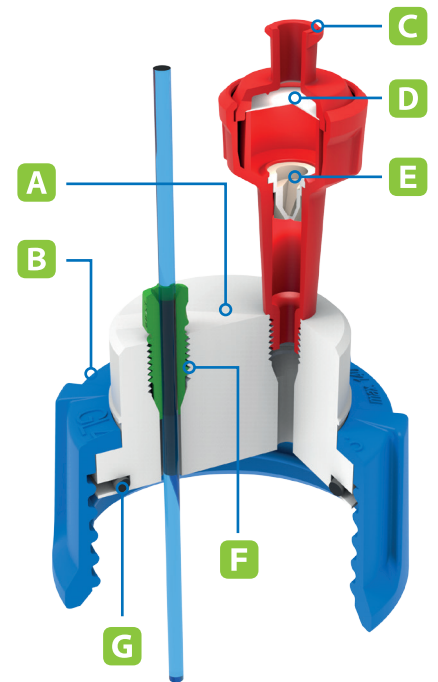
#### FDA approved US regulation

Code of federal regulation 21 CFR Ch.1; section 177.1550 Perfluorocarbon Resins of the Food and Drug Administration/US.

#### EU Regulation

EU 1935/2004 - 10/2011 on plastic materials and articles to come in contact with food.

B Screw Cap: Polyphenylensulfide (PPS)		Test method
E-Module (bending test)	13,500 MPa	ISO 178
Bending strength	260 MPa	ISO 178
Strain of the outer fibre (maximum load)	2.2 %	ISO 178
E-Module (tension test)	15,000 MPa	ISO 527
Breaking resistance (tension test)	190 MPa	ISO 527
Breaking elongation (tension test)	1.7 %	ISO 527
Izod impact resistance 1U	50 kJ/m <sup>2</sup>	ISO 180 / 1U
Impact resistance 1eU	55 kJ/m <sup>2</sup>	ISO 179 / 1eU
Impact resistance 1eU -30°C	52 kJ/m <sup>2</sup>	ISO 179 / 1eU
HDT / A (1,8 MPa)	270 °C	ISO 75-1/-2
Melting temperature (DSC)	280 °C	ISO 11357
Density	1.650 kg/m <sup>3</sup>	ISO 1183
Flammability, 0.75 mm	V-0	UL 94
Yellow card available	Yes	-
C Valve Housing: Polypropylene (PP)		Test method
Melt flow rate (MFR) at 230 °C and 2.16 kg	10.5 g/10 min	ASTM D 1238
Density	905 kg/m <sup>3</sup>	ASTM D 792
Molecular weight distribution	Broad	-
Isotacticity	Medium	-
Anti block agent	No	-
Slip agent	No	-
Tensile test: stress at yield	36 MPa	ASTM D 638
Tensile test: strain at yield	9 %	ASTM D 638
Tensile test: secant modulus at 1% elongation	1,800 MPa	ASTM D 638
Vicat softening temperature at 10 N (VST/A)	154 °C	ASTM D 1525
Vicat softening temperature at 50 N (VST/B)	95 °C	ASTM D 1525



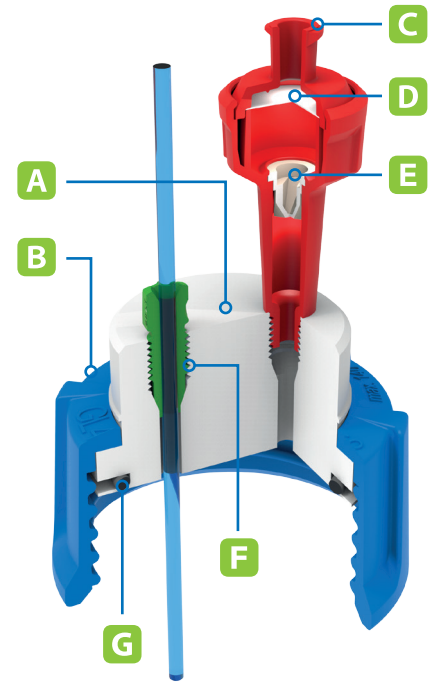
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D Valve Membrane: PTFE, virginal, porous	
Material characteristics	<ul style="list-style-type: none"> <li>• Symmetric, porous structure</li> <li>• Hydrophobic on both sides</li> <li>• Free of PFOA</li> <li>• Free of heavy metals</li> <li>• Free of animal substances</li> </ul>
Colour	white
Pore size	1 µm
Typical water inlet pressure (WIP)	> 0.4 bar
Temperature resistance	-200 to 250 °C
Chemical resistance	Almost universal
Conformity	<ul style="list-style-type: none"> <li>• Protection class IP68</li> <li>• ISO 16750-5:2010</li> <li>• Directive 2000/53/EG</li> <li>• Directive 10/2011/EG on plastic materials and articles to come in contact with food (Implementation in Germany by BedGgstV), supplemented by directives 2011/8/EG, 2007/19/EG and 2002/72/EG</li> <li>• Directive 2002/95/EG on the restriction of the use of certain hazardous substances in electrical and electronic equipment</li> <li>• Directive 2003/11/EG relating to restrictions on the marketing and use of certain dangerous substances and preparations</li> </ul>



E Valve Flap: Silicone VMQ	
Colour	white
Hardness (Shore A)	50
Max. flow rate	400 ml / min
Sterilisation resistance	ETO, Gamma, Steam
Cv	0.08
Max. back pressure	300 kPa
Opening pressure	0.5 kPa
Conformity	ISO 109993, USP class VI, BGW

F Tube Fitting: Teflon™ PFA 340		Test method
Melt flow rate	14 g/10 min	ASTM D 3307 / ISO 12086
Melting point	305 °C	ASTM D 4591
Specific gravity	2.15	ASTM D 792
Critical shear rate, 372 °C	50 1/s	-
Tensile strength: 23 °C	25 MPa	ASTM D 3307 / ISO 12086
Tensile strength: 250 °C	12 MPa	ASTM D 3307 / ISO 12086
Ultimate elongation: 23 °C	300 %	ASTM D 3307 / ISO 12086

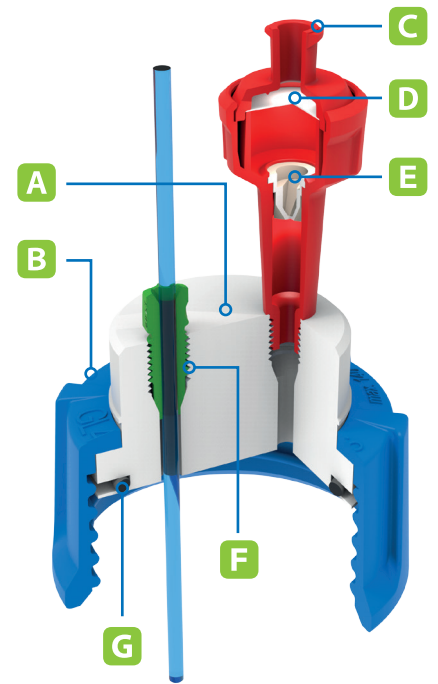
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Ultimate elongation: 250 °C	480 %	ASTM D 3307 / ISO 12086
Flexural modulus: 23 °C	590 MPa	ASTM D 790 / ISO 178
Flexural modulus: 250 °C	55 MPa	ASTM D 790 / ISO 178
MIT folding endurance (0,20 mm, 8 mil film)	15,000 cycles	ASTM D 2176
Hardness durometer	D55	ASTM D 2240 / ISO 868
Dielectric strength, short time, 0,25 mm (0,010 in)	80 kV/mm	ASTM D 149 / IEC 243
Dielectric constant, 1 MHz (10 <sup>6</sup> Hz)	2,03	ASTM D 150 / IEC 250
Dissipation factor, 1 MHz (10 <sup>6</sup> Hz)	< 0.0002	ASTM D 150 / IEC 250
Volume resistivity	10 <sup>18</sup> Ohm·cm	ASTM D 257 / ISO 1325
Water absorption, 24 hr	< 0,03 %	ASTM D 570
Weather and chemical resistance	Outstanding	-
Limiting oxygen index	> 95	ASTM D 2863 / ISO 4589
Continuous service temperature	260 °C	-
Flammability	V-0	UL 94



G	Cap Seal: VITON (FPM)	Test method
Colour	Black	-
Hardness	73 - 77 Shore A	ASTM D 2240
Operating temperature (air)	-20 to 200 °C	-
Density	1.85 - 1.98 g/cm <sup>3</sup>	-
Tensile strength	12 - 14.86 MPa	ASTM D 412
Elongation at break	175 - 216 %	ASTM D 412
Compression strain 22 h / 200 °C	11 - 12 %	ASTM D 395

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