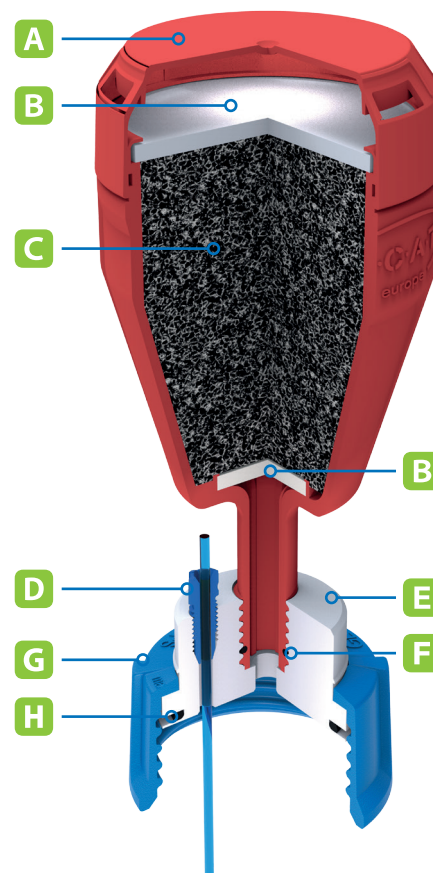


# Material Data Sheet

## S.C.A.T. SafetyWasteCaps 2.0



<b>Product Group</b>	SafetyWasteCaps for HPLC solvent waste, generation 2.0
<b>Intended use / basic function</b>	Blocking solvent vapours from HPLC / UHPLC waste containers, prevention of overpressure within the container
<b>Cap / bottle size(s)</b>	GL 45
<b>Tubing connector type</b>	One-piece fitting with integrated ferrule for capillaries, 6.4 - 9 mm OD connector for tubes
<b>Tubing connector sizes</b>	1.6 / 2.3 / 3.2 mm OD tubing, 6.4 - 9 mm ID tubing (depending on model)
<b>Number of tubing connectors</b>	depending on model



A Exhaust Filter: Body (PP)		Test method
<b>Polymer Properties</b>		
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
Flammability	V-0	UL 94
Molecular weight distribution	Broad	-
Isotacticity	Medium	-
<b>Formulation</b>		
Anti block agent	No	-
Slip agent	No	-
<b>Mechanical properties (Tensile test)</b>		
Stress at yield (speed of testing: 50 mm/min)	36 MPa	ASTM D 638
Strain at yield (speed of testing: 1 mm/min)	9 %	ASTM D 638
Secant modulus a 1% elongation (speed of testing : 1 mm/min)	1,800 MPa	ASTM D 638
<b>Thermal properties (Vicat softening temperature)</b>		
At 10 N (VST/A) at temperature rate 120°C/h	154 °C	ASTM D 1525
At 50 N (VST/A) at temperature rate 120°C/h	95 °C	ASTM D 1525
<b>B Exhaust Filter: Filter Membrane + Pre-Filter (HDPE / UHMWPE)</b>		
Operating temperature	70 °C	-
Pore size	80 µm	-
Filter fineness	up to < 1 µm	-
Filter classes	Class M	DIN EN 60335
	Class H 10	EN 1822
Conformities	FDA, VO 10/2011/EU	



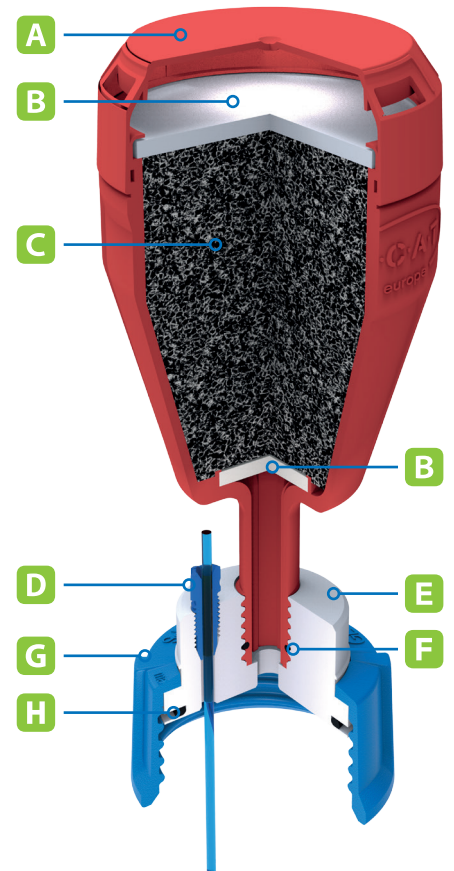
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C Exhaust Filter: Filling (Active Carbon)		Test method
Bulk density	410 ± 30kg/m <sup>3</sup>	ASTM D 2854
Specific humidity (% of weight)	< 5%	ASTM D 2867
Benzene absorption (% of weight) out of air at 20°C	<b>p/p<sub>s</sub>* = relative saturation (saturation concentration at 20°C, 320 g/m<sup>3</sup>)</b>	<b>Value</b>
	0.9	45 ± 2%
	0.1	36 ± 2%
	0.01	28 ± 2%
	0.001	17 ± 2%
Inner specific surface	1,200 m <sup>2</sup> /g	DIN ISO 9277
Particle diameter	2 - 4 mm	ASTM D 2862
Ash content (% of weight)	< 10 %	ASTM D 2866
CCl <sub>4</sub> -absorption (% of weight)	70 %	ASTM D 5742
Ball pan hardness (% of weight)	98 - 99 %	ASTM D 3802
D 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
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



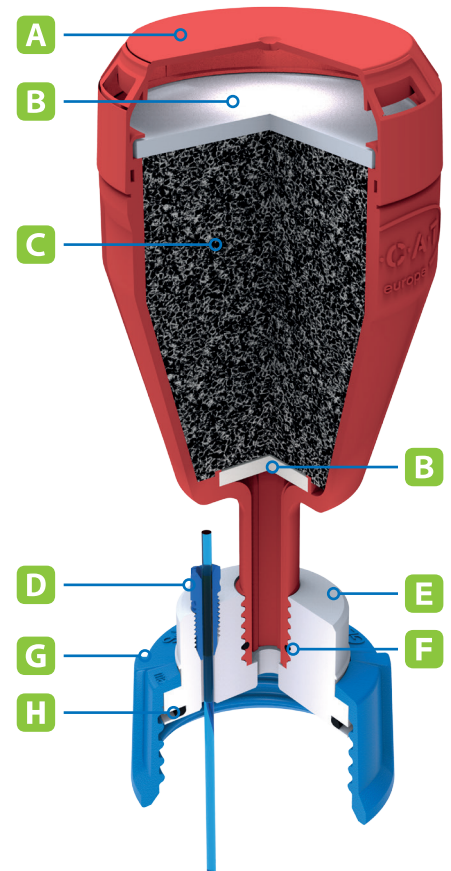
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E Body: PTFE premium grade - medical grade		Test method
Color	White	-
Specific gravity	2.130 - 2.190 g/cm <sup>3</sup>	ASTM D 792
Water absorption	0.01 %	ASTM D 570
Flammability	V-0	UL 94
Tensile strength	≥ 25 MPa	ASTM D 4894
Elongation	≥ 280 %	ASTM D 4894
Hardness	≥ 54 Shore D	ASTM D 2240
Ball hardness	≥ 23 MPa	ASTM D 785
Compression strength at 1% deformation	≥ 4 MPa	ASTM D 695
Deformation under load (140 kg/cm <sup>2</sup> for 24 hrs. at 23°C)	10 - 13 %	ASTM D 621
Permanent deformation (after 24 hrs. relaxation at 23°C)	6 - 7.5 %	ASTM D 621
Coefficient of static friction	0.08 - 0.10	ASTM D 1894
Coefficient of dynamic friction	0.06 - 0.08	ASTM D 1894
Wear factor K	2,900	ASTM D 3702
Wear coefficient	20,000 - 25,000 cm <sup>3</sup> min 10-8 kg m h	
Thermal conductivity	0.34 W/m·k	ASTM C 177
Coefficient of linear thermal expansion from 25 to 100 °C	12 - 15 10 <sup>-5</sup> / °C	ASTM D 696
Dielectric strength	≥ 30 kV/mm	ASTM D 149
Volume resistivity	10 <sup>18</sup> Ohm·cm	ASTM D 257
Surface resistivity	10 <sup>17</sup> Ohm	ASTM D 257
Statement on suitability for contact with foodstuff	<p><b>FDA approved US regulation</b> Code of federal regulation 21 CFR Ch.1; section 177.1550 Perfluorocarbon Resins of the Food and Drug Administration/US.</p> <p><b>EU Regulation</b> EU 1935/2004 - 10/2011 on plastic materials and articles to come in contact with food.</p>	



F Exhaust Filter: Seal (FKM)	
General properties	
Density	approx. 1.9 g/cm <sup>3</sup>
Water absorption (+23°C / 24 h)	approx 0.2 %
Thermal properties	
Operating temperature range (continuous)	-20 °C to +200 °C

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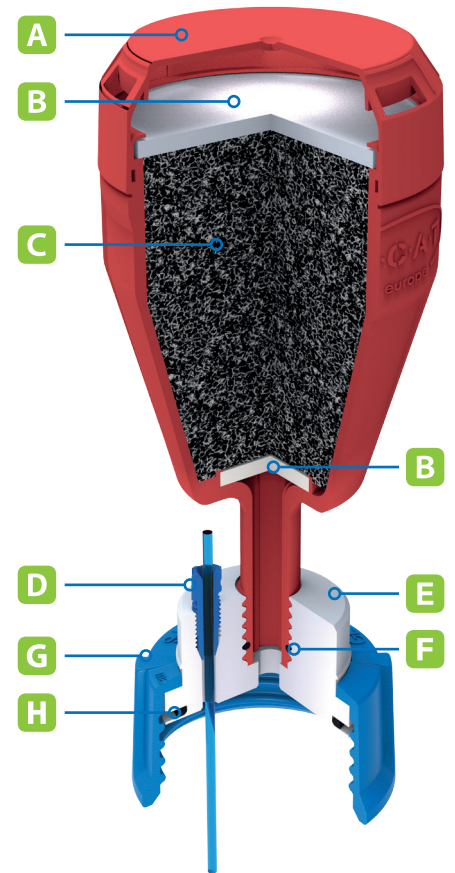
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Operating temperature range (short-term)	up to 250 °C	
Brittle temperature	below -30° C	
Thermal conductivity	approx. 0.3 W b/mK	
Oxygen index (LOI)	> 50%	
Flammability	V-0	UL 94
Electrical properties		
Dielectric constant (50 Hz)	15	
Specific resistance	up to 2 x 10 <sup>13</sup> Ω x cm	
Dielectric strength	approx. 20 kV / mm	
Mechanical properties		
Tensile strength	up to 17 N / mm <sup>3</sup>	
Modulus of elasticity	up to 30 N / mm <sup>3</sup>	
Tensile elongation at Tear	180 % - 300 %	
Compression set at +70 °C / 24 hours	up to 40 %	
Compression set at +200 °C / 24 hours	up to 25%	
Shore hardness A	40° to 90°	

G 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	-



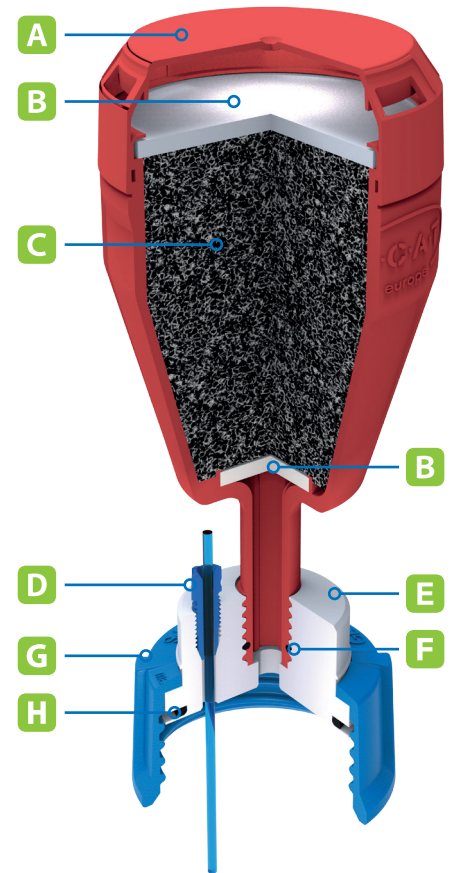
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H Cap Seal: VITON (EPM)		Test method
Colour	Black	-
Hardness	73 - 77 Shore A	ASTM D 2240
Operating temperature (air)	-20 to 200 °C	-
Density	1.85 - 1.98 g/cm <sup>3</sup>	-
Tensile strength	12 - 14.86 MPa	ASTM D 412
Elongation at break	175 - 216 %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



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