Technical Datasheet

SE-NEU-V5-2017

Cellular Silicone Elastomer Sponge Extrusion – Flame Resistant [V-0]

Grades

expanSil™ V-0 Super Soft | **expanSil™ V-0 Soft** | **expanSil™ V-0 Soft-medium**

expanSil™ V-0 Medium | **expanSil™ V-0 Medium-firm** | **expanSil™ V-0 Firm**

Temperature Range

-60°C to 230°C (-76°F to 446°F)

and up to 250°C(482°F) intermittent

Specifications

expanSil™V-0 is a lightweight, closed cell silicone sponge/ foam

expanSil™V-0meetsUL94V0at1.5mmand above. Approval Ref E235077

Additional Approvals

expanSil™ V-0 Super Soft meets ASTM D1056 2D1

expanSil™ V-0 Soft meets ASTM D1056 2D1

expanSil™ V-0 Soft-medium meets ASTM D1056 2D2

expanSil™ V-0 Medium meets AMS3195. Capable of meeting IP67

expanSil™ V-0 Medium-Firm meets ASTM D1056 2D4

The sponge is closed cell with low water absorption and dust ingress capable of meeting IP67.

These products meet the flammability requirements of FAR 25/ JAR 25/ CS 25 Appendix F, Part 1, (a)(1)(i) and (a)(1)(ii) vertical, (a)(1)(iv) and (a)(1)(v) horizontal, (a)(2)(ii) and (a)(2)(iii) 45 degree flammability tests and Automotive Standard PART 571FMVSS302.

Environment Resistance

Silicone rubber products have an excellent resistance to ozone, oxidation, ultraviolet light, corona discharge, cosmic radiation, ionising radiation and weathering in general.

Availability

- Cords, Tubes, Profiles, Joined Rings & Sections
- Pressure sensitive adhesive backing.
- Available in grey and black

Availability

Mouldings	Sheeting	Gaskets	Cables
☐	☐	☐	☐

Extrusions	Compound	Tubing
☐	☐	☐

General Characteristics

Test	Result	Standard
Brittle Point	-80°C (-112 °F)	ASTM D746
Radiation Resistance	>10^5 Grays (10^7 Rads) typical	
Water Absorption	< 3 %	ASTM D1056

Typical Industries

Automotive, Aerospace, Electronics, Energy, Heating and Ventilation (HVAC), Industrial, Lighting, Marine & Rail

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Cellular Silicone Elastomer Sponge Extrusion - Flame Resistant

Mechanical Properties

Property	Units	expanSil™ V-0 Super soft	expanSil™ V-0 Soft	expanSil™ V-0 Soft-medium	expanSil™ V-0 Medium	expanSil™ V-0 Medium-firm	expanSil™ V-0 Firm	Test Method
*Density	$kg.m^{-3}$ $lb.ft^{-3}$	150 10.0	220 13.7	300 19.4	390 24.3	450 28.1	600 37.5	BSENISO 845 ASTM D3574
**Compression Stress 25% strain	kPa psi	19 2.7	24 3.5	37 5.4	52 7.5	73 10.6	112 16.2	ASTM D1056
**Compression Stress 40% strain	kPa psi	40 5.8	50 7.3	80 13.1	120 17.4	160 23.2	250 36.3	BSENISO 3386 part1, 2
Tensile Strength	kPa psi	170 24.7	280 40.6	305 44.1	445 64.3	675 97.8	830 120.4	BSENISO 1798 ASTM D412
Elongation to Failure	%	110	130	90	100	90	90	BSENISO 1798 ASTM D412
Compression Set 50% compression 24 hours recovery. 22 hours @ 70°C (158°F)	%	<1	<1	<1	<1	<1	<1	BSENISO 1856
22 hours @ 100°C (212°F)	%	1	2	3	3	3	2	ASTM D1056

Extra Information

* Density measured on 25 mm diameter cord sample. The density of samples of different sizes
** Compression Stress measured on samples as defined in BSENISO 3386 & ASTM D1056 respectively.

The compressive stress on samples of different dimensions, especially thickness may vary from that quoted here.

For further information about physical properties for other sample sizes, please contact the technical department.

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Flammability Properties

Property	Units	expanSil™ V-0 Super Soft	expanSil™ V-0 Soft	expanSil™ V-0 Soft-Medium	expanSil™ V-0 Medium	expanSil™ V-0 Medium-Firm	expanSil™ V-0 Firm	Test Method
UL94 Vertical Burn	Minimum Thickness (mm)	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-0 @ 1.5	V-1 @ 1.5 (Black) V-0 @ 3.0 (NC)	UL94
FAR 25 App. F sec A 1 (i) & (ii)	Minimum Thickness (mm)	1.5	1.5	1.5	1.5	1.5	1.5	FAR 25 App. F sec A 1 (i)
Limiting Oxygen Index	%	-	-	43.9	→		42.8	EN ISO 4589-2: OI
Flame Spread (CFE)	kW/m^2	-	-	2mm = 26.57 25mm = 20.87	-	-	-	ISO 5658-2
Smoke/Toxicity 50 kWm^{-2}	$D_s(4)$	-	-	2mm = 55 25mm = 57	-	-	-	EN ISO 5659-2
	VOF_4 min	-	-	2mm = 159 25mm = 154	-	-	-	
	CIT_g	-	-	2mm = 0.03 25mm = 0.04	-	-	-	
Cone Calorimeter 50 kWm^{-2}	MARHE kWm^2	-	-	2mm = 76.67 25mm = 68.14	-	-	-	ISO 5660-1
Smoke Density 25 kWm^{-2}	D_s Max	-	-	2mm = 18 25mm = 31	→		2mm = 12 25mm = 33	EN ISO 5659-2
Toxicity 600°C	CIT_{NLP}	-	-	2mm = 0.02 25mm = 0.05	→		2mm = 0.01 25mm = 0.04	NF X 70-100-1 & 2

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EN 45545-2 Rating

Property	Description	Thickness Range (mm)	expanSil™ V-0 Super Soft	expanSil™ V-0 Soft	expanSil™ V-0 Soft-Medium	expanSil™ V-0 Medium	expanSil™ V-0 Medium-Firm	expanSil™ V-0 Firm
R1	Interior surfaces (& non-listed interior products >0.2m^2)	2 - 25	-	-	HL2	-	-	-
R2	Limited surfaces	2 - 25	-	-	HL3	-	-	-
R3	Strips	2 - 25	-	-	HL3	-	-	-
R7	Gangway surfaces, ducting (& non-listed exterior products >0.2m^2)	2 - 25	-	-	HL2	-	-	-
R8	Roof (external)	2 - 25	-	-	HL2	-	-	-
R10	Floors and cavity wall	3 - 50	HL3	-	-	-	-	-
R17	Cab housing	2 - 25	-	-	HL2	-	-	-
R21	Seating & mattress materials	3 - 50	-	-	-	-	-	-
R22	Interior seals (& non-listed interior products <0.2m^2)	2 - 25	HL3 (3mm – 50mm)	HL3	HL3	HL3	HL3	HL3
R23	Exterior Seals (& non-listed exterior products <0.2m^2)	2 - 25	HL3 (3mm - 50mm)	HL3	HL3	HL3	HL3	HL3

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Flame Resistance to NFPA 130:

Property	Units	expanSil™V-0 Super Soft	expanSil™V-0 Soft	expanSil™V-0 Soft-Medium	expanSil™V-0 Medium	expanSil™V-0 Medium-Firm	expanSil™V-0 Firm	Test Method
Average Flame Propagation	inches	1.6	→	→	→	→	0.9	ASTM C1166
Surface Flammability	Is (flame spread index)	3mm = 15 30mm = 25	→	→	→	→	2mm = 25 30mm = 15	ASTM E 162
Smoke Generation (Flaming Mode)	D_s (1.5)	3mm = 8 30mm = 11	→	→	→	→	3mm = 7 30mm = 7	ASTM E 662
	D_s (4.0)	3mm = 14 30mm = 30					3mm = 16 30mm = 33	
Smoke Generation (Non-Flaming Mode)	D_s (1.5)	3mm = 5 30mm = 10	→	→	→	→	3mm = 2 30mm = 1	ASTM E 662
	D_s (4.0)	3mm = 13 30mm = 29					3mm = 13 30mm = 13	
Toxic Gas Generation	N/A	3mm = PASS 30mm = PASS	→	→	→	→	3mm = PASS 30mm = PASS	Bombardier SMP 800-C