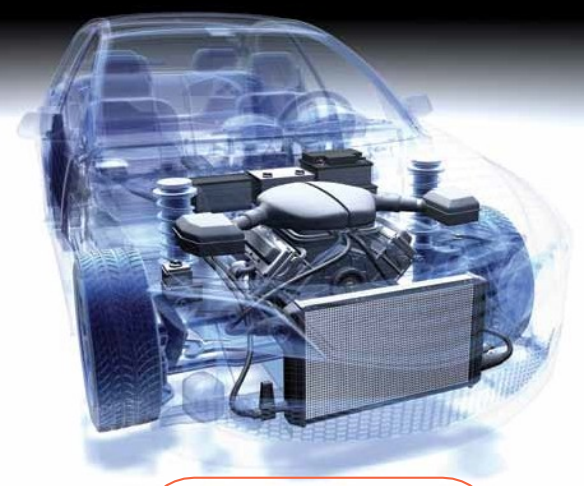
AUTOMOTIVE



armacell
engineered foams

EnsoLite® SF0

- Super soft PVC / NBR crushed (semi-closed cell) foam
- Manufactured in continuous rolls
- On approved source list for FCA (Chrysler) MSAY 522 Type 1 and GMW 17408 Class I Type I.

Ensolite®

General Information

EnsoLite® SF0: Armacell (Mebane, NC Plant) manufactures a black, very soft, semi-closed cell, PVC/NBR, 3.5 - 5.5 lb./ft^3 (56 - 88 kg/m^3) density, crushed foam product SF0, that has typical 25% compression deflection values of 0.4 psi (2.75 kPa) max. SF0 can be graded as an ASTM D 1056 1A0 cellular product with one exception to the basic requirements (Compression set at elevated temperature). **SF0 is listed as an approved source for FCA (Chrysler) MSAY 522 Type 1 and GMW 17408 Class I Type I.** SF0 meets the flame resistance requirements of FMVSS 302 at most thicknesses.

Automotive and Industrial Specifications

The following is a list of automotive and industrial specifications that Armacell Ensolite® SF0 has been tested to or can meet. Additional specifications are listed that have a few exceptions. Feel free to suggest other automotive, military or industrial specifications, and a full review will be made.

Source	Specification	EnsoLite® SF0	Comments
ASTM	ASTM D1056	1A0	Additional (optional) suffixes can be added. Exception to elevated temp compression set
FCA Chrysler	FCA Chrysler MSZ-75 J18	1A0	Additional (optional) suffixes can be added. Exception to elevated temp compression set
FCA Chrysler	FCA Chrysler MS JP9-4	Meets at most thicknesses	Flame resistance (horizontal burn rate)
FCA Chrysler	FCA Chrysler MSAY 500	Type 1 / Type 2	No exceptions
FCA Chrysler	FCA Chrysler MSAY 522	Type 1	SF0 is on the approved source list for Chrysler MSAY 522 Type 1 (2010)
Federal	FMVSS-302	Meets at most thicknesses	Flame resistance (horizontal burn rate). See note 1
Ford	Ford ESB M3G102A	Meets most requirements	Request additional information
Ford	Ford WSB-M3G102-B2	Meets with exceptions	Exception: Armacell's published density specification for SF0 is 3.5 - 5.5 pcf

Automotive and Industrial Specifications

Source	Specification	Armacell EnsoLite® SF0	Comments
GM	GM 6090-M	(B4A) Meets at most thicknesses	Flame resistance tested per GM 9070-P (horizontal burn rate)
GM	GMW 17408	Class I Type I	On approved source list. CD tested at 50% deflection. See note 2. Request more information for additional exceptions.
SAE	SAE J369	Meets at most thicknesses	Flame resistance (horizontal burn rate)
SAE	SAE J 1351	Pass, rating 2	Odor specification
Toyota	TSM 0500G	Meets at most thicknesses	Flame resistance (horizontal burn rate)
Toyota	TSK 6505G	2A1 / 2A2	Polymer = PVC/NBR Request additional information regarding exceptions

Note 1: A number of horizontal burn tests can also be listed (GM 6090, BMW, Volvo, etc.). Request additional information.
Note 2: : For GMW 17408 callouts, EnsoLite® certifies to the “basic” requirements only. Request additional information for each product. Providing application (interior, exterior or under-hood) and part thickness is helpful.

Roll Size Information

Gauge (in)	Gauge (fraction of an inch)	Gauge (mm)	Tolerance (inches)	Tolerance (mm)	Roll Size W (in)	Roll Size L (ft)	Roll Size W (m)	Roll Size L (m)	Comments
0.125	1/8	3.18	0.112 - 0.137	2.84 - 3.48	54	250	1.37	76.20	S1S
0.188		4.76	0.165 - 0.212	4.19 - 5.38	54	185	1.37	56.39	S1S, L
0.197		5.00	0.171 - 0.223	4.34 - 5.66	54	185	1.37	56.39	S1S
0.250	1/4	6.35	0.218 - 0.282	5.53 - 7.16	54	125	1.37	38.10	S2S, L
0.315		8.00	0.274 - 0.356	6.96 - 9.04	54	175	1.37	53.34	S1S, L
0.375	3/8	9.53	0.326 - 0.424	8.28 - 10.77	54	104	1.37	31.70	S2S, L
0.394		10.00	0.343 - 0.445	8.71 - 11.30	54	135	1.37	41.15	S2S
0.472		12.00	0.411 - 0.533	10.44 - 13.54	54	110	1.37	33.53	S2S, L
0.500	1/2	12.70	0.450 - 0.550	11.43 - 13.97	54	100	1.37	30.48	S2S, L
0.551		14.00	0.496 - 0.606	12.60 - 15.39	54	60	1.37	18.29	S2S, L
0.591		15.00	0.531 - 0.649	13.49 - 16.48	54	90	1.37	27.43	S2S
0.626		15.90	0.563 - 0.689	14.30 - 17.50	54	85	1.37	25.91	S2S
0.709		18.00	0.637 - 0.779	16.18 - 19.79	54	75	1.37	22.86	S2S
0.750	3/4	19.05	0.675 - 0.825	17.15 - 20.96	54	75	1.37	22.86	S2S, L
0.787		20.00	0.708 - 0.866	17.98 - 22.00	54	70	1.37	21.34	S2S
0.875	7/8	22.23	0.788 - 0.963	20.01 - 24.46	54	50	1.37	15.24	S2S
0.900	9/10	22.86	0.810 - 0.990	20.57 - 25.14	54	50	1.37	15.24	S2S
1.000	1	25.40	0.675 - 0.825	17.15 - 20.96	54	50	1.37	15.24	S2S
1.000	1	25.40	0.900 - 1.100	22.86 - 27.94	54	30	1.37	9.14	S2S
1.188	1-3/16	30.16	1.180 - 1.380	29.97 - 35.05	54	40	1.37	12.19	S2S
1.250	1-1/4	31.75	1.125 - 1.375	28.58 - 34.93	54	45	1.37	13.72	S2S
1.378		35.00	1.237 - 1.513	31.42 - 38.43	54	30	1.37	9.14	S2S
1.445		36.70	1.305 - 1.583	33.15 - 40.21	54	30	1.37	9.14	S1S, S2S

S1S = skin 1 side
S2S = skin 2 sides
L = additional lengths available

Ensolite®

Polymer Base: **PVC/NBR**

SF0 Continuous Rolls/Sheets (Black) — Semi-Closed Cell / Crushed Foam

Physical Properties	Unit	Test Method	Typical Results
Density	kg/m³	ASTM D 1056	56 - 88
	lb/ft³	ASTM D 1056	3.5 - 5.5
Hardness, Durometer Shore 00		ASTM D 2240	0 - 10
Compression Deflection (25%) (3/8" or 9.53 mm & higher)	kPa	ASTM D 1056	2.75 max
	psi	ASTM D 1056	0.4 max
Tensile Strength	kPa	ASTM D 412 (Die A)	103 min
	psi	ASTM D 412 (Die A)	15 min
Tear Strength	kN/m	ASTM D 624 (Die C)	0.7 Typical
	lb/in	ASTM D 624 (Die C)	4.0 Typical
Elongation	%	ASTM D 412 (Die A)	100 min
Service Temperature (1)			
Low	˚F (˚C)	ASTM D 1056	-40˚F (-40˚C)
High Continuous	˚F (˚C)	- - -	—
High Intermittent (2)	˚F (˚C)	- - -	200˚F (93˚C)
Water Absorption			
Maximum Weight Change	%	ASTM D 1056	Not Applicable
Fluid Immersion (7 days at 23˚C [73.4˚F])			
ASTM Ref. Fuel B, Weight Change (%)	%	ASTM D 1056	Not Applicable
Accelerated Aging (7 days at 70˚C [158˚F])			
Flexibility (180˚ bend without cracking)			Pass
Appearance change			None
Change in Compression Deflection	%	ASTM D 1056	± 30
Combustion Characteristics (3)		**Thicknesses**	**Comments**
FMVSS 302		0.125" (3.18 mm) & higher	Pass

ASTM D 1056 designation: 1A0 (Exception to elevated temp compression set)
SF0 meets:
FCA Chrysler MSAY 500 Type 1 / Type 2
FCA Chrysler MSAY 522 Type 1 Approved Source List
Ford WSB-M3G212A with deviations
Toyota TSK 6505G 2A1/2A2 with deviations
NBR – Acrylonitrile Butadiene Rubber
PVC – Polyvinyl Chloride

(1) This recommendation is based on polymer type only. For specific application requirements please contact technical service.
(2) This temperature is the maximum allowable for intermittent exposure only. For continuous use temperature please contact technical service.
(3) Flammability – This item and any corresponding data refer to typical performance in the specific test indicated and should not be construed to imply this material's behavior in other fire conditions.

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armacell engineered foams

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