

DRIVEN BY PERFORMANCE

EnsoLite[®] IV2

PVC / NBR / CR / closed cell foam in roll form

// ASTM D 1056-14 2A2 / 2C2 / 2B2 grade product

// PVC / NBR / CR closed cell rubber material manufactured in continuous rolls

// UL 94 HF-1 and V-0 listed for flame

// UL 50E (periodic and continuous compression) listed for gaskets and seals

www.armacell.us



 **armacell**[®]
EnsoLite[®]

ENSOLITE IV2 | PVC / NBR / CR / closed cell foam in roll form

Armacell (EnsoLite®) IV2: Armacell LLC (Conover, NC Plant) manufactures a black, continuous, closed cell, medium density (5.5 - 7.5 lb/ft³) (88 - 120 kg/m³) PVC / NBR / CR rubber product IV2, that meets all the physical property requirements of ASTM D 1056-14 2A2 / 2C2 / 2B2. IV2 has excellent resistance to oil and fuel. IV2 meets the horizontal burn / flame requirements of FMVSS-302 at 0.125" (1/8") (3.18 mm) & higher. IV2 is listed to UL94 HF-1 at 1.1 mm (0.043") and higher and UL94 V-0 at 11.7 mm (0.461") and higher (UL File# QMFZ2.E55798). IV2 is listed with UL to UL50E [periodic & continuous compression] (UL File# JMST2.MH10189). IV2 is listed on the approved source list for Chrysler MSAY 516 Type 2 and GMW 17408 Class I Type IV.

ROLL SIZE INFORMATION

Thickness (in)	Thickness (fraction of an inch)	Thickness (mm)	Tolerance (in)	Tolerance (mm)	Roll Size		Roll Size		Skin
					Width (in)	Length (ft)	Width (m)	Length (m)	
1.25	1-1/4	31.75	1.25 - 1.45	31.75 - 36.83	54	50	1.37	15.24	Skin 2 sides
1.25	1-1/4	31.75	1.25 - 1.45	31.75 - 36.83	54	100	1.37	30.48	Skin 2 sides
1.25	1-1/4	31.75	1.25 - 1.45	31.75 - 36.83	62	100	1.57	30.48	Skin 2 sides
1.50	1-1/2	38.10	1.50 - 1.70	38.10 - 43.18	54	50	1.37	15.24	Skin 2 sides
1.50	1-1/2	38.10	1.50 - 1.70	38.10 - 43.18	54	100	1.37	30.48	Skin 2 sides
1.57		40.00	1.57 - 1.77	39.90 - 45.00	40	50	1.02	15.24	Skin 2 sides

The following is a list of automotive and industrial specifications that Armacell EnsoLite® IV2 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.

AUTOMOTIVE AND INDUSTRIAL SPECIFICATIONS

Source	Specification	Armacell EnsoLite® IV2	Comments
ASTM	ASTM D 1056-14	2A2 / 2C2 / 2B2	Additional (optional) suffixes can be added
ASTM	ASTM D 6576-13	Type II, Grades A & B, Condition Soft-Medium	Formerly MIL-R-6130-C
Caterpillar	1E0720	1E0720E (Medium) Grades 2 and 3	Exception. Request additional information.
Chrysler	Chrysler MSZ-75 J18	2A2 / 2C2 / 2B2	Additional (optional) suffixes can be added
Chrysler	Chrysler MS JP9-4	Meets at 0.125" (1/8") (3.18 mm) and higher	Flame resistance (horizontal burn rate)
Chrysler	Chrysler MSAY 516	Type 2	Approved source list
Federal	FMVSS-302	Meets at 0.125" (1/8") (3.18 mm) and higher	Flame resistance (horizontal burn rate). See note 1
Federal	FAR 25.853	Contact Armacell Technical Service Department	12 Second Vertical Burn Test. (Test report available upon request)
Ford	WSK M2D 419-A	Type 3	See note 2
Ford	WSS M99P32 E1	Data available	Contact Technical Service Department for additional information
Ford	WSS M99P32 E6	Data available	Contact Technical Service Department for additional information
Ford	WSS M99P48 A1	Data available	Contact Technical Service Department for additional information
GM	GMW 17408	Class I Type IV	On the approved source list (Interior / Exterior)
ISO	ISO 6916	2A2 / 2C2 / 2B2	Exception to compression set.
Military	ASTM D 6576-13	Type II, Grades A & B, Condition Soft-Medium	Formerly MIL-R-6130-C
SAE	SAE J18 APR2002	2A2 / 2C2 / 2B2	Additional (optional) suffixes can be added
SAE	SAE J369	Meets at 0.125" (1/8") (3.18 mm) and higher	Flame resistance (horizontal burn rate)
SAE	SAE J 1351	Contact Armacell Technical Service Department	Odor test method
Toyota	TSM 1501G	2A2 / 2C2 / 2B2	Exception to compression set.
Toyota	TSM 0500G	Meets at 0.125" (1/8") (3.18 mm) and higher	Flame resistance (horizontal burn rate)
UL	UL94 V-0	V-0 UL Listed at 0.461" (11.7 mm) and higher	Flame resistance specification (UL file# QMFZ2.E55798)
UL	UL94 HF-1	HF-1 UL Listed at 0.043" (1.1 mm) and higher	Horizontal flame resistance specification. (UL file# QMFZ2.E55798)
UL	UL 50E	Suitable as gasket material for UL 50 and UL 50E (continuous and periodic compression) enclosures	Request additional information about UL enclosure types. (UL file# JMST2.MH10189)

Note 1: A number of horizontal burn tests can also be listed (GM 6090, BMW, Volvo etc.). Request additional information.

Note 2: For all Ford WSK M2D419A callouts, request full information for each product due to some exceptions with non-tested staining requirements)

ENSOLITE IV2 | PVC / NBR / CR / closed cell foam in roll form

DATA SHEET:

Physical Properties	Unit	Test Method	Typical Result
Density	lb/ft ³	ASTM D 1056	5.5 - 7.5
	kg/m ³	ASTM D 1056	88 - 120
Hardness, Durometer Shore 00		ASTM D 2240	45 - 65
Compression Deflection (25%)	psi	ASTM D 1056	5.0 - 9.0
	kPa	ASTM D 1056	34.5 - 62.1
50% Compression Set (Room temp)	%	ASTM D 1056	35 maximum
Tensile Strength	psi	ASTM D 412 (Die A)	75 minimum
	kPa	ASTM D 412 (Die A)	517 minimum
Tear Strength	lb/in	ASTM D 624 (Die C)	12
	kN/m	ASTM D 624 (Die C)	2.1
Elongation	%	ASTM D 412 (Die A)	100 minimum
Service Temperature (1)			
Low	°F (°C)	ASTM D 1056	-40 (-40)
High Intermittent (2)	°F (°C)		200 (93.3)
Water Absorption			
Maximum weight change	%	ASTM D 1056	10
Fluid Immersion (7 days @ 23°C [73.4 °F]) ASTM Ref. Fuel B, Weight Change	%	ASTM D 1056	100 maximum
Accelerated Aging (7 days @ 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			Meets at 0.125" (1/8") (3.18 mm) and higher
FAR 25.853			Contact Armacell Technical Service Department
UL 94			
HF-1		0.043" (1.1 mm) and higher	Listed, UL file # QMFZ2.E55798
V-0		0.461" (11.7 mm) and higher	Listed, UL file # QMFZ2.E55798

(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.

NBR - Acrylonitrile Butadiene Rubber

PVC - Polyvinyl Chloride

CR - Chloroprene (Neoprene)

ASTM D 1056 designation: 2A2 / 2C2 / 2B2

SAE J 18 APR2002 designation: 2A2 / 2C2 / 2B2

ASTM D 6576: Type II, Grades A & B, Condition Soft-Medium

Additionally UL Listed to UL 50E (UL file# JMST2.MH10189)

IV2 is on the approved source list for Chrysler MSAY 516 (Type 2)

IV2 is on the approved source list for GM GMW 17408 (Class I Type IV)

ENSOLITE IV2 | PVC / NBR / CR / closed cell foam in roll form

UL FILE NUMBER FOR ARMACELL ENSOLITE® IV2

UL File Number: QMFZ2.E55798
Plastics – Component (UL 94)

UL FILE NUMBER: JMST2. MH10189

Armacell Product Number	Description	Enclosure Types
IV1, IV2, IVC	Closed cellular PVC / NBR / CR gasket material	Types "IV1", "IV2", "IVC". Suitable as a gasket material for UL 50 enclosure types 2, 3, 3R, 3S, 4, 4X, 5, 6, 6P, 12, 12K and 13. [UL50E (Continuous and Periodic Compression)]
UL Spec	Test Method	Requirements
UL50E	Tensile strength and elongation after heat aging 168 h (7 d) at 158° F (70° C)	75% of original for tensile strength 60% of original for elongation
UL 50E	Oil immersion / oil aging (IRM # 903), % volume change after 70 h @ room temperature	Shall not swell more than 25% or shrink more than 1% of original volume
UL 157	Tensile strength and elongation after heat aging 70 h @ 212° F (100° C)	60% of original (For both tensile and elongation)

All data and technical information are based on results achieved under typical application conditions. It is the customer's responsibility to verify if the product is suitable for the intended application. The responsibility for professional and correct installation and compliance with relevant building regulations lies with the customer. By ordering/receiving product you accept the **Armacell General Terms and Conditions of Sale** applicable in the region. Please request a copy if you have not received these.

EnsoLite EnsoLite | EnsoLite IV2 TDS | 102018 | NA| EN-A | IV2

ABOUT ARMACELL

As the inventors of flexible foam for equipment insulation and a leading provider of engineered foams, Armacell develops innovative and safe thermal, acoustic and mechanical solutions that create sustainable value for its customers. Armacell's products significantly contribute to global energy efficiency making a difference around the world every day. With 3,000 employees and 26 production plants in 17 countries, the company operates two main businesses, Advanced Insulation and Engineered Foams. Armacell focuses on insulation materials for technical equipment, high-performance foams for high-tech and lightweight applications and next generation aerogel blanket technology.



For more information, please visit:
www.armacell.us
800-866-5638