

AUTOMOTIVE



## Monarch® #2002

- ASTM D 1056-07 2A2 / 2C2 grade closed cell material
- Fine cell – manufactured in blocks (buns)
- ASTM D 6576-07 Type II, Grades A & B, Condition Soft-Medium



**Monarch®**

### General Information

**Armacell Monarch® #2002:** Armacell LLC (Spencer, WV Plant) manufactures a black, closed cell,  $9 \pm 2 \text{ lb./ft}^3$  ( $144 \pm 32 \text{ kg/m}^3$ ) density Neoprene based rubber product #2002, that meets all the physical property requirements of ASTM D 1056-07 2A2 / 2C2 and SAE J-18 APR2002 2A2 / 2C2. #2002 is manufactured with non-staining oils and anti-oxidants. #2002 meets the flame resistance requirements of FMVSS-302 at 2.5mm (.098”) and higher.

### Bun Size Information

Product	Bun Size (Inches)			Bun Size (mm)			Color
	W	L	T	W	L	T	
2002	42	56	2	1067	1422	50.8	Black
2002	42	72	2	1067	1829	50.8	Black
2002	45	60	2	1143	1524	50.8	Black

# Automotive and Industrial Specifications

The following is a list of automotive and industrial specifications that Armacell Monarch® #2002 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	Armacell Monarch® #2002	Comments
ASTM	ASTM D 1056-07	2A2 / 2C2	Additional (optional) suffixes can be added
ASTM	ASTM D 6576-07	Type II, Grades A & B, Condition Soft-Medium	Formerly MILR6130-C
ASTM	ASTM G 21-09	Pass, rating 0	Fungus resistance test method
Caterpillar	1E0720	1E0720E (medium)	Exception to fluid immersion (#2002 is classified as a 2C2 grade material)
Chrysler	Chrysler MSZ-75 J18	2A2 / 2C2	Additional (optional) suffixes can be added
Chrysler	Chrysler MS JP9-4	Meets at thicknesses of 2.5mm (.098") and higher	Flame resistance (horizontal burn rate)
Federal	FMVSS-302	Meets at thicknesses of 2.5mm (.098") and higher	Flame resistance (horizontal burn rate). See note 3
FORD	FORD WSK M2D 419-A	Type 3	See note 2
ISO	ISO 6916	2A2 / 2C2	No exceptions
GM	GM 6086-M	Type II	CD tested at 50% deflection. See note 1
GM	GM 6090-M	(B4A) Meets at thicknesses of 2.5mm (.098") and higher	Flame resistance tested per GM 9070-P (horizontal burn rate)
GM	GMN11106	Type II	CD tested at 50% deflection. See note 1
GM	GMW15473	Class I Type IV	CD tested at 50% deflection. See note 1
Military	ASTM D 6576-07	Type II, Grades A & B, Condition Soft-Medium	Formerly MILR6130-C
Raytheon	Raytheon SMA 800578 Revision F	Meets with exceptions	Exceptions: a) Low temperature resistance (fails at -40°C) b) Corrosion on steel, copper, and aluminum (not tested / no data)
SAE	SAE J 18 APR2002	2A2 / 2C2	Additional (optional) suffixes can be added
SAE	SAE J 369	Meets at thicknesses of 2.5mm (.098") and higher	Flame resistance (horizontal burn rate)
SAE	SAE J 1351	Rating 2	Odor specification
Toyota	TSM 1501G	2A2 / 2C2	No exceptions
Toyota	TSM 0500G	Meets at thicknesses of 2.5mm (.098") and higher	Flame resistance (horizontal burn rate)

Note 1: For all GM 6086-M, GMN11106 & GMW15473 callouts, Armacell Monarch® certifies to the "basic" requirements only. Request additional information for each product. Providing application (interior, exterior or under-hood) and part thickness is helpful.

Note 2: For all FORD WSK M2D 419-A callouts, request full information for each product due to some exceptions with non-tested staining requirements.

Note 3: A number of horizontal burn tests can also be listed (GM 6090, BMW, Volvo, etc.). Request additional information.



Polymer Base: **Neoprene (CR Based)**

**F-02002 (Black)**

Physical Properties	Unit	Test Method	Typical Results
Density	kg/m <sup>3</sup>	ASTM D 1056	144 ± 32
	lb/ft <sup>3</sup>	ASTM D 1056	9 ± 2
Hardness, Durometer Shore 00		ASTM D 2240	55 ± 5
Compression Deflection (25%)	kPa	ASTM D 1056	48 ± 14
	psi	ASTM D 1056	7 ± 2
Compression Set (Room temp)	%	ASTM D 1056	≤ 25%
Tensile Strength	kPa	ASTM D 412 (Die A)	620
	psi	ASTM D 412 (Die A)	90
Tear Strength	kN/m	ASTM D 624 (Die C)	2.5
	lb/in	ASTM D 624 (Die C)	14
Elongation	%	ASTM D 412 (Die A)	150%
Resilience	%	ASTM D 2632	10%
Service Temperature			
Low	°F (°C)	ASTM D 746	-40°F (-40°C)
High Continuous	°F (°C)	ASTM D 746	150 °F (65.5°C)
High Intermittent	°F (°C)	ASTM D 746	200°F (93.3°C)
Water Absorption			
Maximum Weight Change	%	ASTM D 1056	< 10%
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)		ASTM D 1056	Pass
Appearance change		ASTM D 1056	None
Change in Compression Deflection	%	ASTM D 1056	± 30%
<b>Combustion Characteristics</b>		<b>Thicknesses</b>	<b>Comments</b>
FMVSS-302		0.098" (2.5 mm) & higher	Pass

ASTM D 1056 designation: 2A2 / 2C2  
 SAE J 18 APR2002 designation: 2A2 / 2C2  
 ASTM D 6576: Type II, Grades A & B, condition soft-medium  
 Replaces Armacell Monarch® #2092  
 Neoprene = polychloroprene (CR = chloroprene rubber)

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