

AUTOMOTIVE



## Monarch® #5021

- ASTM D 1056-07 2A1 grade material
- Fine cell – manufactured in blocks (buns)
- Approved source for Delphi SD2-207, paragraph 6.1
- Widely used, general purpose EPDM / CR / SBR blend
- ASTM D 6576-07 Type II, Grades B & C, condition Soft

**Monarch®**

### General Information

**Armacell Monarch® #5021:** Armacell LLC (Spencer, WV Plant) manufactures a black, closed cell,  $6 \pm 2 \text{ lb./ft}^3$  ( $96 \pm 32 \text{ kg/m}^3$ ) density, general purpose, EPDM / Neoprene / SBR blended rubber product #5021, that meets all the physical property requirements of ASTM D 1056-07 2A1 and SAE J18 APR2002 2A1. #5021 is manufactured with non-staining oils and anti-oxidants. #5021 does not incorporate a flame retardant but meets FMVSS-302 at thicknesses of 3/16" (4.76 mm) (0.187") and higher. #5021 is also available in gray (#5921).

### Bun Size Information

Product	Bun Size (Inches)			Bun Size (mm)			Color
	W	L	T	W	L	T	
5021	40	80	2.5	1016	2032	63.5	Black
5021	42	72	2	1067	1829	50.8	Black
5021	42	72	2.5	1067	1829	63.5	Black
5021	54	80	2	1372	2032	50.8	Black

# Automotive and Industrial Specifications

The following is a list of automotive and industrial specifications that Armacell Monarch® #5021 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® #5021	Comments
ASTM	ASTM D 1056-07	2A1	Additional (optional) suffixes can be added
ASTM	ASTM D 925 Method B	Pass; no migration staining	This is a test method.
ASTM	ASTM D 6576-07	Type II, Grades B & C condition soft	Formerly MILR6130-C
BEHR	BEHR 30.42.08	Meets with exceptions	Exception (Color: 5021 is black)
Chrysler	Chrysler MSZ-75 J18	2A1	Additional (optional) suffixes can be added
Chrysler	Chrysler MS JP9-4	Meets at thicknesses of 4.76 mm (0.187") (3/16") and higher	Flame resistance (horizontal burn rate).
Chrysler	Chrysler MSAY 430	Type 2	Exceptions in elongation and polymer blend
Delphi	SD2-207	Paragraph 6.1	See note 4. On approved source list
Federal	FMVSS-302	Meets at thicknesses of 4.76 mm (0.187") (3/16") and higher	Flame resistance (horizontal burn rate)
FORD	FORD WSK M2D 419-A	Type 2	See note 2
GM	GM 6086-M	Type II	CD tested at 50% deflection. See note 1. Exception in cycle testing (not tested, no data). 5021 is NOT on the approved source list for this specification.
GM	GM 6090-M	(B4A) Meets at thicknesses of 3/16" (0.1875") (4.76 mm) 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
ISO	ISO 6916	2A1	Exception to compression set
Military	ASTM D 6576-07	Type II, Grades B & C condition soft	Formerly MILR6130-C
Mitsubishi	ES-X 60154	ER C1, F1 (EPDM/ CR/ SBR Blend)	Compression deflection (hardness) is stated on the drawing
SAE	SAE J 18 APR2002	2A1	Additional (optional) suffixes can be added
SAE	SAE J 369	Meets at thicknesses of 4.76 mm (0.187") (3/16") and higher	Flame resistance (horizontal burn rate)
SAE	SAE J 1351	Rating 2	Odor specification
Toyota	TSM 1501G	2A1	Exception to compression set
Toyota	TSM 0500G	Meets at thicknesses of 4.76 mm (0.187") (3/16") 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.

Note 4: See QMPL-3621 Revision 12. Effective date August 24, 2009.



Polymer Base: Neoprene, EPDM, SBR Blend

**F-05021 (Black)**

Physical Properties	Unit	Test Method	Typical Results
Density	kg/m <sup>3</sup>	ASTM D 1056	96 ± 32
	lb/ft <sup>3</sup>	ASTM D 1056	6 ± 2
Hardness, Durometer Shore 00		ASTM D 2240	45 ± 5
Compression Deflection (25%)	kPa	ASTM D 1056	24 ± 10
	psi	ASTM D 1056	3.5 ± 1.5
Compression Set (Room temp)	%	ASTM D 1056	≤ 40%
Tensile Strength	kPa	ASTM D 412 (Die A)	520
	psi	ASTM D 412 (Die A)	75
Tear Strength	kN/m	ASTM D 624 (Die C)	1.7
	lb/in	ASTM D 624 (Die C)	9.6
Elongation	%	ASTM D 412 (Die A)	125%
Resilience	%	ASTM D 2632	35%
Service Temperature			
Low	°F (°C)	ASTM D 746	-40°F (-40°C)
High Continuous	°F (°C)	ASTM D 746	200 °F (93.3°C)
High Intermittent	°F (°C)	ASTM D 746	250°F (121.1°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		0.187" (4.76 mm) & higher	Pass

ASTM D 1056 designation: 2A1  
 SAE J 18 APR2002 designation: 2A1  
 ASTM D 6576: Type II, Grades B & C, Condition Soft  
 EPDM = (ethylene-propylene-diene-methylene)  
 SBR = styrene-butadiene rubber  
 Neoprene = polychloroprene (GR = chloroprene rubber)

**ARMACELL LLC**  
 TEL: 1 800 866-5638  
 FAX: 919 304-3847  
 info.us@armacell.com  
 www.armacell.us  
 7600 Oakwood Street Extension • Mebane, NC 27302



Armacell provides this information as a technical service. To the extent the information is derived from sources other than Armacell, Armacell is substantially, if not wholly, relying upon the other source(s) to provide accurate information. Information provided as a result of Armacell's own technical analysis and testing is accurate to the extent of our knowledge and ability, as of date of printing, using effective standardized methods and procedures. Each user of these products, or information, should perform their own tests to determine the safety, fitness and suitability of the products, or combination of products, for any foreseeable purposes, applications and uses by the user and by any third party to which the user may convey the products. Since Armacell cannot control the end use of this product, Armacell does not guarantee that the user will obtain the same results as published in this document. The data and information are provided as a technical service and are subject to change without notice.