

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.



F-05021 (Black)

Physical Properties	Unit	Test Method	Typical Results
Density	kg/m ³	ASTM D 1056	96 ± 32
	lb/ft ³	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%
Combustion Characteristics		Thicknesses	Comments
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 (CR = chloroprene rubber)



Seal & Design Able Division

5533 Steeles Avenue West Unit 11
Toronto, Ontario M9L 1S7
Ph: (416) 741-0750
Gasket@AbleSealAndDesign.com

Seal & Design Corporate Headquarters

4015 Casilio Parkway
Clarence, NY 14031
Ph: (716) 759-2222
Info@SealAndDesign.com
www.SealAndDesign.com

Seal & Design Higbee Division

6741 Thompson Rd N
Syracuse, NY 13221
Ph: (315) 432-8021
Sales@Higbee-Inc.com