



COMPONENT FOAMS

EnsoLite[®]

Elastomeric component foam
gaskets and seals for the OEM market.

www.armacell.com



 **armacell[®]**
EnsoLite[®]

ENGINEERED FOR SUCCESS

EnsoLite[®]

Armacell brings more than sixty years of science, expertise and innovation to foam technology. In addition to our leading market position in foam insulation, we also offer a wide range of foam components for foam converters and part makers in automotive and industrial applications.

Our EnsoLite product range provides high-quality, high-performance component foams made of extruded EPDM (ethylene propylene diene monomer) rubber which comes in sheets, rolls or tubes.

EnsoLite products

EF0 continuously extruded EPDM foam rolls

ET7 extruded EPDM tubes



EF0



EF0



ET7



ENSOLITE ENGINEERED FOR AUTOMOTIVE APPLICATION

Armacell's EnsoLite products are specifically engineered for automakers and used for a wide range of automotive applications from foam trim to automotive insulation.

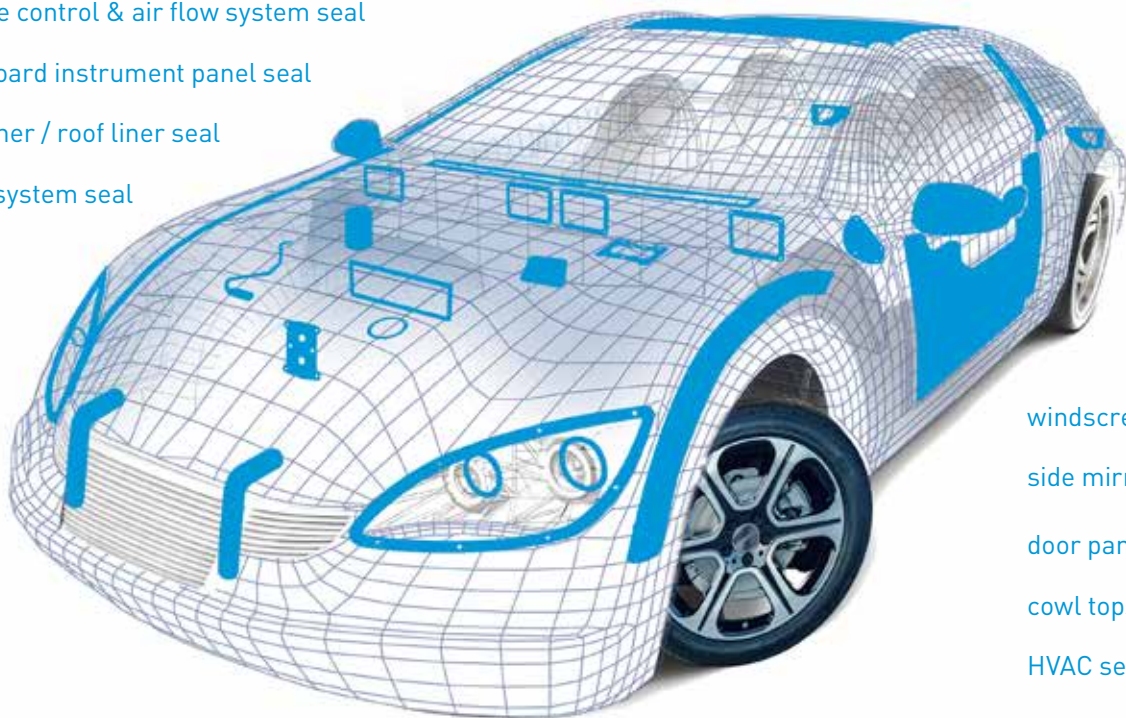
Common uses for EnsoLite foams in motor vehicles are gaskets, seals (water and dust), liners, panels, trim, insulation, mats or acoustical/anti-rattle applications.

climate control & air flow system seal

dashboard instrument panel seal

headliner / roof liner seal

audio system seal



windscreen seal

side mirror seal

door panel seal

cowl tops seal

HVAC seal

TO FILL UNEVEN GAPS AND TO SEAL
AGAINST AIR, DUST, HEAT AND NOISE.

EnsoLite[®] EFO

Soft, semi-closed cell “crushed” EPDM foam.

The excellent sealing properties against air, dust, heat and noise make our semi-closed cell EFO foams the proper material for space filling and noise-reducing applications for quieter performance in mechanical systems, mainly for the automotive, white goods and HVAC markets. Semi-closed cell materials combine the flexibility of open cell materials with the excellent sealing capabilities of closed cell (after compression), thus perfectly sealing complex surfaces without causing any deformation with relatively low compression loads.

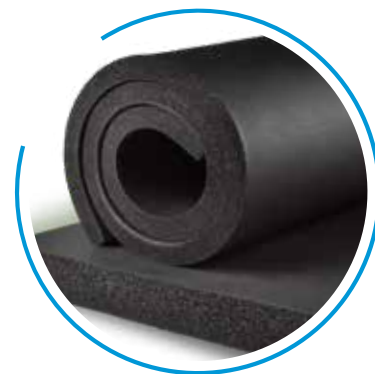
TECHNICAL DATA

			EFO 90	EFO 130	
Density	ISO 2781	kg/m ³	90	130 ¹⁾	Tolerance: +/- 15 ¹⁾ With skin.
Compression Deflection 25%	ASTM D 1056	kPa	< 4	< 6.9	> 8mm thickness
Compression Set 50%	ISO 1856	%	≤ 25	≤ 25	Room temperature
Tensile Strength	ISO 1798 (type 1 die)	kPa	≥ 70	≥ 80	Machine direction
			≥ 60	tdb	Cross direction
Tear Strength	ISO 34-1 (method B)	kN/m	≥ 0.4	≥ 0.5	
Elongation	ISO 1798	%	100 - 250	≥ 150	
Service temperature range	EN 14304 (min)	°C	-50	-50	
	EN 14706 (max)		+120	+120	Maximum allowable for intermittent exposure.
Accelerated Ageing					7 days at +70°C
Bending without cracking	ASTM D 1056		pass	pass	
Appearance change	ASTM D 1056		none	none	
Compression deflection change	ASTM D 1056	%	± 30	± 30	
Migration Staining	ASTM D 925 (B)		pass	tdb	
Ozone Resistance	ASTM D 1149 / 1171		pass		
	ISO 1431			pass	
Fire Performance	FMVSS-302		pass	pass	Refer to typical performance in the specific test indicated.

Standard rolls: 2-sided skins

	Foam Thickness (mm)	Roll Length (m)	Roll Width (mm)
	15* ± 1,5	22 -0/+0,5	1000 -0/+50
EF0 90	25* ± 1,5	13 -0/+0,5	1000 -0/+50
	30* -2/+3	11 -0/+0,5	1000 -0/+50
EF0 130	21* ± 2	11 -0/+0,5	1000 -0/+50

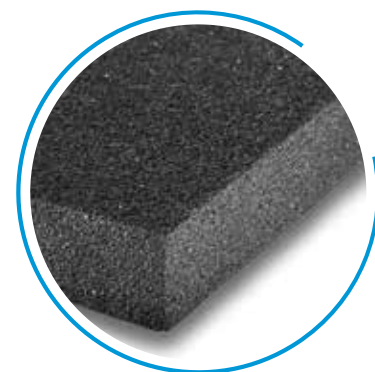
* Standard.
Further options
on request.



Slitted rolls: 0- or 1-sided skin mixed per box

Slitted rolls are 11 meter long without joints. With and without skins mixed per box.

	Foam Thickness (mm)	Roll Length (m)	Roll Width (mm)	Per Box	
				(pcs)	(m)
	3 -0,5/+1	11 -0	1000 -0/+50	10	110
	4 -0,5/+1	11 -0	1000 -0/+50	7	77
	5 -0,5/+1	11 -0	1000 -0/+50	6	66
EF0 90	6 -0,5/+1	11 -0	1000 -0/+50	5	55
	8 -1/+1,5	11 -0	1000 -0/+50	3	33
	10 -1/+1,5	11 -0	1000 -0/+50	3	33
	12-15 -1/+1,5	11 -0	1000 -0/+50	2	22
	19 -1,5/+2	11 -0	1000 -0/+50	1	11
	4 -0,5/+1	11 -0	1000 -0/+50	5	55
	5 -0,5/+1	11 -0	1000 -0/+50	4	44
EF0 130	8 -1/+1,5	11 -0	1000 -0/+50	3	33
	10 -1/+1,5	11 -0	1000 -0/+50	3	33
	12 -1/+1,5	11 -0	1000 -0/+50	2	22



YOUR BENEFITS

Our EF0 product range is designed for easy fabrication: from die cutting, stamping, thermoforming, laminating to applying adhesive - all according to the specific needs of the final foam part. In addition to processability, EF0 provides excellent materials properties to meet different physical and chemical requirements:

- // Excellent sealing capabilities, even under high strain conditions.
- // Outstanding resistance to ozone, weathering and UV exposure.
- // Shrink and tension free material due to continuous extrusion in rolls.
- // Broad service temperature range: -50 to +120 °C.
- // Low compression deflection and good compression set.
- // Homogeneous fine cell structure and compression deflection.



EnsoLite® ET7

Extruded EPDM tubes.

ET7 are high temperature resistant EPDM tubes especially developed to cover pipes and wires and protect cable ducts against engine compartment rattling and vibration. ET7 tubes meet a host of special requirements, including ozone and high temperature resistance. Shaped in a variety of customer configurations (available in endless or pre-cut), ET7 profiles are used for nearly any protective application: fluid carrying systems, air conditioning tubes, fuel systems, brake and fuel products or heater and radiator hose systems.

TECHNICAL DATA

Density	ISO 845	kg/m ³	150-220
Hardness, Shore 00	ISO 7619-1		40-60
Compression Deflection 25%	ISO 6916-1	kPa	20-50
Compression Deflection 50%	ISO 6916-1	kPa	70-130
Compression Set 50% (23°C, 24h)	ISO 1856	%	≤ 25
Tensile Strength	ISO 1798	kPa	≥ 450
Tear Resistance	ISO 34-1	kN/m	≥ 1.0
Elongation	ISO 1798	%	≥ 100
Service temperature range ¹⁾	ASTM D 1056	°C	-55 to +120
Linear Shrinkage (23°C, 24h / 70°C, 3h)	ISO 2796	%	≤ 5.0
Water Absorption	ASTM D 1056	%	≤ 5.0
Fire Performance ²⁾	FMVSS-302		pass

Wall thickness tube

3 - 25 mm

Inner diameter tube

4 - 28 mm

Delivery form

bobine (continuous)
pre-cut

Results based on testing of 6mm thick sheets.

¹⁾ Recommendation is based on polymer type only. Specific application requirements to be tested.

²⁾ Refer to typical performance in the specific test indicazed. Data are not construed to imply the behaviour of material in other fire conditions.

YOUR BENEFITS

- // Durable and resistant to ageing and weathering.
- // Extremely flexible but strong tubes.
- // High temperature resistance.
- // Broad service temperature range: -55 to +120 °C.



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 27 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.

MEGATRENDS

Armacell's energy-saving or noise- and vibration-attenuating solutions are principally addressing five global megatrends.



ENERGY EFFICIENCY



URBANISATION



ACOUSTIC COMFORT AND VIBRATION CONTROL



GLOBALISATION OF FOOD SUPPLY CHAIN



LIGHTWEIGHTING

2017 RESULTS

€603.2m

Total Net Sales

€102.1m

Adjusted EBITDA

€82.0m

Adjusted EBITA

~ 3,000

Employees

ARMACELL PROJECTS



PRESENCE

1

CORPORATE HEADQUARTERS
LUXEMBOURG

3

REGIONAL HEAD OFFICES
GERMANY - USA - SINGAPORE

27

MANUFACTURING FACILITIES
17 COUNTRIES - 4 CONTINENTS

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.

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