

SIGRAFLEX®

Flexible graphite foil for industrial sealing [US units]

SIGRAFLEX flexible graphite foil is manufactured from high quality expanded natural graphite free of adhesives and binders. Inhibitors can be added to enhance the performance. Advanced grades like SIGRAFLEX APX2® foil offer maximum protection against oxidation for greater reliability and longer service life.

Properties

- Soft and flexible, inert and highly impermeable to gases and liquids, fire safe
- Asbestos-free, no associated health risks
- Free of any polymers or organic binders
- No aging or fatigue under dynamic load even at elevated temperatures

- Even in long term services, no noticeable changes in properties. Micro sealing properties will not degrade over time
- No measurable cold or warm flow characteristics up to the maximum permissible gasket stress
- Electrically conductive, no static charge
- Excellent chemical resistance and high thermal shock capability
- Operating temperatures range from –400 °F up to 932 °F depending upon the SIGRAFLEX foil grade. Consult the manufacturer when application temperatures exceed 750 °F. After consulting the manufacturer application temperatures even slightly exceeding 1000 °F might be acceptable. Life time might be limited at high temperatures, please refer to our technical guideline regarding thermal stability. Chemical resistance also needs to be considered.
- Easy handling and processability during assembly or punching

Material data of SIGRAFLEX® foil¹⁾

Typical properties	Units	APX2	BP	B	SHL	N
Density (ASTM F1315)	lb/ft ³	Standard 70.0 [capability of 44.0 – 62.4 – 70.0 – 90.0]				
Thickness for rolls (ASTM F104)	in	0.010 – 0.060	0.010 – 0.060	0.010 – 0.060	0.010 – 0.060	0.010 – 0.060
Thickness for sheets (ASTM F104)	in	0.030 – 0.120	0.030 – 0.120	0.030 – 0.120	0.030 – 0.120	0.030 – 0.120
Ash content (ASTM C561)	%	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0	≤ 0.5
Carbon content (ASTM D5373)	%	≥ 98.0	≥ 98.0	≥ 98.0	≥ 98.0	≥ 99.5
Moisture content (ASTM C562)	%	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total sulfur content (ASTM D4239)	ppm	< 300	< 300	< 500	< 300	< 300
Oxidation rate in air at 670 °C/1238 °F (TGA) ²⁾	%/hour	≤ 1.0	≤ 2.0	< 4.0	≤ 2.0	
Oxidation inhibitor		yes	yes	yes	yes	no
Roll width	in	5"/20"/30"/60"	5"/20"/30"/60"	5"/20"/30"/60"	5"/20"/30"/60"	5"/20"/30"/60"
Tape width	in	3/16" to 5"	3/16" to 5"	3/16" to 5"	3/16" to 5"	3/16" to 5"
Standard roll length	ft	330	330	330	330	330

¹⁾ Data are valid for the bigger part of the product range. Other values or dimensions on request.

²⁾ Based on a thickness of ≥ 0.015" and a density of ≥ 70 lb/ft³

Material data of SIGRAFLEX® grade B
 [density of 70 lb/ft³ or 1.12 g/cm³]

Typical properties		Units	Values
Thermal conductivity at 70 °F Netzsch LFA477	in plane		250
	through plane	Wm ⁻¹ K ⁻¹	5
Resistivity at 70 °F (ASTM C611)	in plane		10
	through plane	μΩm	750
Coefficient of thermal expansion (70 – 1800 °F)	in plane		approx. 1
	through plane	10 ⁻⁶ K ⁻¹	approx. 50
Tensile strength (ASTM F152)		psi	500
Young's modulus at 5000 psi stress		psi	80,000
Gasket factors (ASTM F3149)	"m"-factor		2
	"y"-factor	psi	1000
PVRC design constants	"Gb"		970
	"a"		0.384
	"Gs"	psi	0.050
Tightness parameter TP _{max} at 15,000 psi stress		psi	1776
Sealability (DIN 3535)		ml/min	< 1.0
Compressibility (ASTM F36)			40
Recovery (ASTM F36)		%	14
Creep relaxation (ASTM F38)		%	< 4

Unless stated otherwise, all values are valid at room temperature, typical, non-binding and subject to change. For engineering or design purposes please contact our technical sales team.

Applications

- Sheet products such as SIGRAFLEX BTCSS
- Metallic gaskets such as spiral wound gaskets, corrugated metal gaskets and kammprofile gaskets
- Compression packing for stuffing boxes



Additional information on our SIGRAFLEX sealing materials can be found under "Download Center" on our homepage.
www.sigraflex.com/downloads



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Common grades of SIGRAFLEX® foil for industrial sealing

- B, BP, APX2, SHL** for general industrial applications
- B-PSA** with pressure sensitive adhesive
- B-TEX and B-COR** for speciality tapes
- AQ** with proprietary corrosion inhibitor (maximum 670 °F)
- S, N, HP, UHP** for nuclear, semiconductor, ceramics, LED and other industries

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