

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 -452 °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 D5373B) | % | ≥ 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 D4239A) | 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" to 60" | 5" to 60" | 5" to 60" | 5" to 60" | 5" to 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 F152D) | | psi | 500 |
| Young's modulus at 5000 psi stress | | psi | 80,000 |
| Gasket factors (ASTM F3149) | "m"-factor | | 2 |
| | "y"-factor | psi | 1000 |
| | "Gb" | | 970 |
| PVRC design constants | "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 F36A) | | | 40 |
| Recovery (ASTM F36A) | | % | 14 |
| Creep relaxation (ASTM F38B) | | % | 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 BSSC or 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

TDS APX2_BP_B_SHL_N_Foil_US.03
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