

## SIGRAFLEX® BSSC

SIGRAFLEX flexible graphite foil reinforced with flat stainless steel



**SIGRAFLEX BSSC is a gasket sheet made of SIGRAFLEX B-grade flexible graphite foils adhesively bonded to a 0.002 inch thick flat stainless steel reinforcement.**

### Applications

- For all common pipework and vessel flange designs, such as ANSI, API, MSS or ASME B 16.21
- For special design gaskets (square, oblong, oval)
- For one-piece gasket designs up to an outside diameter of 59.1 inch; for diameters above 59.1 inch, two-layer structures with segmented sections and staggered joints are recommended
- For operating pressures from vacuum up to 600 or 1000 psi, depending on material thickness
- For corrosive media, please refer to our technical guideline

regarding chemical resistance.

- Operating temperatures range from  $-452^{\circ}\text{F}$  up to  $932^{\circ}\text{F}$  depending upon the type of SIGRAFLEX foil grade [e.g. B, BP or APX2®] used for sheet production. Consult the manufacturer when application temperatures exceed  $750^{\circ}\text{F}$ . After consulting the manufacturer application temperatures even slightly exceeding  $1000^{\circ}\text{F}$  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.
- Gaskets for the chemical, petrochemical, refinery, power generation, heating equipment, pulp and paper, and other industries.



↑ Cross-section

## Material data of SIGRAFLEX® BSSC

Typical properties <sup>1)</sup>	Units	BSSC
Thickness (ASTM F104)	in	0.030 – 0.060 – 0.120
		39.4 x 39.4 and 59.1 x 59.1 Bigger sheets available on request. Up to 0.060 thickness also supplied on rolls.
Dimensions <sup>2)</sup>	in	
Density of flexible graphite (ASTM F1315)	lb/ft <sup>3</sup>	70
Ash content of flexible graphite (ASTM C561)	%	≤ 2.0
Carbon content (ASTM D5373)	%	≥ 98.0
Moisture content (ASTM C562)	%	< 0.5
Total sulfur content (ASTM D4239)	ppm	< 500
Oxidation rate in air at 670 °C/1238 °F (TGA)	%/h	< 4
Oxidation inhibitor		yes
Reinforcing steel sheet details		Smooth stainless steel foil
ASTM A240 material number		316L
Thickness	in	0.002
Number of sheets		1
Gasket factors (ASTM F3149)	„m“-factor	2.0
	„y“-factor	1500
Compressibility (ASTM F36)		40
Recovery (ASTM F36)	%	14
Creep relaxation (ASTM F38)	%	< 4
Sealability according DIN 3535 (0.060")	ml/min	0.5
Tp max at 15,000 psi gasket stress	psi	3227
PVRC design constants	Gb	816
	A	0.377
	Gs	0.066

<sup>1)</sup> Some data are for flexible graphite foil only.

<sup>2)</sup> Sheet size is based on metal dimensions with overlapping foil to protect the metal edge.

**SIGRAFLEX BSSC is not only available with B-grade flexible graphite foil, but also with other SIGRAFLEX flexible graphite foil grades, see table below.**

### Material data that deviate from SIGRAFLEX® BSSC if other SIGRAFLEX® foil grades are used

Typical properties	Units	APX2	BP	B	SHL	N
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)	%/hour	≤ 1.0	≤ 2.0	< 4.0	≤ 2.0	
Oxidation inhibitor		yes	yes	yes	yes	no

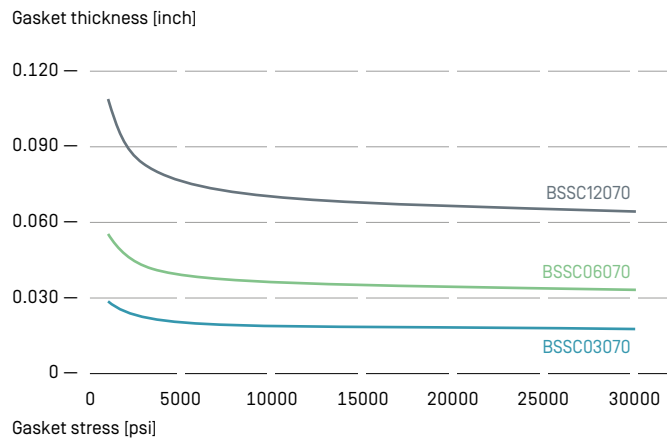
Other dimensions on request.

Unless stated otherwise, all values are valid at room temperature, typical, non-binding and subject to change. Please note some values correspond to the graphite foil only. For engineering or design purposes please contact our technical sales team.

### Properties

- High fault tolerance during assembly and operation
- Good chemical resistance
- Long-term stability of compressibility and recovery, even under fluctuating temperatures
- No measurable cold or warm flow characteristics up to the maximum permissible gasket stress
- No aging or embrittlement of the graphite layers
- Ease of processing
- Asbestos-free (no associated health risks)

### Compressibility of SIGRAFLEX BSSC



### Minimum required gasket stress

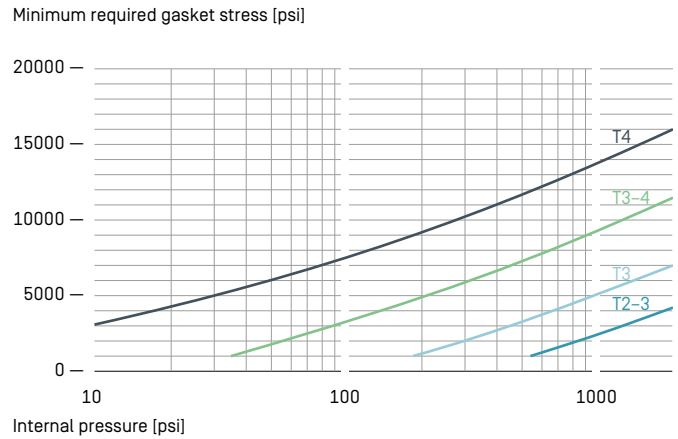
Internal pressure characteristics (plots of gasket stress, internal pressure, tightness class) are used when critical hazardous or dangerous media needs to be sealed.

The Pressure Vessel and Research Council (PVRC) defines certain tightness classes for bolted joints:

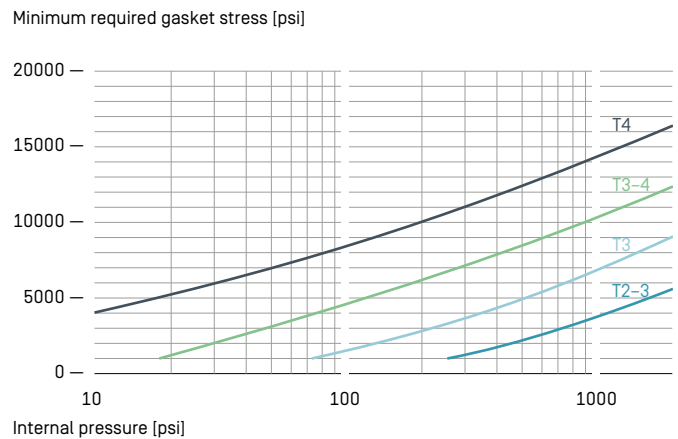
- T1 =  $2 \cdot 10^{-1}$  mg/(s\*mm): Economy
- T2 =  $2 \cdot 10^{-3}$  mg/(s\*mm): Standard
- T3 =  $2 \cdot 10^{-5}$  mg/(s\*mm): Tight
- T4 =  $2 \cdot 10^{-7}$  mg/(s\*mm): Extremely Tight

The minimum required gasket stress during operation can simply be taken by the expected internal pressure and the required tightness (Standard or Tight).

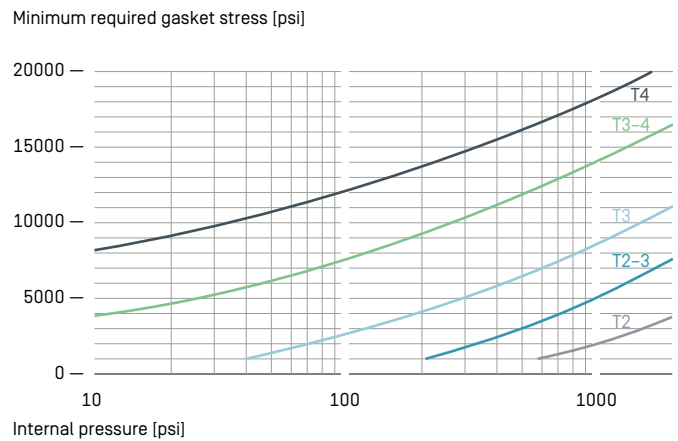
### Minimum required gasket stress of SIGRAFLEX BSSC 0.030"



### Minimum required gasket stress of SIGRAFLEX BSSC 0.060"



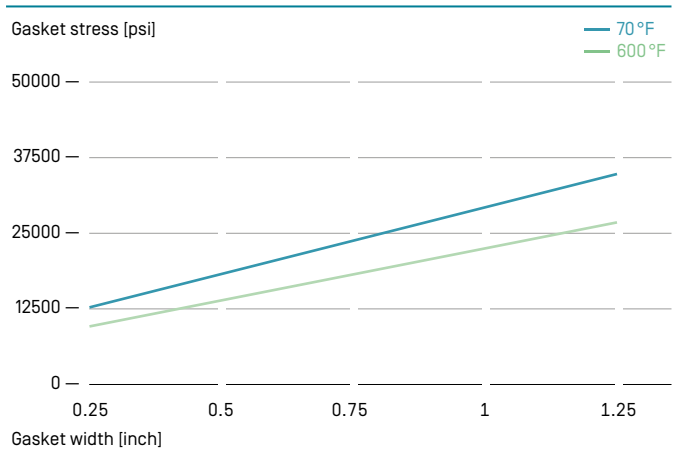
### Minimum required gasket stress of SIGRAFLEX BSSC 0.120"



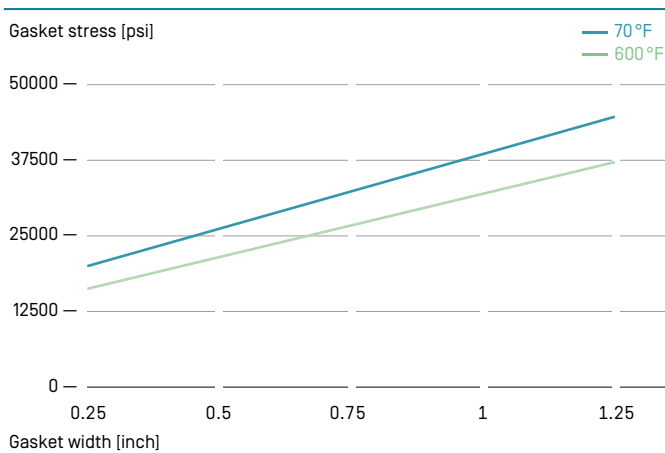
### Maximum applicable gasket stress

The hydrostatic end force that leads to gasket stress reduction needs to be considered. The maximum allowable gasket stress is used for the evaluation of safe load limits. For narrow gaskets and with increasing service temperatures, the maximum allowable gasket stress in service decreases.

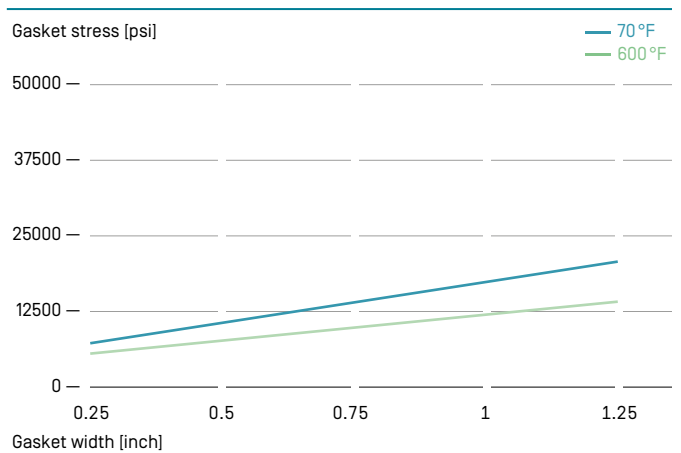
### Typical maximum permissible gasket stress of SIGRAFLEX BSSC 0.060"



### Typical maximum permissible gasket stress of SIGRAFLEX BSSC 0.030"



### Typical maximum permissible gasket stress of SIGRAFLEX BSSC 0.120"



Additional information on our SIGRAFLEX sealing materials can be found under "Download Center" on our homepage.

[www.sigraflex.com/downloads](http://www.sigraflex.com/downloads)



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### Assembly instructions

Our detailed assembly instructions are available on request. These instructions provide generic procedures for flange assembly. For troubleshooting, please use the recommendations of the user's own technical division or the gasket manufacturer.

### TDS BSSC\_Sheet\_US.02

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