

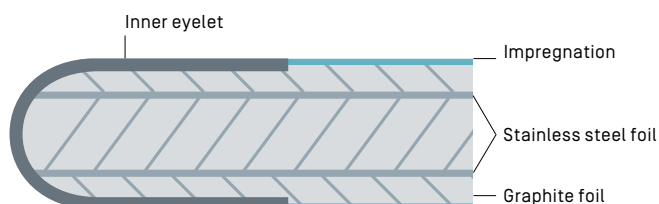
SIGRAFLEX® SELECT

High-integrity gasket made from natural graphite with inner eyelet



SIGRAFLEX SELECT is a graphite gasket comprising three graphite foils of various thicknesses and 0.05 mm thick stainless steel foils, as well as a stainless steel inner eyelet. This laminate is produced without adhesive and is impregnated to reduce leakage and to improve handling.

SIGRAFLEX SELECT is designed for applications requiring TA Luft approval.



↑ Cross-section

Applications

- For raised-face flanges meeting DIN EN 1514, DIN 2690 and ANSI
- For operating pressures from vacuum up to 100 bar
- For corrosive media
- Operating temperatures range from -250°C up to 550°C depending on chemical resistance. Life time might be limited at high temperatures. Consult the manufacturer when application temperatures exceed 450°C . Please refer to our technical guideline regarding thermal stability.
- Gaskets for the chemical, petrochemical and refinery industries
- Steam pipework in power generation plants
- Heat transfer oils and heating equipment
- Existing plants

Properties

- Reduction in fugitive emissions due to high leak-tightness
- High operational reliability, increased plant availability
- Excellent oxidation resistance
- High blow-out resistance and mechanical strength
- High fault tolerance during assembly and operation
- Good chemical resistance
- Long-term stability of compressibility and recovery, even under fluctuating temperatures
- Good scratch resistance and antistick properties due to special impregnation
- No measurable cold or warm flow characteristics up to the maximum permissible gasket stress
- No aging or embrittlement (no adhesives or binders)
- Asbestos-free (no associated health risks)

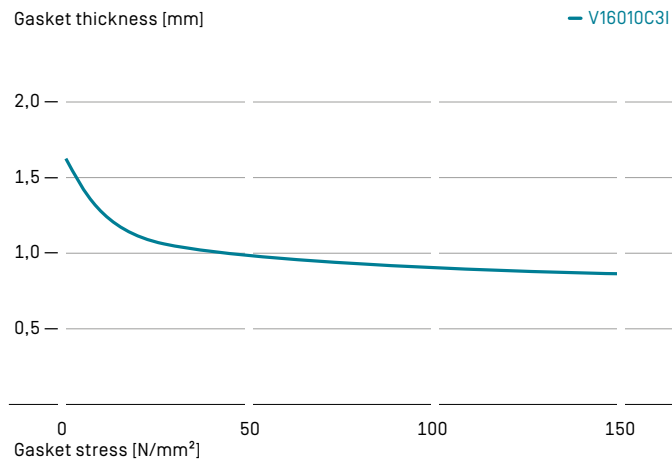


↑ Gaskets made from SIGRAFLEX SELECT



↑ Flange with SIGRAFLEX SELECT gasket

Compressibility of SIGRAFLEX SELECT



Approvals/Test reports

Please see www.sigraflex.com/downloads for details

- TA Luft (VDI 2440/VDI 2200)
- Fire safe according to API 607
- Blow-out resistance (TÜV at 2.5 times the nominal pressure)
- BAM oxygen
- DVGW (DIN 3535-6)

Assembly instructions

Our detailed assembly instructions are available on request.

Material data of SIGRAFLEX® SELECT

Typical properties		Units	V16010C3I
Thickness		mm	1.6
Bulk density of graphite		g/cm ³	1.0
Ash content of graphite [DIN 51903]		%	≤ 2.0
Purity		%	≥ 98
Total chloride content		ppm	≤ 25
Total halogen content		ppm	≤ 100
Total sulphur content		ppm	< 300
Oxidation rate in air at 670 °C (TGA)		%/h	< 4
Oxidation inhibitor			yes
Passive corrosion inhibitor [ASTM F 2168-13]			yes
Reinforcing steel sheet details			Smooth stainless steel foil
ASTM material number			316 (L)
Thickness		mm	0.05
Number of sheets			2
Stainless steel inner eyelet, ASTM material number			316 Ti
Residual stress [DIN 52913]	σ_D 16 h, 300 °C, 50 N/mm ²	N/mm ²	≥ 47
Gasket factors [DIN E 2505/DIN 28090-1]			
Gasket width $b_0 = 20$ mm at an internal pressure of			
$\sigma_{VU/0,1}$	10 bar	N/mm ²	10
	16 bar	N/mm ²	12
	25 bar	N/mm ²	15
	40 bar	N/mm ²	17
m			1.3
σ_{V0}		N/mm ²	160
σ_{B0} at 300 °C		N/mm ²	140
Gasket factors [DIN EN 13555]			see www.gasketdata.org
Compression factors [DIN 28090-2]			
Compressibility	ϵ_{KSW}	%	35
Recovery at 20 °C	ϵ_{KRW}	%	4
Hot creep	ϵ_{WSW}	%	< 3
Recovery at 300 °C	ϵ_{WRW}	%	4
Young's modulus at 20 N/mm ² [DIN 28090-1]		N/mm ²	750
ASTM	„m“-factor		2
	„y“-factor	psi	2000
Compressibility [ASTM F36]		%	35
Recovery [ASTM F36]		%	14
The gasket factor conversion formulas as per AD Merkblatt B7 are as follows			$k_0 \times K_0 = \sigma_{VU} \times b_D$ $k_1 = m \times b_D$

Definitions

$\sigma_{VU/0,1}$	Minimum gasket assembly stress needed to comply with leakage class L 0.1 (according to DIN 28090-1)	k_0	in mm, factor for gasket assembly stress
	Recommended gasket assembly stress: ≥ 20 N/mm ² up to σ_{B0}	k_1	in mm, factor for gasket stress in service
σ_{BU}	Minimum gasket assembly stress in service, where σ_{BU} is the product of internal pressure p_i and gasket factor m for test and in service ($\sigma_{BU} = p_i \times m$)	K_D	in N/mm ² , max. gasket stress-bearing capacity under assembly conditions
σ_{V0}	Maximum permissible gasket stress at 20 °C	ϵ_{KSW}	Compression set under a gasket stress of 35 N/mm ²
σ_{B0} at 300 °C	Maximum permissible gasket stress in service	ϵ_{KRW}	Gasket recovery after reduction in gasket stress from 35 N/mm ² to 1 N/mm ²
m	$m = \sigma_{BU} / p_i$	ϵ_{WSW}	Gasket creep compression under a gasket stress of 50 N/mm ² at 300 °C after 16 h
„m“-factor	Similar to m , but defined acc. to ASTM, hence different value	ϵ_{WRW}	Recovery after reduction in gasket stress from 50 N/mm ² to 1 N/mm ²
„y“-factor	Minimum gasket stress in psi		

The percentage changes in thickness of ϵ_{KSW} , ϵ_{KRW} , ϵ_{WSW} und ϵ_{WRW} are relative to the initial thickness.

Product overview

Products	Characteristics	Recommended applications
SIGRAFLEX FOIL F.../C/E/Z/APX/APX2	Flexible, continuous	- 250 °C to approx. 550 °C, for die-formed packing rings, spiral-wound and kammprofile gaskets
SIGRAFLEX STANDARD L...CI	Unreinforced, impregnated	Raised-face flanges, enamel or glass flanges, highly corrosive media
SIGRAFLEX ECONOMY V...C4	Reinforced with bonded stainless steel foil	Pumps, fittings, gas supply and waste gas pipelines
SIGRAFLEX UNIVERSAL V...C2I	Reinforced with tanged stainless steel, impregnated	Pipework and vessels in the chemical and petrochemical industries and in power generation plants
SIGRAFLEX UNIVERSAL PRO V...C2IP	Reinforced with tanged stainless steel, impregnated	TA Luft applications, for pipework and vessels in the chemical and petrochemical industries and in power generation plants
SIGRAFLEX SELECT V16010C3I	Reinforced with stainless steel foil, adhesive-free, impregnated	TA Luft applications, raised-face flanges, pipework in the chemical and petrochemical industries
SIGRAFLEX HOCHDRUCK V...Z3I	Multilayer material, reinforced with stainless steel foil, adhesive-free, impregnated	Universal sealing sheet, also for solving sealing problems in pipework, process equipment, tongue-and-groove flanges and non-standard joints in the chemical, petrochemical and nuclear industries and in power generation plants
SIGRAFLEX HOCHDRUCK PRO V...Z3IP	Multilayer material, reinforced with stainless steel foil, adhesive-free, impregnated	Universal sealing sheet for TA Luft applications, also for solving sealing problems in pipework, process equipment, tongue-and- groove flanges and non-standard joints in the chemical, petrochemical and nuclear industries and in power generation plants
SIGRAFLEX APX2 HOCHDRUCK V...W3	Multilayer material, reinforced with stainless steel foil, adhesive-free	Universal sealing sheet, also for solving sealing problems in high temperature applications in pipework, process equipment, tongue-and-groove flanges and non-standard joints in the chemical and petrochemical industries and in power generation plants
SIGRAFLEX MF V...MF	Adhesive-free laminate made of graphite, stainless steel and PTFE	Maximum requirements for sealability (TA Luft), safety and process hygiene; sealed joints in the chemical, petrochemical, pharmaceutical and food industries
SIGRAFLEX EMAIL V...Z3E	Reinforced with stainless steel foil, adhesive-free	PTFE-envelope gaskets for enameled pipework, vessels and stub connections, etc.



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

www.sigraflex.com/downloads



Graphite Materials & Systems | SGL CARBON GmbH | SGL TECHNIC Inc.
Sales Europe/Middle East/Africa | sigraflex-europe@sglcarbon.com
Sales Americas | sigraflex-americas@sglcarbon.com
Sales Asia/Pacific | sigraflex-asia@sglcarbon.com
www.sigraflex.com | www.sglcarbon.com

TDS SELECT_Sheet.00

05 2018/0 E Printed in Germany

®registered trademarks of SGL Carbon SE

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should therefore not be construed as guaranteeing specific properties of the products described or their suitability for a particular application. Any existing industrial property rights must be observed. The quality of our products is guaranteed under our "General Conditions of Sale".