

Non-Asbestos Jointing Materials


Type
KLINGERSil® C-4400
KLINGERSil® C-4430
Applications

Universal high-pressure gasket suitable for use in many branches of the chemical industry, the food industry and the water supply industry. Very high standard of performance.

Aramid fibres bonded with NBR. Resistant to oils water, steam, gases, salt solutions, fuels, alcohol organic & inorganic acids, hydrocarbon, lubricant and refrigerants.

Premium quality, high-pressure gasket with outstanding stress relaxation and outstanding resistance to hot water and steam.

Optimum combination of synthetic and glass fibres bonded with NBR. Resistant to steam and water at high temperatures as well as to oils and hydrocarbons. Fire Safe according to BS 5146;

Technical Data
Technical Data

Max operating temperature	400 °C	Max operating temperature	430 °C
Max operating pressure	100 bar	Max operating pressure	100 bar
Compressibility ASTM F 36 A	11 %		9 %
Recovery ASTM F 36 A min	55 %		50 %
Stress relaxation DIN 52913	50 MPa, 16h/300°C	25 MPa	50 MPa, 16h/300°C
Stress relaxation BS 7531		23 MPa	35 MPa
Klinger cold/hot compression 50 MPa	Thickness decrease at 23°C	10 %	Thickness decrease at 23°C
	Thickness decrease at 300°C	22 %	Thickness decrease at 300°C
Gas leakage according to DIN 3535/6		0.2 ml/min	<1.0 ml/min
Soluble Chloride Content	Chlorides (soluble)	150 ppm	Chlorides (soluble)
Thickness increase after fluid immersion ASTM F 146	Oil JRM 903: 5h/150°C	3 %	Oil JRM 903: 5h/150°C
	Fuel B: 5h/23°C	5 %	Fuel B: 5h/23°C
Density		1.6 g/cm ³	1.55 g/cm ³
Colour		Green both sides	Green one side, white one side


Type
KLINGERSil® C-4500
KLINGERSil® C-4403
Applications

Premium quality high-pressure gasket especially suitable for use with high temperature alkaline media and superheated steam.

Carbon fibres and special heat resistant additives bonded with NBR. A superior performance product designed for use with strongly alkaline media and steam in the chemical industry. Fire safe according to API SPEC 6 FA;

A general purpose non-asbestos sheet for use on oils water and gases. An excellent alternative to traditional compressed asbestos fibre.

3XA Anti- Stick coating on both sides aids flange separation. This removes the need for application of grease, or sealants which may cause gasket failure.

Technical Data
Technical Data

Max operating temperature	450 °C	Max operating temperature	300 °C
Max operating pressure	100 bar	Max operating pressure	50 bar
Compressibility ASTM F 36 A	12 %		8 %
Recovery ASTM F 36 A min	60 %		50 %
Stress relaxation DIN 52913	50 MPa, 16h/300°C	32 MPa	
Stress relaxation BS 7531		30 MPa	
Klinger cold/hot compression 50 MPa	Thickness decrease at 23°C	10 %	Thickness decrease at 23°C
	Thickness decrease at 300°C	15 %	Thickness decrease at 300°C
Gas leakage according to DIN 3535/6			Tensile strength ASTM F152 across grain
Soluble Chloride Content	Chlorides (soluble)	<1.0 ppm	18 MPa
Thickness increase after fluid immersion ASTM F 146	Oil JRM 903: 5h/150°C	3 %	Thickness increase ASTM F146 after immersion in
	Fuel B: 5h/23°C	5 %	ASTM Oil IRM 903
Density		1.4 g/cm ³	ASTM Fuel B
Colour		One side black, one side green	ASTM Water
			0-10 %
			0-10 %
			0-10 %

Non-Asbestos Jointing Materials


Type
KLINGER-top-graph 2000
KLINGER-top-graph 2008
Applications

The truly flexible graphite sealing material that is easy to handle and cut. It combines "high load bearing capacity" with high sealability.

KLINGER top-graph-2000 is ideally suited for use with steam up to 300°C and many high temperature applications up to 500°C Steam, Hot water, Oils and Hydrocarbon

The really flexible graphite sealing material now supplied wire reinforced. It combines "high load bearing capacity" and high sealability with improved blow-out resistance.

KLINGER Topgraph 2008 is ideally suited for use with steam up to 300°C and many high temperature applications up to 500 °C. A sealing material based on graphite and synthetic fibres with a wire insert that provides this material with totally new, previously unachievable properties.

Technical Data
Technical Data

	Max operating temperature	500 °C	Max operating temperature	500 °C
	Max operating pressure	100 bar	Max operating pressure	100 bar
Compressibility ASTM F 36 A		10 %		10 %
Recovery ASTM 36 A min		60 %		60 %
Stress relaxation DIN 52913	50 MPa, 16h/300°C	32 MPa	50 MPa, 16h/300°C	32 MPa
Klinger cold/hot compression 50 MPa	Thickness decrease ambient	10 %	thickness decrease ambient	10 %
	Thickness decrease hot 300°C	10 %	thickness decrease hot 300°C	10 %
Immersion oil JRM 903:5h/150°C	Thickness change	5 %	thickness change	5 %
	Weight change	10 %	weight change	10 %
Immersion fuel B: 5h/23°C	Thickness change	7 %	thickness change	7 %
	Weight change	10 %	weight change	10 %
Soluble chloride content	Chlorides (soluble)	<50 ppm	chlorides (soluble)	<50 ppm
Tightness according to DIN 3535/6		0.5 ml/min		1.0 ml/min
Density		1.75 g/cm ³		2.10 g/cm ³
Colour		Black both sides		Black both sides


Type
KLINGERSil® C-4409
KLINGERSil® C-8200
Applications

Premium high-pressure gasket for exacting operations with water, steam and liquid and gaseous chemicals.

Synthetic fibres bonded with NBR. High-pressure capability due to expanded metal reinforcement.

Resistant to oils, hydrocarbons, water, steam and gases.

Premium high-pressure gasket for use with acids. Resistant to a wide variety of media.

Glass fibres bonded with special acid-resistant elastomers.

Technical Data
Technical Data

	Max operating temperature	400 °C	Max operating temperature	200 °C
	Max operating pressure	80 bar	Max operating pressure	40 bar
Compressibility ASTM F 36 A		7 %	Compressibility ASTM F 36 A	9 %
Recovery ASTM F 36 A min		50 %	Recovery ASTM F 36 A min	55 %
Stress relaxation DIN 52913	50 MPa, 16h/300°C	35 MPa	Klinger cold/hot compression	
Stress relaxation BS 7531		-	25 MPa min thickness decrease at 23°C	7 %
Klinger cold/hot compression 50 MPa	Thickness decrease at 23°C	8 %	25 MPa max thickness decrease at 200°C	17 %
	Thickness decrease at 300°C	15 %	Density	2.0 g/cm ³
Gas leakage according to DIN 3535/6		2.0 ml/mi	Reference thickness	2 mm
Soluble Chloride Content	Chlorides (soluble)	150 ppm	Acid tests HNO ₃ , 96%: 18h/23°C	unsuitable
Thickness increase after fluid immersion ASTM F 146	Oil JRM 903: 5h/150°C	3 %	H ₂ SO ₄ , 96%: 18h/23°C	10 %
	Fuel B: 5h/23°C	5 %	H ₂ SO ₄ , 65%: 48h/23°C	8 %
Density		2.0 g/cm ³		
Colour		Black both sides		Off-white both sides

Note: C-4409 Variants : Gaskets reinforced with stainless steel C-4409 L and C-4509 L are also available. Their specifications are the same but the stainless steel reinforced grades are available in the sheet size: 1000 mm x 1250 mm and 1250 mm x 2000 mm respectively