



Klinger® - compressed gasket materials

In view of technical progress designs and dimensions are subject to change without notice.



UNI KLINGER LIMITED





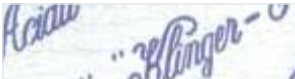




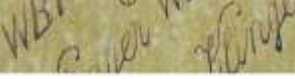

A joint venture of the Neterwala group of companies and KLINGER AG, Switzerland.



HARSH ENGINEERING SALES & SERVICE PVT. LTD

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Add: 2-3-692/22/13 Lal Bagh, Zinda Tillismath Road, Ganga Nagar, Amberpet, Hyderabad - 500013
Tel: +91-40-2740 3329 | Website: harsh-engineering.com | E-mail: sales@harsh-engineering.com

	Material Description	Operating Guidelines	(see note below*)	Typical Specifications	Typical Original Properties (1.5mm)	Typical Properties after Fluid Immersion (1.5mm)			
	Klingerit® 3XA Top quality service sheet for steam, gas, water, alkaline media, non-aggressive solvents and many other chemicals such as aliphatic alcohols, esters, ketones and amines composed of SBR binder and high grade chrysotile asbestos. Colour: Red/Brown.	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. W/1 & 0/1)	550°C 130 bar	British German American French BS 1832 Grade A & O DIN 3754 IT 400 ASTM F104-F112 551 M8 NFT 48001 Cat. D.	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 35 N/mm ² 1.95 gm/cm ³ 8% 55% 30 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	20% 0-10% 15%
	Klingerit® Universal 3XA Top quality universal service sheet suitable for nearly all media such as : hydrocarbons, alkalines and medium strong acids. Composed of NBR binder and high grade chrysotile asbestos. Particularly suitable for use in aviation industry, hot oil and thermic fluids. Colour : Blue. † Do not retorque fasteners at cryogenic temperatures	Max. Temperature Max. Pressure Min. Temperature † (Indian Standard IS 2712 / 1998 : Gr. 01 & W/1)	550°C 140 bar -200°C	British German American French BS 1832 Grade A and O BS F125 (Types 1 and 3) DIN 3754 IT 400 DIN 3754 IT C DIN 3754 IT O ASTMF104-F112121 M8 NFT 48001 Cat. D	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 42 N/mm ² 1.95 gm/cm ³ 8% 55% 30 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	8% 0-10% 12%
	Klingerit® 1000 Top grade material based on Klingerit, but reinforced with wire mesh for demanding and extreme services. Especially suitable and recommended for condition of fluctuating pressures and temperatures, i.e. when steam hammers might occur or in automotive applications. Composed of SBR binder and high grade chrysotile asbestos. Delivered with graphited surfaces. Colour : Graphite black.	Max. Temperature Max. Pressure	550°C 200 bar	There are no standards to cover wire reinforced materials however refer to Kliner 3 X A for typical properties	Minimum tensile strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 33 N/mm ² 2.1 gm/cm ³ 8% 50% 31 N/mm ²	As there are no standards to cover wire reinforced materials, refer to Klingerit 3XA for typical properties		
	Klinger® Oilit 3XA Top quality oil and petrol resistant material suitable for fuels, oils, solvents including aromatic and chlorinated hydrocarbons for high mechanical and thermal demand. Excellent resistance and compatibility for natural and town gas, water, steam, alkalines, mild acids and many other chemicals. Suitable for potable water (WRC certification) Composed of chrysotile asbestos and NBR binder. Also available in metallic Colour : Black. † Do not retorque fasteners at cryogenic temperatures	Max. Temperature Max. Pressure Min. Temperature (Indian Standard IS 2712 / 1998 : Gr. 0/1 & W/1)	500°C 130 bar -200°C	British German American French BS 1832 Grade A and O DIN 3754 IT O ASTM F104-F112120 M8 NFT 48001 Cat. D. Approved by the Water Research Council for use with potable water	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 38 N/mm ² 1.95 gm/cm ³ 8% 55% 30 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	6% 0-10% 8%
	Klinger® Acidit Plus High quality acid resistant material based on chrysotile asbestos and special binders compatible with strong organic and inorganic acids. Widely used in the chemical industry. Colour : White	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. A/1)	400°C 100 bar	British German American French — DIN 3754 IT S ASTM F104-F112000 NFT 48001 Cat. E.	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery	ASTM F152 30 N/mm ² 1.90 gm/cm ³ 8% 50%	Thickness increase 96% Sulphuric acid 95% Nitric acid 50% Nitric acid		5% Not suitable 15%
	Klinger® 100 High quality grade similar to Klingerit widely used in the petro-chemical industry. Especially suitable for steam, gas, water, alkalines and other non-aggressive media. Composed for chrysotile asbestos and SBR binder Colour : Grey † Do not retorque fasteners at cryogenic temperatures	Max. Temperature Max. Pressure Min. Temperature (Indian Standard IS 2712 / 1998 : Gr. W/1 & 0/2)	510°C 100 bar -200°C	British German American French BS 1832 Grade A and O DIN 3754 IT 400 ASTM F104-F112551M8 NFT 48001 Cat. D.	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 30 N/mm ² 1.95 gm/cm ³ 8% 55% 29 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	25% 5-20% 17%
	Klinger® SOE A Medium Grade Product for hydrocarbon service, fuels and oil solutions. Good resistance for medium pressure gases, water, steam, alkalines & acids. Colour : Black	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. 0/1)	400°C 80 bar	German DIN 3754 IT 0	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 22 N/mm ² 1.95 gm/cm ³ 10% 40% 25 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 23°C	10% 12%
	Klinger® 200 Good quality suitable for most applications of steam, gas, water, alkalines and other non-aggressive media under less demanding conditions. Composed of chrysotile asbestos fibre bonded with SBR. Colour : Red/Brown.	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : W/2)	400°C 40 bar	British German American BS 1832 Grade B DIN 3754 IT 200 ASTM F104-F112750 M7	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 22 N/mm ² 1.95 gm/cm ³ 8% 55% 26 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	30% 5-20% 20%
	Klinger® 80 Medium quality for general purpose use. Contains chrysotile asbestos fibre bonded with SBR. Also available in metallic Colour : Red/Brown	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. W/3)	350°C 35 bar	British American BS 1832 Grade B ASTM F104-F112700	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 13 N/mm ² 2 gm/cm ³ 8% 50% 21 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	25% 5-20% 15%
	Klinger® WB1 Medium quality controlled swell material extensively used by the automotive industry. Particularly suitable for applications where bolt loadings are relatively light or uneven. Composed of chrysotile asbestos fibre bonded with SBR. Colour: Yellow	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. W/3 : 0/2)	350°C 30 bar	American ASTM F104-F112970	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 20 N/mm ² 1.95 gm/cm ³ 8% 50% 15 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 20°C 5 hours 23°C	40% 5-20% 25%
	Klinger® KLR - 232 A Medium Range General Purpose Gasket Jointing For Steam, Water and Gas Application. Colour : Red / Black	Max. Temperature Max. Pressure (Indian Standard IS 2712 / 1998 : Gr. W/3)	270°C 25 bar	— —	Minimum tensile Strength (cross grain) Specific gravity Compressibility Recovery Stress relaxation	ASTM F152 8 N/mm ² 2.15 gm/cm ³ 8% 40% 14 N/mm ²	Thickness increase ASTM Oil 3 ASTM Fuel A ASTM Fuel B	5 hours 150°C 5 hours 23°C	45% 30%

*Note : Maximum temperature and pressure capabilities do not necessarily operate together for all gasket thickness and service conditions.

Tolerances

Nominal Sheet Size	Standard		Reinforced	
	Width (mm)	Length (mm)	Width (mm)	Length (mm)
1.5 X 4.0 M	1510 to 1475	4100 to 3800	1500 to 1450	4100 to 3800
1.5 X 2.0 M	1510 to 1475	2040 to 1975	1500 to 1450	2040 to 1975
1.5 X 1.5 M	1510 to 1475	1510 to 1475	1500 to 1450	1510 to 1475
1.5 X 1.0 M	1510 to 1475	1020 to 975	1500 to 1450	1020 to 975

Nominal Thickness

Up to and including 0.5 mm
 Over 0.5 mm, Up to and including 1.0 mm
 Over 1.0 mm, Up to and including 2.0 mm
 Over 2.0 mm

Tolerances

Plus or Minus 0.05 mm
 Plus or Minus 0.10 mm
 Plus or Minus 0.15 mm
 Plus or Minus 0.20 mm

Maximum variation within one sheet.

0.05 mm
 0.10 mm
 0.15 mm
 0.20 mm

Special Tolerances on request.

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Also available :  **KLINGER / UKL** Fluid Sealing Division:

UNISIL Compressed Non-Asbestos Gasket Sheetting
Full Range of Cut Gaskets, Metal Jacketed Heat Exchanger Gaskets,
Non-Asbestos Gland Packing, Kammprofile, Spiral Wound Gaskets
& all types of PTFE Gaskets

Fluid Control Division:

PISTON VALVES - Seatless & Glandless, Forged Piston Valves
STEAM TRAPS - Thermodynamic, IBT, Ball Float, Thermostatic
MANUAL & ACTUATED BALL & BUTTERFLY VALVES
STRAINERS 'Y' Type / LEVEL GAUGES - Reflex, Transparent, Bicolor
BELLOW SEALED VALVES

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