# KLINGER®top-sil ML1

**KLINGER®top-sil ML1 is a special multi-layer sealing material with extended service life and improved flexibility at higher temperatures.**

Revolutionary combination of synthetic fibres and different elastomers, bonded in a multi-layer structure.
This material is suitable for use with oils, water, steam, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons, lubricants and refrigerants.



## Key features:

» Unique multi-layer structure
» Utilization of HNBR and NBR rubber
» Resistant to creep and cold flow
» Dimensionally stable

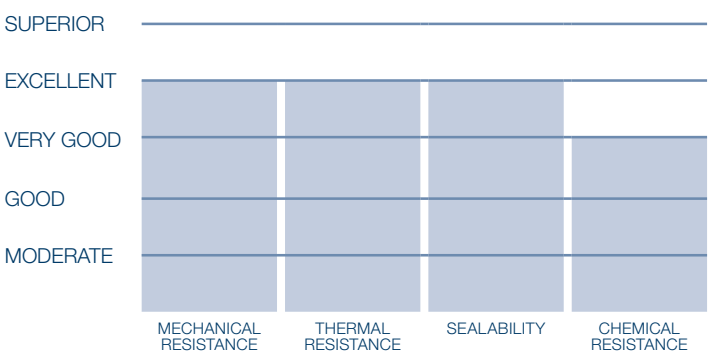
## Benefits:

» Extended service life time
» Improved flexibility at higher temperatures

## Certificates and approvals:

» BAM-tested
» DIN-DVGW
» WRAS approval
» German Lloyd
» TA-Luft (Clean air)
» Fire-Safe acc. DIN EN ISO 10497

## Properties: referring to KLINGERSIL® product range




## Industries:

INDUSTRY | CHEMICAL | OIL & GAS | ENERGY | INFRASTRUCTURE | PULP & PAPER | TRANSPORT | FOOD & BEVERAGES | PHARMA

## Typical technical data for thickness 2.0 mm:

| | | | |
|---|---|---|---|
| Compressibility ASTM F 36 J | | % | 9 |
| Recovery ASTM F 36 J | | % | 50 |
| Stress relaxation DIN 52913 | 50 MPa, 16 h/175°C | MPa | 34 |
| | 50 MPa, 16 h/300°C | MPa | 28 |
| Stress relaxation BS 7531 | 40 MPa, 16 h/300°C | MPa | 29 |
| KLINGER cold/hot compression | thickness decrease at 23°C | % | 8 |
| 50 MPa | thickness decrease at 300°C | % | 15 |
| Tightness | DIN 28090-2 | mg/s x m | 0.05 |
| Specific leakrate λ | VDI 2440 | mbar x l/s x m | 3.51E-06 |
| Thickness increase after fluid | oil IRM 903: 5 h/150°C | % | 4 |
| immersion ASTM F 146 | fuel B: 5 h/23°C | % | 8 |
| Density | | g/cm³ | 1.7 |
| Average surface resistance | ρO | Ω | 9.3x10E12 |
| Average specific volume resistance | ρD | Ω cm | 3.8x10E12 |
| Average dielectric strength | $E_d$ | kV/mm | 18.8 |
| Average power factor | 50 Hz | tan δ | 0.048 |
| Average dielectric coefficient | 50 Hz | εr | 7.3 |
| Thermal conductivity | λ | W/mK | 0.36 |
| Classification acc. to BS 7531:2006 | Grade AX | | |
| **ASME-Code sealing factors** | | | |
| for gasket thickness 1.0 mm | tightness class 0.1 mg/s x m | | y 15 |
| | | | m 1.5 |
| for gasket thickness 2.0 mm | tightness class 0.1 mg/s x m | | y 15 |
| | | | m 2.2 |
| for gasket thickness 3.0 mm | tightness class 0.1 mg/s x m | | y 15 |
| | | | m 4.0 |

## Dimensions of the standard sheets:

### Sizes:

2000 x 1500 mm

### Thicknesses:

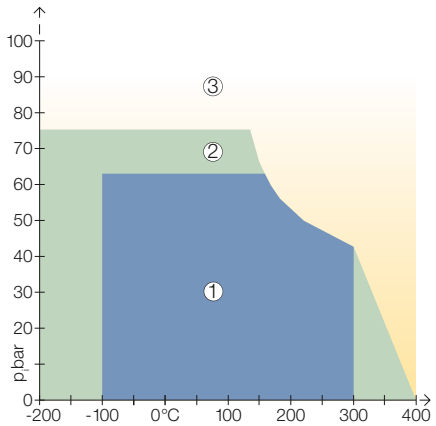
0.8 mm, 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm

### Tolerances:

Thickness acc. DIN 28091-1
Length ± 50 mm, width ± 50 mm

Other thicknesses, sizes and tolerances on request.

## pT diagram for thickness 2.0 mm:




① In area one, the gasket material is normally suitable subject to chemical compatibility.

② In area two, the gasket material may be suitable but a technical evaluation is recommended.

③ In area three, do not install the gasket without a technical evaluation.

Always refer to the chemical resistance of the gasket to the media.

Certified acc. to DIN EN ISO 9001:2008 Subject to technical alterations. Status: March 2016

Rich. Klinger Dichtungstechnik GmbH & Co KG » Am Kanal 8-10 » A-2352 Gumpoldskirchen, Austria
Tel +43 (0) 2252/62599-137 » Fax +43 (0) 2252/62599-296 » e-mail: marketing@klinger.co.at

www.klinger.co.at