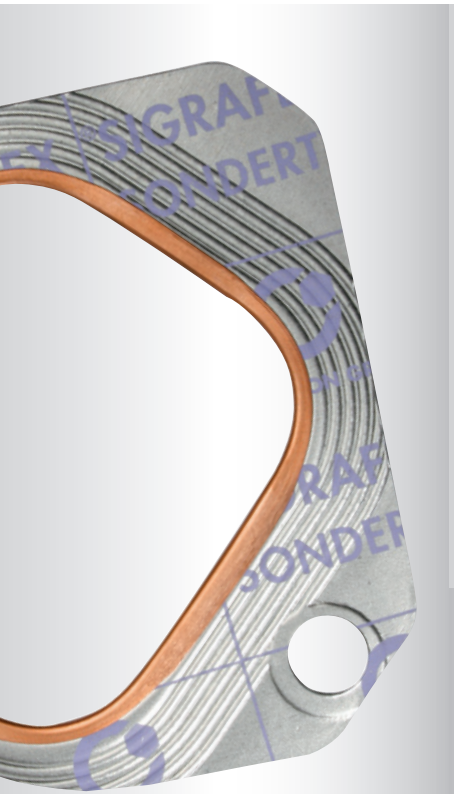
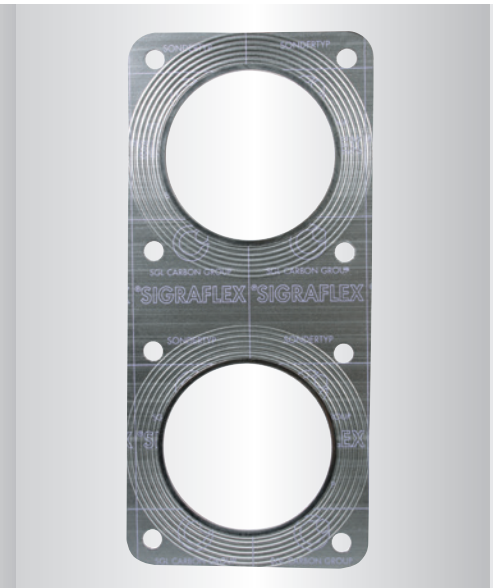
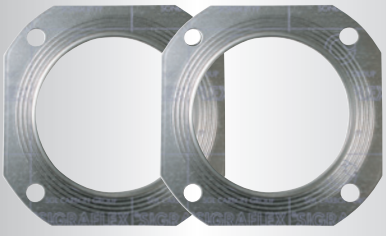
KLINGER
A. W. Schultze

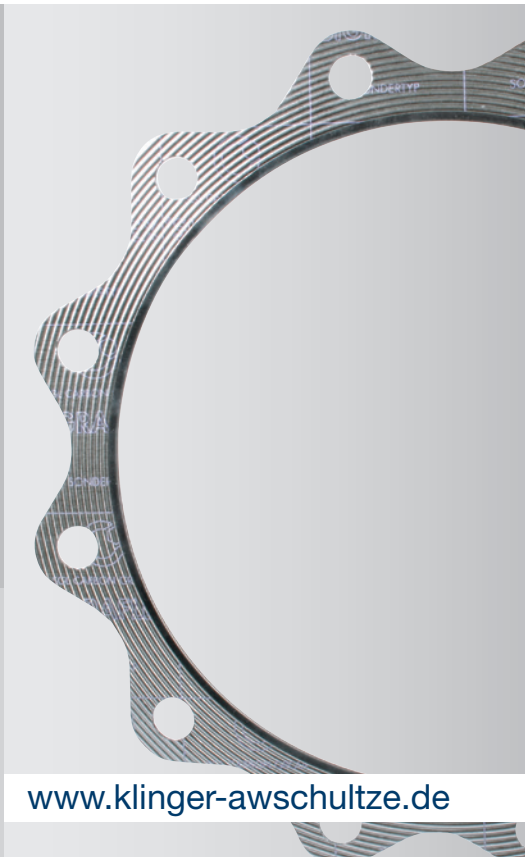
# SIGRAFLEX® SPECIAL TYPE WAVELINE-WLP®

Our know-how for a clean environment







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# THE CHALLENGE

## Highly temperature resistant

High pressure gaskets must withstand high temperatures in the areas of power station technology as well as motor, plant and container fabrication.
Frequently the limits for use of fibrous materials and exposed graphite are exceeded. At the same time, unevenness and heat distortion have to be compensated for at the gasket surfaces.

## Structure

The interior structure of the sheet consists of several 0.5 mm layers of high-grade graphite film and 0.05 mm layers of sheet metal and stainless steel foil.
The surface consists of a 0.05 mm layer of stainless steel foil 1.4401. The entire compound is free of adhesives.

# THE SOLUTION

## Sigraflex® special type Waveline-WLP®

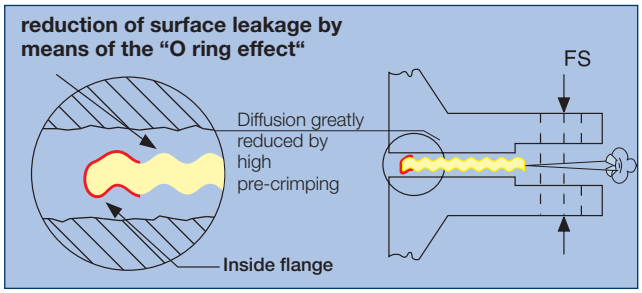
meets most important user criteria when exposed graphite oxidises.

» high thermal stability for applications to 650 °C and higher (depending on installation and operating conditions)

» good adaptivity to uneven and distorted gasket surfaces

» good behaviour under changing temperatures, high pressure stability, bursting resistance, rigidity, long-term stable compression and resilience behaviour

## Waveline-WLP® design




» reduces cross-sectional leakage by pre-crimping of the gasket

» reduces surface leakage through the “O-ring” effect

» reduces the surface leakage of a flanged gasket in a particularly significant manner compared to the smooth metallic flange

» optimal handling during installation through greater stiffness

# THE PROPERTIES

Sigraflex® special type is based on the gasket material Sigraflex® high-pressure, which has proven its worth over many years in demanding fields of application.
In its refined version, Sigraflex® special type Waveline WLP®, the gasket has excellent characteristics.

» the mechanical and thermal properties of high-purity graphite

» the reduced oxidation and shielding from the oxygen from the surroundings

» the blow-out safety and stabilising effect of inner flange and stainless steel inserts

» the emission-reducing effect of the Waveline WLP® design, high compressive strength, resistance to bursting, rigidity, long-term stable compression and resilience behaviour

## Inside flange

» increases blow-out safety

» protects medium and gasket from contamination

» reduces cross-section leakage

» increases buckling stability

» improves handling

# THE BENEFITS

- » good compressibility and resilience
- » high resistance to pressure
- » thermal and chemical resistance, no material ageing
- » temperature resistance up to 650 °C and good temperature variation behaviour
- » extensive protection from oxidation
- » adhesive-free compound
- » high blow-out safety
- » no contamination of medium due to gasket
- » no contamination of gasket with toxic media
- » high installation safety and handling advantages due to Waveline WLP®
- » constructive tool in the gasket connection

# THE APPLICATION

The gasket has already proven its worth in the following fields of application:

- » Exhaust gases of internal combustion engines up to 640 °C
- » Oxidizing media (SO2/SO3) up to 570 °C
- » Steam up to 545 °C
- » Production up to 4.5 m in diameter

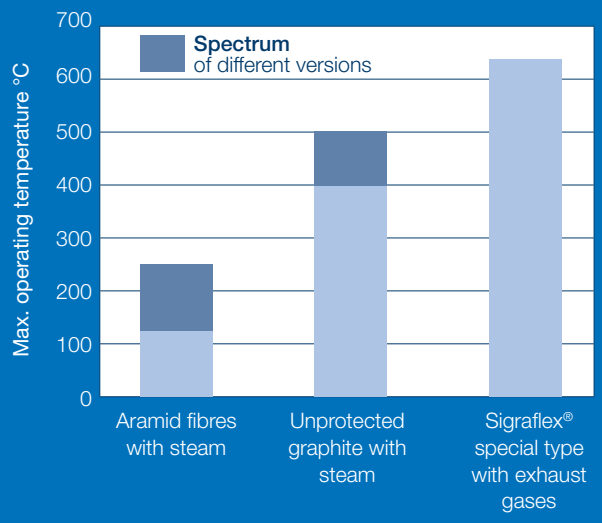
## Material data of the Sigraflex® special type plate material

| | | | |
|---|---|---|---|
| Thickness | | mm | 2 |
| Bulk density of the graphite | | g/cm³ | 1,1 |
| Ash content of the graphite DIN 51903 | | % | ≤ 0,15 |
| **Information on smooth metal inserts/layers** | | | |
| Material number | | | 1.4401 |
| Thickness | | mm | 0,05 |
| Number | | | 5 |
| Pressure resistance according to DIN 52913 for 16 h, 300 °C, 50N/mm² | | N/mm² | > 48 |
| **Gasket characteristics** | | | |
| Gasket width | | | |
| VO $b_d$ = 10 mm | | N/mm² | 170 |
| $b_d$ = 20 mm | | N/mm² | 240 |
| BO, 300 °C $b_d$ = 10 mm | | N/mm² | 140 |
| **Deformation characteristics according to DIN 28090 part 2** | | | |
| Cold heading value | KSW | % | 25 - 30 |
| Cold resilience value | KRW | % | 3 - 4 |
| Hot creep | WSW | % | < 3 |
| Warm resilience value | WRW | % | 3 - 4 |

| | |
|---|---|
| VU | Minimum pressure for pre-crimping |
| BO | Minimum surface pressure in the operating condition |
| VO | Maximum permissible surface pressure at RT |
| BO, 300 °C | Maximum permissible surface pressure in the operating condition |
| KSW | Compression and compressibility at a surface pressure of 35 N/mm² |
| KRW | Resilience after relief of 35 N/mm² to 1 N/mm² |
| WSW | Recovery after relief of 35 N/mm² to 1 N/mm²<br>50 N/mm² at 300 °C after 16 h |
| WRW | Resilience after relief of 50 N/mm² to 1/3 (16,7 N/mm²) |

The percentage changes in thickness of KSW, KRW, WSW, WRW refer to the initial thickness of the gasket.

## Temperature diagram




The temperature data for aramid fibres and graphite relate to the full spectrum of the manufacturer's instructions. The temperatures for Sigraflex® special type relate to practical applications. In all cases, the operating temperatures can be both under-and above the values shown here, depending on the installation and operating conditions. We always recommend a consultation with our sealing expert to choose the right gasket for the particular application.

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