

KLINGERmetal

the embedded intelligence

*With KLINGERmetal,
we enable you to react purposeful to the demands of
the gasket joint and the surrounded components.*

*We offer solutions,
leading to a progressive conception
of the components to be tightend and mounted.*

KLINGER – The global leader in static sealing

May we introduce **KLINGERmetal**?

A sealing material with an excellent adaption to the demands of the components which are to be tightened.

This sealing material is produced with inserts made out of carbon steel, stainless steel or spring steel, with a thin elastomer-coating on both sides (NBR or AEM).

According to actual pressure and the allocation of the bolt load as well as to the areas which are to be tightened, one or more beads will be engraved. They lead to a defined line-pressing and thus to an exact sealing.

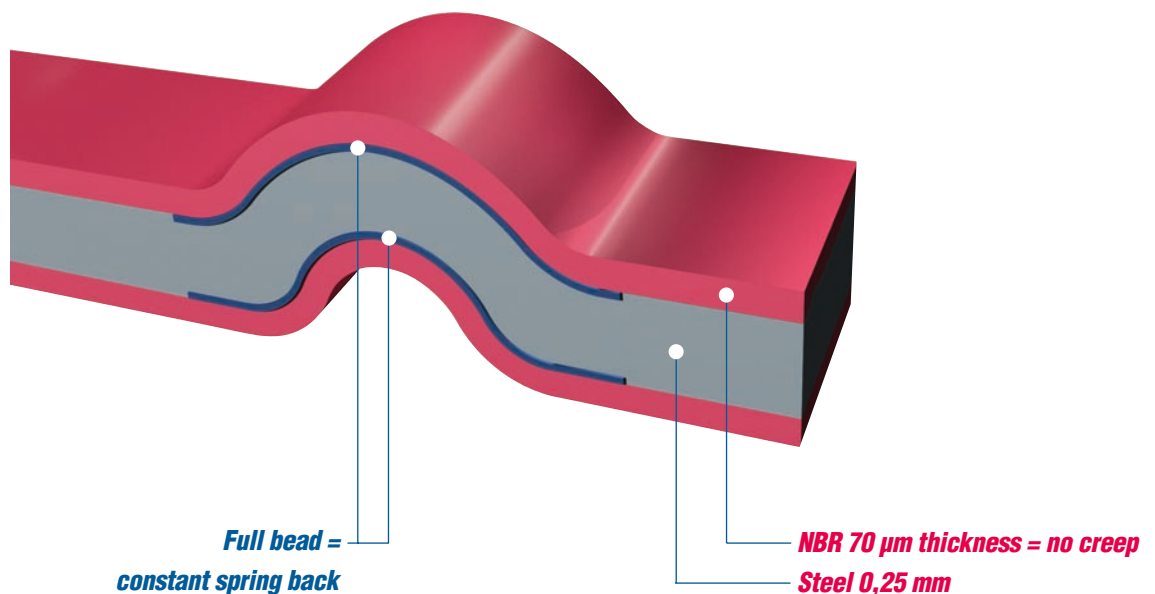
Demands

The previous sealing concepts made out of soft-materials depend on the realisation of the macro-adaption and the micro-sealing via the compressibility of the sealing material i.e. via its compression. At the same time however, a high adaption i.e. a high compressibility often leads to a low residual stress. The residual stress is an indicator for the stability of a gasket.

The residual stress is extremely important in case of higher temperatures, high gasket load and for gaskets with a small width.

Because of the contradiction of compressibility and residual stress, no satisfactory results often could have been achieved in the case of complex demands.

With **KLINGERmetal** those problems do not occur, because on the one hand **KLINGERmetal** can not be overloaded and on the other hand the adaption and the sealability will be determined specifically for the components via the bead-geometry and the thickness of the elastomer.



Function

When mounting a **KLINGERmetal** gasket, the screw-force will deform the bead, so a high, specific line-load on the bead will be produced, even with low screw-force. The elastomer-coating will be pressed into the surface roughness of the sealing area: the wanted **microsealing** in the area of the surface roughness will be achieved.

Deforming itself, the bead adapts to the unevenness of the sealing area and guarantees the **macrosealing**. Changes of the size of the sealing-gap can be absorbed by the recovery of the bead.

The gasket which adapts itself

The features in detail:

- no stress relaxation
- defined line-load
- good micro- and macrosealing
- 100% tight across
- no fatigue of the material in opposite to statical-loaded elastomer gaskets
- a high stability of the shape with constant recovery
- a compensation of the movements of the counterparts is possible
- nearly no maturing
- automatic mounting possible
- well suited for recycling

The typical range of application

Regarding the possible applications, there are nearly no limits, as the KLINGERmetal is tailor-made to your application.

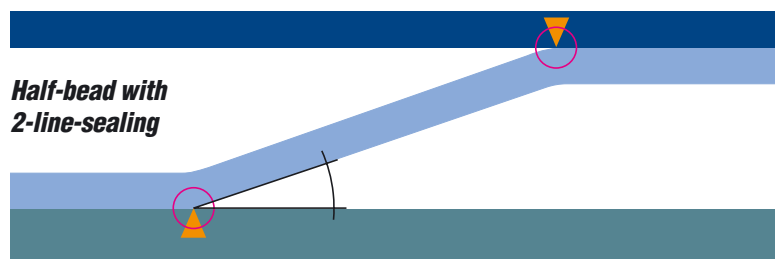
However, there are applications making the use of KLINGERmetal very interesting:

- gaskets joint with a low surface load
- narrow gaskets (3,5 - 4 mm)
- strong vibrations (movements in the connection)
- uneven sealing area
- weak components
- movements during mounting (screw fittings)
- simplifying of sealing areas (O-ring grooves can be dropped)
- difficult mounting situations

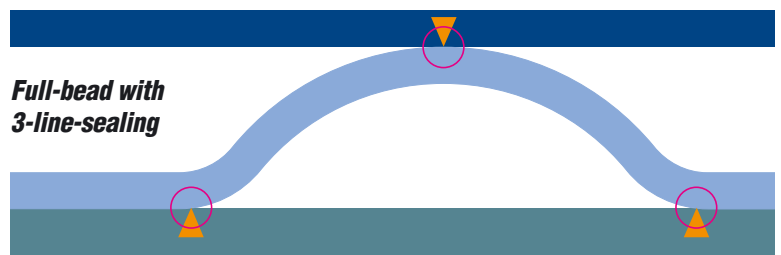
Two examples

A) You have to tighten a body, with small gaskets, whose screws are arranged asymmetrically. Because of the different allocation of the bolt load in the construction, there are differently high surface loads. Conventional gasket material are often not pressed satisfactory and thus can not really tighten. Moreover, it is not guaranteed that the gasket is placed securely on the centre bars.

The result is a regular pressing and a secure sealing. The critical centre bars are tightened as well as there is no slipping because of the stable KLINGERmetal sealing!



Half-bead with 2-line-sealing



Full-bead with 3-line-sealing

B) A valve assembly for controlling of compressed air consists of a body with many connection ports and valves, which are mounted on and switched according to the needed control logic.

The single valve-connections are tightened with O-rings for which the respective grooves must be produced.

The lavish and expensive processing as well as the ponderous mounting will be dropped. You only need a plane area. The suitable formed KLINGERmetal will be inserted in one piece and tighten the various valves.

Out of limits

We could carry on enumerating further applications - each an intelligent solution for the special application. Have you become curious?

Please contact us.

Typical data KLINGERmetal	2540 NS (ZN)*	2540 NE	2540 NF	2533 AL
Steel type	cold strip St2 K50	stainless steel 1.4301	stainless spring steel 1.4310	cold strip St2LG
Thickness of the metal	0.25 mm	0.25 mm	0.25 mm	0.25 mm
Elastomer coating	NBR containing 34% nitrile	NBR containing 34% nitrile	NBR containing 34% nitrile	Ethylen-Acrylat (AEM)
Thickness of coating	2 x 0.075 mm	2 x 0.075 mm	2 x 0.075 mm	2 x 0.04 mm
Total thickness	0.40 mm	0.40 mm	0.40 mm	0.33 mm
Thickness increase ASTM F 146 (only coating)				
Oil : 3,5 h/150 °C	max. 6 %	max. 6 %	max. 6 %	max. 6 %
Fuel B: 5h/ 20 °C	max. 6 %	max. 6 %	max. 6 %	max. 6 %
Water/Glycol 1:1, RT	max. 7 %	max. 7 %	max. 7 %	max. 7 %

* () = option can be choosed if required

Description of the type

Throught the type description you easily can get the basic information about the materials structure.

Example KLINGERmetal 2540 NS ZN

ZN = zinc-plated
 S = cold strip St2K50/ K60
 L = cold strip St2LG
 E = stainless steel 1.4301
 F = spring steel 1.4310
 N = NBR
 A = AEM
 Total thickness = 0.40 mm
 Thickness of the metal sheet = 0.25 mm

Further qualities:

We are permanently working on new sealing applications. Thus, other materials are in development.

Please don't hesitate to contact us if you have special demands on materials.

Materials for shims/insulators on demand.



Powerful sealing calculation with
online help on CD-ROM



**Certified according to
DIN EN ISO 9001:2000**

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