

STASSKOL



SK404

Sealing material for dry Hydrogen in non-lubricated applications

SK404 is a sealing material based on Polytetrafluorethylene (PTFE) and it is widely used in dry-running service. A typical application is the compression of gases like Hydrogen, Nitrogen, Hydrocarbons and Chlorosilanes mostly by reciprocating systems. The optimized content of carbon fibers, carbon black and graphite ensures high service life-times, increased mechanical properties and a chemical resistance against gases with HCl contents.

TRIBOLOGICAL PROPERTIES

The tribological properties are defining the wear behavior of the material. The wear rate (k) and friction coefficient (μ) of SK404 are identified by tribological characterization.

Under Hydrogen	
Wear rate:	$k = 7 \cdot 10^{-8} \text{ mm}^3/\text{Nm}$
Friction coefficient:	$\mu = 0.04$

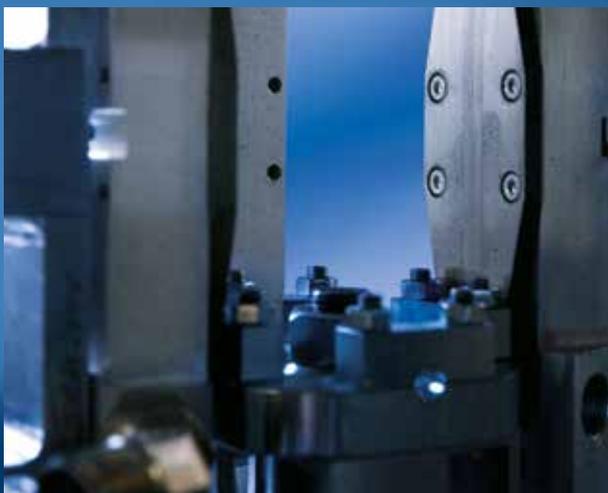
Under Nitrogen	
Wear rate:	$k = 5 \cdot 10^{-8} \text{ mm}^3/\text{Nm}$
Friction coefficient:	$\mu = 0.07$

The following conditions were applied during the test of SK404:

Gas:	Hydrogen, Nitrogen
Average velocity:	2.7 m/sec
Pressure:	20 bar
Dew point:	-70 °C
Counter surface:	steel with tungsten carbide coating
Lubricant:	none

The lower the wear rate the higher are the wear resistance and the expected service life-time at the field application.

STASSKOL provides state-of-the-art equipment for tribological characterizations under reciprocating and rotating movement. An unique reciprocating tribometer was used to investigate the wear behavior of SK404.



The material performance strongly depends on the test conditions. Therefore measurements at the parameters of the customer's application are recommended. Please use the characterization and development capabilities of STASSKOL.

MECHANICAL PROPERTIES

SK404 shows an increased stiffness due to the high filler content. The mechanical properties have been investigated using a tensile testing machine under standard (DIN EN ISO527-1) conditions.

Elastic modulus:	1,660 MPa
Tensile strength:	17.6 MPa
Elongation at break:	8.2 %
Density:	1.78 g/cm ³
Hardness:	66.9 Shore D

CUSTOMER GUIDELINE

Operating Conditions:

- Dry-running
- Pressure up to 200 bar
- Temperature up to 150 °C
- Average velocity up to 4.5 m/sec
- Dew point down to -50 °C

References:

- Refinery applications
- Polysilicon productions
- Polymer plants
- Biogas applications

Please contact STASSKOL to get additional information about SK404. You will be supported by choosing the best sealing material according to the operating conditions of your application.

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