WACKER

CREATING TOMORROW'S SOLUTIONS

ELASTOSIL®

NEW HORIZONS THROUGH INNOVATIVE APPLICATIONS WITH ELASTOSIL® FILM

ULTRATHIN SILICONE FILM FOR HIGH-PRECISION SOLUTIONS

A New Product Form for Silicone Elastomers

ELASTOSIL® Film from WACKER is an ultrathin, high-precision film of crosslinked silicone rubber that is available in various layer thicknesses from 20 µm to > 400 µm and is manufactured under clean-room conditions entirely without solvents. The unique patent-pending manufacturing process produces immaculate, high-precision silicone film with a defined thickness that is impossible by other production processes. The maximum thickness variation across the film width is ±5%. This precision, combined with the proven properties of silicone rubber opens up potential applications that were hardly conceivable until now, and could certainly not be realized on an industrial scale.

ELASTOSIL® Film is especially impressive for its durability. Its outstanding dielectric properties, Young's modulus and rebound resilience remain constant over a wide range of temperatures and frequencies, as well as over millions of load cycles. Moreover, ELASTOSIL® Film is chemically inert and suitable for food contact. Like all silicone elastomers, ELASTOSIL® Film is characterized by selective permeability for gases and water vapor.

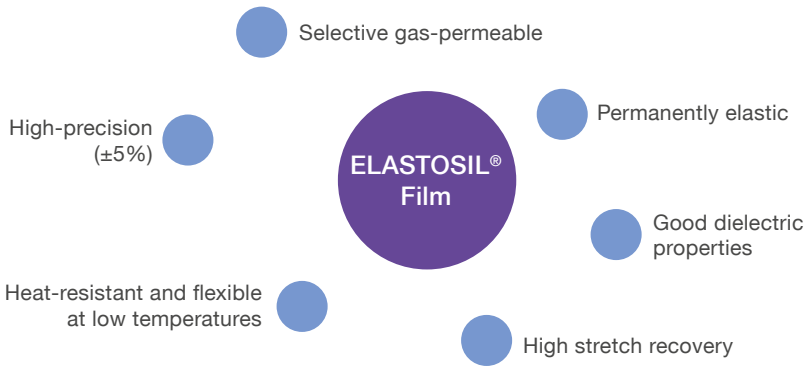
Diverse Applications

ELASTOSIL® Film is ideal for use as a dielectric precision layer in innovative, future-oriented electronics applications: so-called EAPs (electroactive polymers), especially in:

- Actuator technology ("artificial muscles")
- Electricity generation ("energy harvesting")
- Smart sensors

With its typical silicone properties, ELASTOSIL® Film can also be used in food packaging, technical textiles and an extremely wide variety of industrial applications.

Properties of ELASTOSIL® Film



For applications in the medical sector and for wound dressing, ask about our biocompatible SILPURAN® Film.

Form of Delivery and Processing

ELASTOSIL® Film

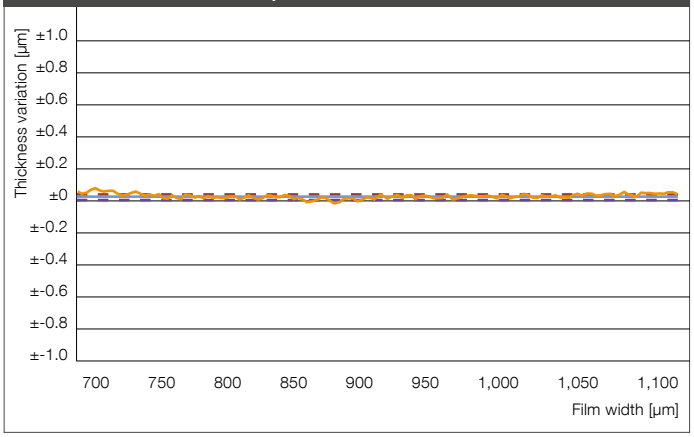
- Produced under cleanroom conditions, currently on a pilot scale, at a width of 250 mm
- Available as sheet or roll stock on a support film, from which it can be easily stripped off for further processing
- Can be processed by conventional die-cutting or laser techniques
- Can be permanently and reliably bonded using silicone adhesive. Different grades are available for different applications. Ask us, and we will recommend one that is optimum for your application.

ELASTOSIL® Film 2030 Product Data	
Starting material	Addition-curing silicone rubber
Layer thickness	20 µm – 400 µm
Shore A (DIN 53505)	30
Elongation at break (ISO 527-3)	450%
Tear strength (ASTM D624 B)	10 N/mm
Glass transition temperature (Tg)	-126 °C
Operating range	-45 °C to 200 °C
Gas permeability (selectivity)	CO_2/N_2 1:100
Water vapor permeability (JIS 1099 A1)	3,000 g/m²/24 h at 20 µm
Compression set, 22 h, 100 °C (ISO 815-B)	5%
Permittivity ε_r	2.8
Dielectric strength (VDE 0303)	80 V/100µm
Volume resistivity (IEC 60093)	10^{14} Ω·cm
Suitable for food contact (BfR/FDA)[1]	Yes

[1] BfR recommendation:
„XV. Silicones" / FDA CFR 21 § 177.2600
„Rubber articles intended f. repeated use"

These figures are only intended as a guide and should not be used in preparing specifications.

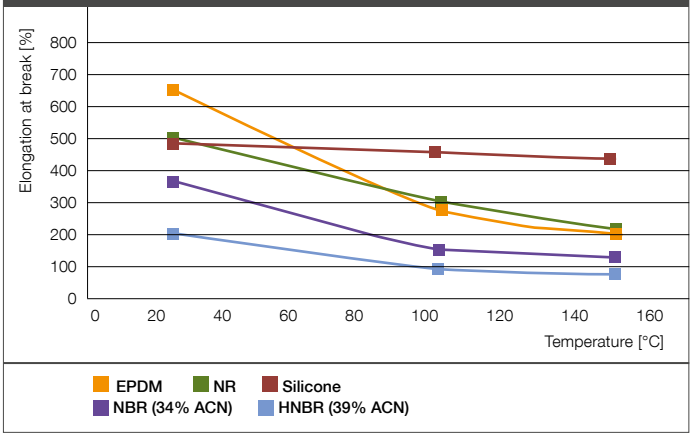
Surface Precision of a 20 µm Thick ELASTOSIL® Film



Thickness Precision

The ELASTOSIL® Film process produces films that are a fraction of the thickness of a human hair with state-of-art film thickness uniformity.

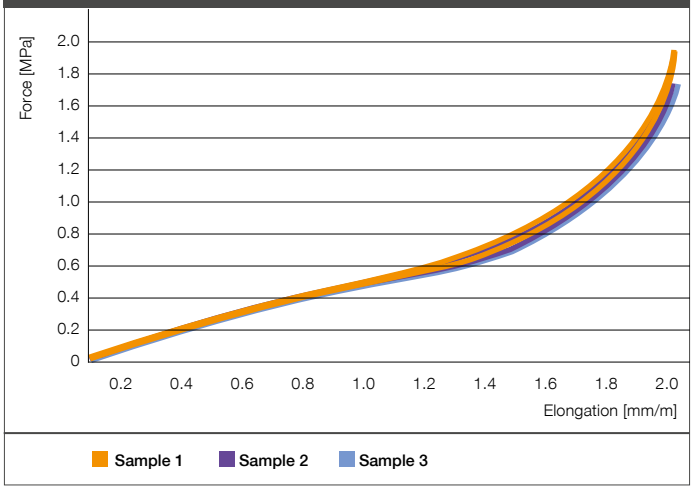
Heat Resistance of Various Elastomers



Elongation at Break

Silicones high elongation at break remains practically constant over a wide temperature range.

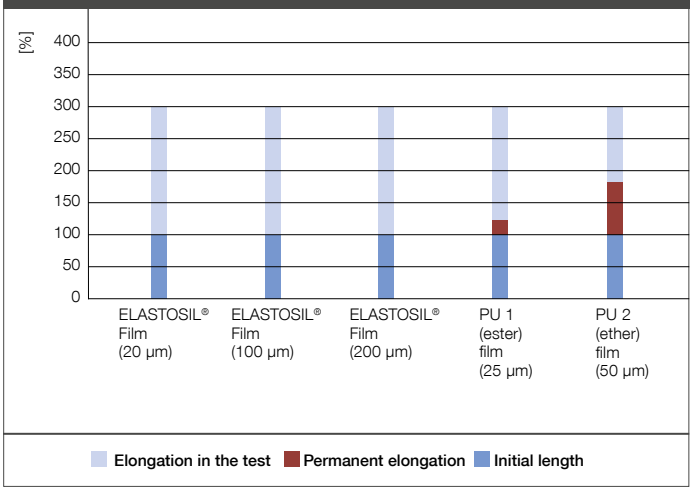
Stress-Strain Curve of ELASTOSIL® Film 20 µm, 3 Samples, 1.0 Hz, 10 Cycles



Elasticity and Resilience

ELASTOSIL® Film is highly elastic – permanently.

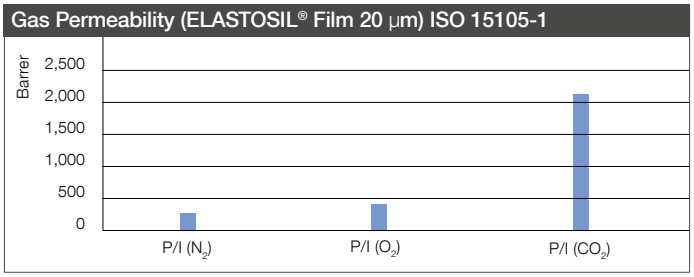
Stretch Recovery of ELASTOSIL® Film and PU Film after 24 h at 300% Elongation



Stretch Recovery

Compared to other materials, silicone, and therefore ELASTOSIL® Film, has excellent elastic recovery.

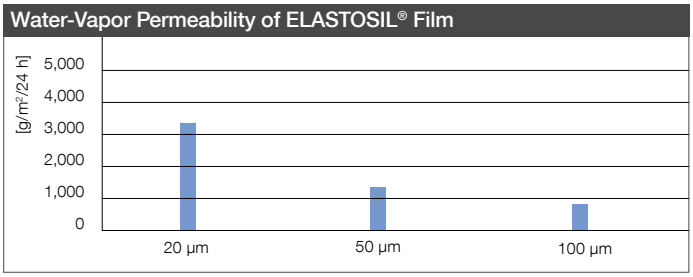
Gas Permeability (ELASTOSIL® Film 20 µm) ISO 15105-1



Gas Permeability and Selectivity

ELASTOSIL® Film is water repellent but selectively permeable to gases. This permeability is significantly higher than that of other polymers.

Water-Vapor Permeability of ELASTOSIL® Film



Water-Vapor Permeability

The water-vapor permeability of ELASTOSIL® film depends on the layer thickness.

WACKER

Wacker Chemie AG
Hanns-Seidel-Platz 4
81737 München, Germany
Tel. +49 89 6279-1741
Infoline +49 8677 83-7979
info@wacker.com

www.wacker.com

www.wacker.com/socialmedia

7091e/07.14