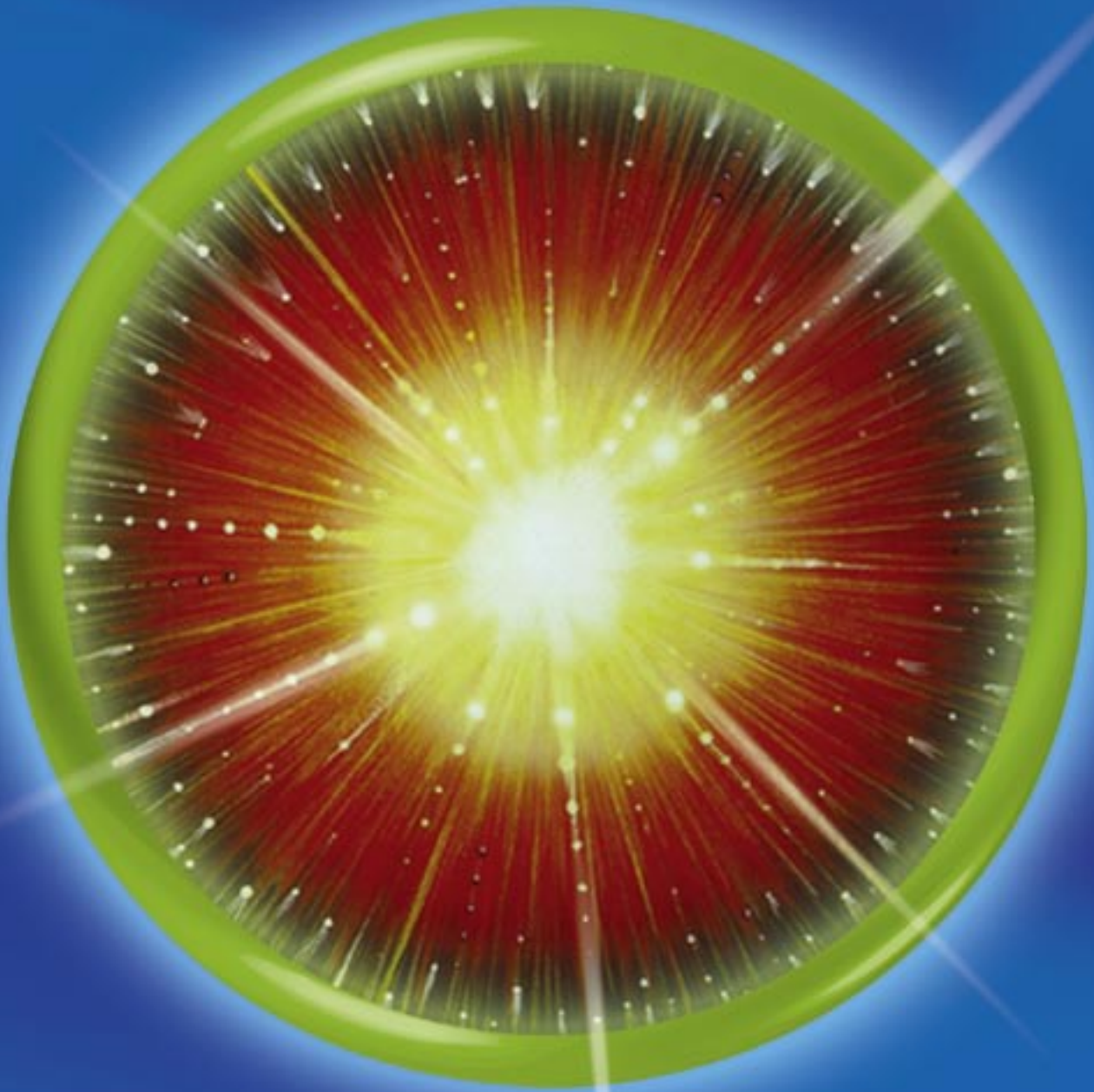


ERIKS

RX[®] SurfaPlus



Surface treatment for rubber products

INTRODUCTION

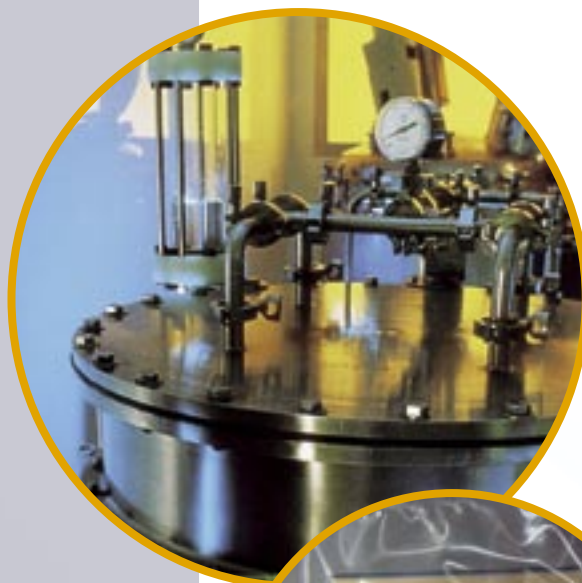
Rubber (also classified as an elastomer) plays a leading role in the fascinating world of sealing. And with good reason - this material has a large number of excellent characteristics. Rubber is flexible and resilient, strong, easy to manufacture and to use, resistant to a wide range of media and temperatures and attractively priced.

SurfaPlus surface treatment is the solution for the high frictional resistance of elastomers

One disadvantage is that the frictional resistance of rubber, particularly in dynamic applications, can lead to wear and the generation of (excessively) high frictional heat at the seal. Also the sticking of O-rings in the packaging causes a lot of problems in automatic assembly. The introduction of ERIKS new

'SurfaPlus' surface treatment programme for rubber products relegates these problems to the past.

This brochure introduces the most common surface treatment products for rubber products. Each is capable of making a significant contribution to the improved performance of your seals. We will also inform you about the early stages of a new development and explain that specific targets can be attained via the use of various treatments. Thus it is of great importance that the surface treatment chosen for your specific application is tested in advance. Contact your nearest ERIKS branch for advice without obligation about an ERIKS 'SurfaPlus' surface treatment for rubber products. Our specialists will be happy to explain all the various options. Material specifications are available for all the surface treatments.



The extensive ERIKS 'SurfaPlus' surface treatment programme for rubber products offers you countless ways of improving your seals for specific applications. We will explain the most frequently used treatments here.

1. Lowering frictional resistance in dynamic applications

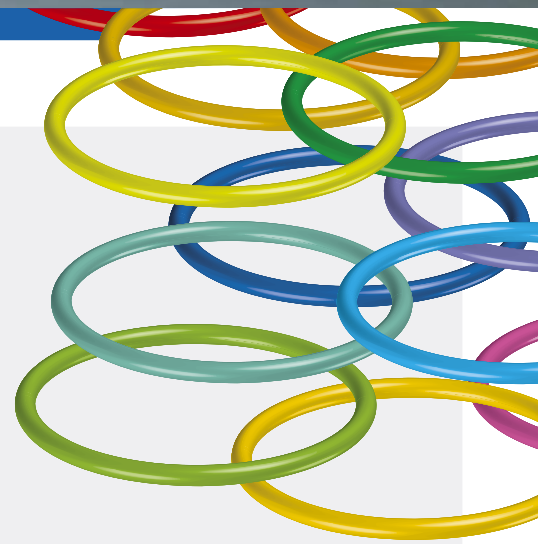
We use a spray applied PTFE based coating to lower the frictional resistance of rubber. The use of this coating involves a complex pre-treatment process ranging from cleaning to sintering. This must be carried out with great care. The coating thickness for use in dynamic applications is 0.020 mm. The level of adhesion of the PTFE layer to the mother material is particularly high.



2. Problem free automatic assembly with O-rings

To avoid O-rings in bulk packaging sticking to each other (possibly causing problems to arise when the rings are used for automatic assembly in mass production) we coat these seals with a thin layer of PTFE. Because large numbers are involved in this type of application price plays an important role. Thus ERIKS has selected dip-spin application and a thickness of approximately 0.005 mm. The coating dries to a splotchy, milky appearance. This coating is FDA approved in conformance with HHS 21 CFR 175.300 and 177.1520.

A polysiloxane coating can also be chosen for this application. However this coating must be spray applied and sintered, so the price is somewhat higher than the thin the PTFE coating mentioned above. On the other hand the polysiloxane provides the smoothest surface. We are continuously developing new coating systems such as our PTFE based SP 10107 - a fully transparent coating for coloured rubber components.



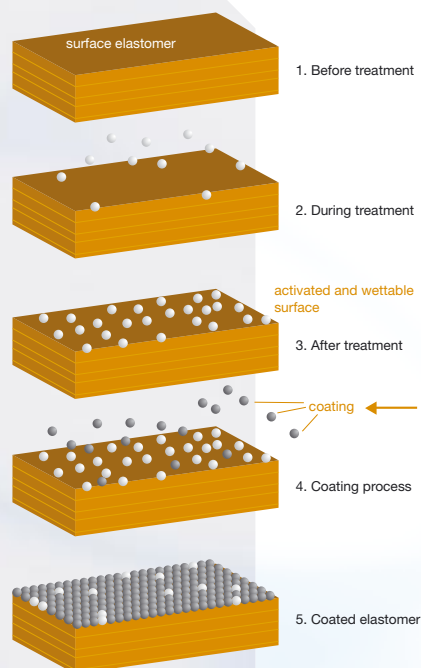
3. Increasing chemical resistance

In many applications PTFE seals are used to resist chemicals in the medium to be sealed. A big disadvantage of PTFE is that it is not resilient and is not always suitable as a sealing material. In many instances the solution is a rubber seal coated with a 0.020 mm thick PTFE layer. By doing this you combine the outstanding properties of an elastomer (such as the good compression set, tensile strength etc) with those of the chemical resistant PTFE. Products coated with this PTFE based ERIKS 'SurfaPlus' coating have an elongation of at least 100%!

In addition to this frequently used PTFE treatment, a fluoroelastomer coating may also be applied to rubber products to increase chemical resistance. This method is mainly used on very large rubber products made of NBR or EPDM, because it is cheaper than making the entire product from fluoroelastomer. The coating thickness is approximately 0.050 mm.

4. Surface cleaning ('labsfrei')

In many applications no contamination is allowable, including that from rubber seals. For applications such as the semiconductor industry, food and pharmaceuticals and the automotive industry, seals are thoroughly cleaned using a plasma treatment. Here the surface of the seal is subjected to an ultra-fine cleaning process using a reactive gas under vacuum. Incidentally this process can also be used for treating synthetic materials and metals.



5. Easy cleaning

CIP or SIP are used for cleaning in many processes. Rubber seals coated with 0.020 mm thick PTFE from the ERIKS 'SurfaPlus' rubber surface treatment range are recommended for these methods.

Advantages:

- The product that is to be sealed adheres less strongly to the PTFE surface, making cleaning the machine quicker and easier.
- The seal is not damaged by low-pressure cleaning and/or hot water with a cleaning agent.

6. Preventing ageing

NBR products that are coated with PTFE are resistant to the penetration of ozone and UV radiation and thus are very suitable for use in the open air and in electrical equipment.



7. The right colour, easily recognisable and visually attractive

A number of the coatings described can be manufactured in the RAL colour of your choice. This applies particularly to a number of our PTFE coatings and for our fluoroelastomer treatment. These are mainly used in decorative applications.



Brief summary of the available 'SurfaPlus' surface treatments for rubber products

| ERIKS designation | coating thickness | most common applications | remarks |
|---------------------------|-------------------|--|--|
| PTFE | 5 mu | to aid assembly, friction reduction for light applications | FDA approval, dries splotchy |
| PTFE SP 10020 | 20 mu | to aid assembly, friction reduction in general applications, improving chemical resistance | particularly strong coating; for general use; standard colour grey, other colours possible |
| Polysiloxan SP 30605 | 5 mu | to aid assembly, particularly for O-rings and moulded products | provides smoothest surface |
| Plasma SP 24000 | na | cleaning of rubber products, for clean room production, food and pharmaceutical | making 'labsfrei', increases surface hardness by a few Shore points |
| FKM SP 83050 | 50 mu | increasing chemical resistance | only viable for very large moulded shapes or profiles, available in several colours |
| MOS ₂ SP 40505 | 5 mu | to aid assembly, mainly for O-rings and economical. Chalks. | powder coating, easy to apply |

ERIKS is continually seeking to further improve its coatings.
Contact the nearest ERIKS branch for advice about your application

The many advantages of SurfaPlus surface treatment for rubber products

- aids assembly: eases assembly of all rubber products; ideal for automatic assembly of O-rings.
- dry lubrication: improves running characteristics in cases of poor lubrication - even dry running is possible.
- better cleaning: no clinging of product making cleaning easier. Good resistance to SIP and CIP.
- chemical resistance: PTFE based coatings increase the chemical resistance of rubber sheet.
- stops ageing: slower rate of ozone influenced ageing.
- colour: coating with the colour you require is possible if volumes are sufficient.
- FDA approval: PTFE based coatings with FDA approval for food and pharmaceutical products.
- 'clean room': including making rubber products 'Labsfrei' for automotive, semiconductor and food & pharmaceutical applications.
- flexibility: rubber products with a 'SurfaPlus' coating have 100 to 150% elongation.

More information?

ERIKS Belgium

Industriezone Polderstad
Boombekelaan 3
2660 Hoboken
tel: +32 (0)3-829 26 11
fax: +32 (0)3-828 39 59
info@eriks.be
www.eriks.be

ERIKS Nederland

Toermalijnstraat 5
1812 RL Alkmaar
Postbus 280
1800 BK Alkmaar
tel: +31 (0)72 5141514
fax: +31 (0)72 5155645
info@eriks.nl
www.eriks.nl

www.o-ring.info