

PERFREZ[®]
faith in precision
Perfluoroelastomer



**WE SPECIALIZE IN YOUR SEALS DESIGN
CUSTOMIZATION AND OPTIMIZATION**



PERFREZ® Industrial Products

PERFREZ® industrial seals and O-Rings are intended for chemical process industry applications and general industrial applications where the seals are exposed to high temperatures and aggressive chemicals.

PERFREZ® provides a full range of standard and custom FFKM elastomer compounds. Established and accredited quality systems include AS-9100 and ISO 13485 certifications to guarantee the best quality.

Applied Seals, we deliver total sealing solutions at cost efficiency and with short lead time. For SMART sealing solutions, you can rely on Applied Seals.

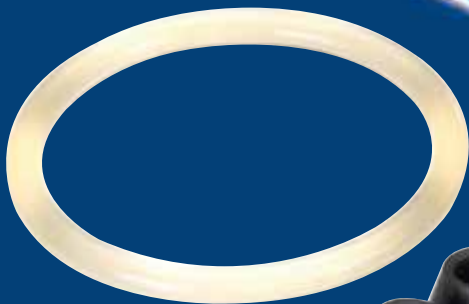
Sealing Products - Our industrial grade FFKM seals are the most advanced formulated compound serves to the global market.

Materials science - Broad coverage of FFKM curing systems, peroxide nitrile and bisphenol.

Applications support - We do not only just ship products to you, but also helps you to optimize their life-time.

Reliability - Our seals enable you to run your process reliably for a longer time before maintenance.

Technological Innovation - We are developing tomorrow's sealing solutions today.





APPLIED SEALS

APPLIED SEALS CO., LTD.

Welcome to Applied Seals

CPI sealing applications can be harsh which requires high temperatures, pressures and broad chemicals resistance compatibility.

To seal even the toughest industrial applications, Applied Seals offers PERFREZ® CPI grade perfluoroelastomer seals and O-Rings.

Our production processes are carefully controlled to provide each industry that we serve with the necessary quality and performance needed at an competitive cost.

Applied Seals headquarter is built as a multi-purposed production facility mainly focused on manufacturing sealing products made from PERFREZ® compounds. Established in 2005, this state of the art facility feature 5,560 square meters of manufacturing space. Our facility has an advanced laboratory to support customer programs and materials developments.



ISO 13485:2016
AS 9100D
ISO 9001:2015
(CNS 12681)

PERFREZ® Industrial Seals & O-ring

The Right Parts For Your Application...

At Applied Seals, we can mold our PERFREZ® perfluoroelastomer materials into nearly any shape that you may need for your application.

● We can manufacture...

- O-Rings
- D-Ring
- Square Rings
- Press-in-Place Gaskets
- Rubber to Metal Bonded Parts



● We are tooled on...

- AS568 O-Ring sizes
- JIS B 2401 O-Ring sizes
- Standard metric O-Ring sizes

At Applied Seals, we can also solve your problems with equipment even when we didn't design or help design the seals.

If you have a piece of equipment with seals that aren't performing to your expectations, let us help you. Just send us the poorly performing seals as well as information regarding how you are using the equipment and what isn't working.

We need to know...

- Temperatures
- Pressures
- Chemical with which seals are in contact
- A description of the motion for dynamic seals
- Dimensions of mating compounds
- Incumbent dimensions of the seals

We will use this information to develop and design solutions that will perform as you require and expect

Our Standard PERFREZ® industrial seals and O-Rings are...

- Manufactured using our standard manufacturing process
- Inspected per ISO 3601-3 Grade CS (see note)

● ISO 3601-3 Grade CS

The CS stands for Critical Service, in other words applications where the surface of the parts must be nearly perfect to perform in a satisfactory manner.

ISO 3601-3 Grade CS defines acceptance criteria for O-Rings and seals intended for applications requiring the highest levels of precision with respect to dimensional tolerances and surface defects.





Applied Seals Perfluoroelastomer Typical Physial Properties

Compound Number	Service Temp.	Hardness (Shore A)	Color	Features
PERFREZ [®] 9071	-10°C~240°C	75	Black	<ul style="list-style-type: none"> · General purpose · Excellent chemical resistant applications · Good performance in steam/hot water
PERFREZ [®] 9021	-10°C~290°C	80	Black	<ul style="list-style-type: none"> · Broad chemical withstanding range · Good performance in steam/hot water with thermal resistant
PERFREZ [®] 9001	-10°C~300°C	80	Black	<ul style="list-style-type: none"> · Superior high temperature resistant · Excellent compression set at high temperature
PERFREZ [®] 9131E	-10°C~320°C	70	Black	<ul style="list-style-type: none"> · Excellent high temp. resistant · Excellent compression set at high temperature
PERFREZ [®] 9021A	-10°C~290°C	90	Black	<ul style="list-style-type: none"> · Broad chemical resistant with high hardness · Steam resistant with excellent compression set · NORSOK M710 (ISO 23936) · Nace TM0297 · API 6A H₂S sour fluid resistant
PERFREZ [®] 9091D	-40°C~230°C	75	Black	<ul style="list-style-type: none"> · Excellent low temperature resistant · Drilling tools used in deepwater applications
PERFREZ [®] 9091A	-40°C~230°C	90	Black	<ul style="list-style-type: none"> · Drilling tools used in deepwater applications · Subsea equipment · Excellent low temperature resistant · NORSOK M710 (ISO 23936) · API 6A H₂S sour fluid resistant
PERFREZ [®] 9082E	-10°C~230°C	70	White	<ul style="list-style-type: none"> · USP class VI grade with broad chemical resistant · FDA grade · Biomedical



Applied Seals PERFREZ® 9071

Product Description

PERFREZ® 9071 was developed as a general use perfluoroelastmer compound to help withstand attack by most aggressive chemical. PERFREZ® 9071 offers excellent chemical compatibility in a wide range of industrial applications as well as for mixed process streams because of its excellent resistance to acids, bases, and amines.

Chemical Resistance

Low volume swell of elastomers is critical to proper operation of equipment, for many applications. Excessive swell may cause permanent seal failure due to equipment operation difficulty, extrusion, etc. The following data is the result of laboratory testing to determine the volume swell of PERFREZ® 9071 when exposed to various fluids. The following chemicals represent some of the most aggressive applications in the industry. These test results are an indication of the performance of compound.

PERFREZ® 9071

Inorganic acids	A
Organic acids	A
Alkalis	A
Amines (RT)	A
Hot amines (>70°C)	A
Water/Steam	A
Ketones	A
Esters	A
Ethers	A
Aldehydes	A
Alcohols	A
Hydrocarbons	A
Sour gas	A
Lubricants	A
Fluorinated fluid	C

A: Volume Swelling <10% B: Volume Swelling 10-30%

C: Volume Swelling 30-50% D: Volume Swelling >50%

Typical Physical Properties

Hardness, Shore A +/-5	75
100% Modulus, MPa(psi)	6.87
Tensile at Break, MPa(psi)	15.74
Elongation at Break,%	160
Compression Set, % 70hr at 200°C (392°F)	17.4



Applied Seals PERFREZ® 9021

Product Description

PERFREZ® 9021 offer the broadest working temperature range and widest resistance to chemical media. Some of the unique properties of PERFREZ® are:

- Outstanding resistance to very high temperature;
- Outstanding resistance to aggressive chemicals;
- Outstanding steam resistance;
- Outstanding compression set even at very high temperatures;

Typical Physical Properties

Hardness, Shore A +/-5	80
100% Modulus, MPa(psi)	9.35
Tensile at Break, MPa(psi)	20.5
Elongation at Break,%	185
Compression Set, % 336hr at 200°C (392°F)	26.3



Chemical Resistance

	PERFREZ® 9021
Inorganic acids	A
Organic acids	A
Alkalis	A
Amines(RT)	A
Hot amines(>70°C)	C
Water / Steam	A
Ketones	A
Esters	A
Ethers	A
Aldehydes	A
Alcohols	A
Hydrocarbons	A
Sour gas	A
Lubricants	A
Fluorinated fluids	C

A: Volume Swelling<10% B: Volume Swelling 10-30%
 C: Volume Swelling 30-50% D: Volume Swelling>50%

Applied Seals PERFREZ® 9001

Product Description

PERFREZ® 9001 exhibits very low and stable compression properties set at high temperature. PERFREZ® 9001 is a carbon black-filled compound having excellent mechanical properties and chemical resistance. It exhibits low swell in organic and inorganic acid and aldehydes.

Typical Physical Properties

Hardness, Shore A +/-5	80
100% Modulus, MPa(psi)	6.79
Tensile at Break, MPa(psi)	9.87
Elongation at Break,%	203
Compression Set, % 70hr at 275°C (527°F)	23.4

Not recommend to amine and steam applications.

Chemical Resistance

	PERFREZ® 9001
Inorganic acids	A
Organic acids	A
Alkalis	A
Amines (RT)	B
Water/Steam	C
Ketones	A
Esters	A
Ethers	A
Aldehydes	B
Alcohols	A

A: Volume Swelling<10%

B: Volume Swelling 10-30%

C: Volume Swelling 30-50%

D: Volume Swelling>50%



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