High Purity elastomer and plastics guide

for the food, biochemical, pharma and life science industries

ERIKS

CONTENTS:

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ERIKS sets the standards

ERIKS is a leading developer of high performance advanced elastomer and plastic components for the food, biochemical, pharma and life science industries.

Pharmaceutical and food equipment present some of the most demanding applications for elastomeric and plastic parts. Elastomers and plastic compounds used in valves, pumps, couplings, sterilisation equipment, containers, etc. must be able to cope with a wide range of process media, active ingredients, agressive cleaning and sterilisation processes. In addition these elastomeric and plastic parts must be compliant with a growing range of legislative manufacturing regulations and hygiene standards.

ERIKS offers a full range of elastomers and plastics, compliant with the requirements of the Food and Drug Administration (FDA), United States Pharmacopeia (USP class VI), Food Contact Notification, Bfr regulation, 3A-Sanitary Standards, ADI (Animal derived ingredients) standards, as well as Good Manufacturing Practice (GMP).
In addition to these standards ERIKS offers different compounds that prevent the development of bacteria and micro-biofilm.

ERIKS has over 50 years experience in designing and manufacturing components for the food and pharmaceutical processes. Therefore, ERIKS is very well placed to increase your plant productivity.

ERIKS sets the standard in materials:

- **widest range of elastomer and plastics materials for use in food, pharma and bioscience applications,**
- **materials to suite operations from -60 °C to +300 °C,**
- **materials compatible with all process media, from EPDM over PEEK, to Kalrez® perfluorelastomers,**
- **certificates to all international norms.**

Certification regulations and cleaning procedures

FDA compounds

- FDA sets the standard for ensuring that foods, human and veterinary drugs, biological products, medical devices are safe and effective.
- FDA also ensures that these products are honest, accurate and are informatively represented to the public.
- CFR § 21.177.2600 sets out the relevant regulations for 'rubber articles intended for repeated use'. This list contains the ingredients that may form part of a rubber compound. The list includes elastomers, accelerators, plasticisers, fillers, emulsifiers, etc.
- There are also certain quantative limitations on different ingredients.
- Most ERIKS FDA compounds are produced to meet class 1 for fatty foods. This means that the 'high purity' carbon black does not exceed 10%. All our compounds have been tested by an independent certified lab in Germany following the class 1 rules in n-hexane at reflux temperature.
- Certificates on demand.

Migration tests FDA

Some compounds have been tested by independent laboratories (for example 'Rapra' in England).
Rubber articles intended for repeated use in contact with **aqueous food** shall meet the following specifications: 'The food-contact surface of the rubber article in the finished form in which it is to contact food, when extracted with distilled water at reflux temperature, shall yield total extractives not to exceed 20 milligrams per square inch during the first 7 hours of extraction, nor to exceed 1 milligram per square inch during the succeeding 2 hours of extraction'.

Rubber articles intended for repeated use in contact with **fatty foods** shall meet the following specifications: 'The food-contact surface of the rubber article in the finished form in which it is to contact food, when extracted with n-hexane at reflux temperature, shall yield total extractives not to exceed 175 milligrams per square inch during the first 78 hours of extraction, nor to exceed 4 milligrams per square inch during the succeeding 2 hours of extraction'.

FDA does not 'approve' products to CFR21.177.2600. It is the manufacturer's task and responsability to demonstrate compliance of the finished rubber product.

Introduction to FDA-USP concept

USP class VI standards are controlled by United States Pharmacopeia (USP), a non-governmental organisation that promotes the public health by establishing state-of-the-art standards to ensure the quality of medicines and other health care technologies.

The standards are published in the USP-NF which is officially recognised in FDA act (21 usc § 321 et seq.).

USP class VI compounds have undergone tests to:
- cytotoxicity
- hemolysis
- pyrogenicity
- sensitisation

Some elastomers are also formulated following the European Pharmacopeia.

The 3 main goals are:
- To protect products from contamination, spalling, particulates and TOCs resulting from the use of improper sanitary gasket material.
- To protect facilities from unnecessary downtime associated with sanitary gasket failure and replacement from use of improper gasket material.
- To provide a standard of consistency of sanitary gaskets selection between multiple facilities.

Most decisions driving gasket type selection are based on chemistry, temperature, exposure limits, USP, FDA qualifications, and curing methods.

USP class VI was especially developed for the pharmaceutical industry.
This information has been carefully prepared to help in selecting the correct elastomer or perfluorocarbon utilized in high purity sanitary hygienic seals where critical pure water, process fluids (both ambient and hot), and SIP environment exist.
The intention is to consider the different uses, applications and conditions to determine the most favourable gasket material for each application. The following criteria are used in determining correct sanitary gasket materials.

- USP Pharmacopoeia Class VI-XXII Certification
- Cytotoxicity Criteria
- CFR Title 21 Section 177.1550 (PTFE)
- CFR Title 21 Section 177.2600 (rubber)
- Traceability: Lot and Batch
- Certification: Lot and Batch
- ASME-BPE Standards
- USD Standards
- 3-A Sanitary Standards
- Current Good Manufacturing Practices (CGMP)
- Manufacturer data and specifications
- Consultation with various pharmaceutical users

The gasket materials considered are Tef-Steel® (Teflon/Stainless Steel), Teflon® (PTFE), Silicone (platinum cured), Viton®, EPDM and Kalrez®.

DuPont Performance Elastomers

FDA Contact Notification (FCN)

The Food and Drug Administration (FDA) has regulatory oversight for substances added to food, including monitoring their safe use.

Section 309 of the Food and Drug Administration Modernisation Act (FDAMA) of 1997 now also establishes a Food Contact Notification (FCN) process as the primary method by which the FDA regulates substances that are classed as 'food contact substances' (FCS).

A FCS is any substance that is intended for use as a component of materials used in manufacturing, packing, packaging, transporting or holding food, but is not an additive within the food.

During the FCN process, the sealing material and its individual constituent ingredients undergo a significant amount of research, testing and analysis to evaluate the potential for food contamination.

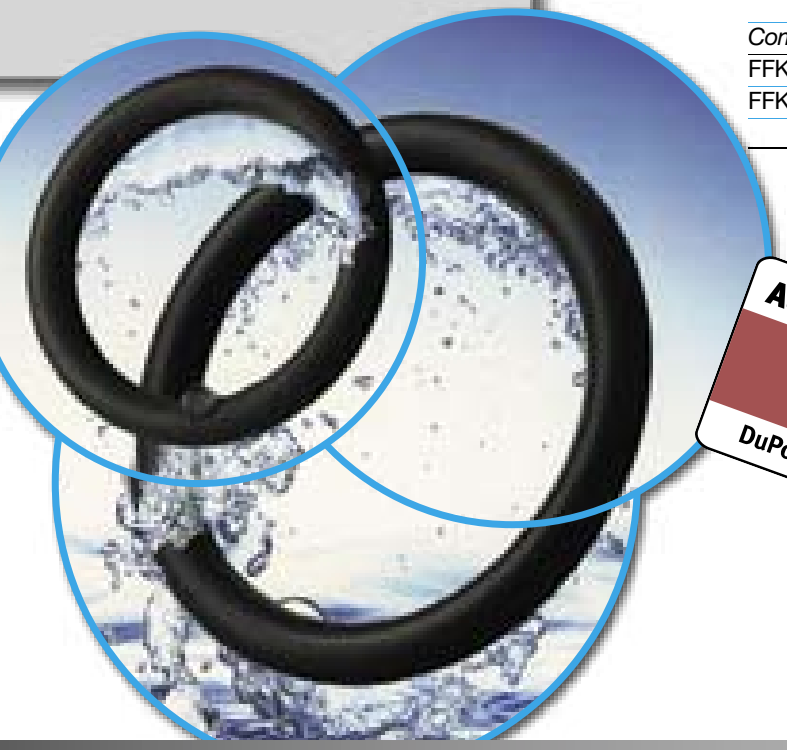
Successful completion of the FCN process allows the following material grades to be used in a variety of food contact applications under the Food Contact number FCN000402.

The Food and Drug Administration Modernisation Act of 1997 provides a system whereby a manufacturer or supplier of food-contact material may submit a Food Contact Notification (FCN) to FDA regarding the identity and use of the new food contact substance, together with necessary date to demonstrate that the substance is safe for its intended use. FCN is a formal acceptance of a material by the FDA, so it is fundamentally different to self-certification to FDA CFR § 21.177.2600.

FCN application requires a detailed analysis of the compound, its constituents, toxicological effects and intended uses and is much more rigorous than the requirements of CFR § 21.177.2600. The complexity and high cost of the FCN process means that it is currently restricted to a limited range of very high performance perfluorelastomer materials that are used in very demanding applications.

Food Contact Notification Materials

Compound	*Hardness °RHD*	*Material*	*Colour*
FFKM Kalrez® 6221	70	perfluorelastomer	white
FFKM Kalrez® 6230	75	perfluorelastomer	black



AUTHORIZED DISTRIBUTOR Kalrez® perfluoroelastomer parts DuPont Performance Elastomers

3-A Sanitary Standards

ERIKS manufactures seals in accordance with 3-A Standard 18-03 which defines the requirements for food quality materials that must be suitable for cleaning and sanitising solutions.

All ERIKS 3-A Sanitary Standards compliant elastomers are FDA-compliant to FDA CFR § 21.177.2600 resistant to steam sterilisation, milk fat and water, acid and alkali cleaning solutions and chlorine sanitising solution.

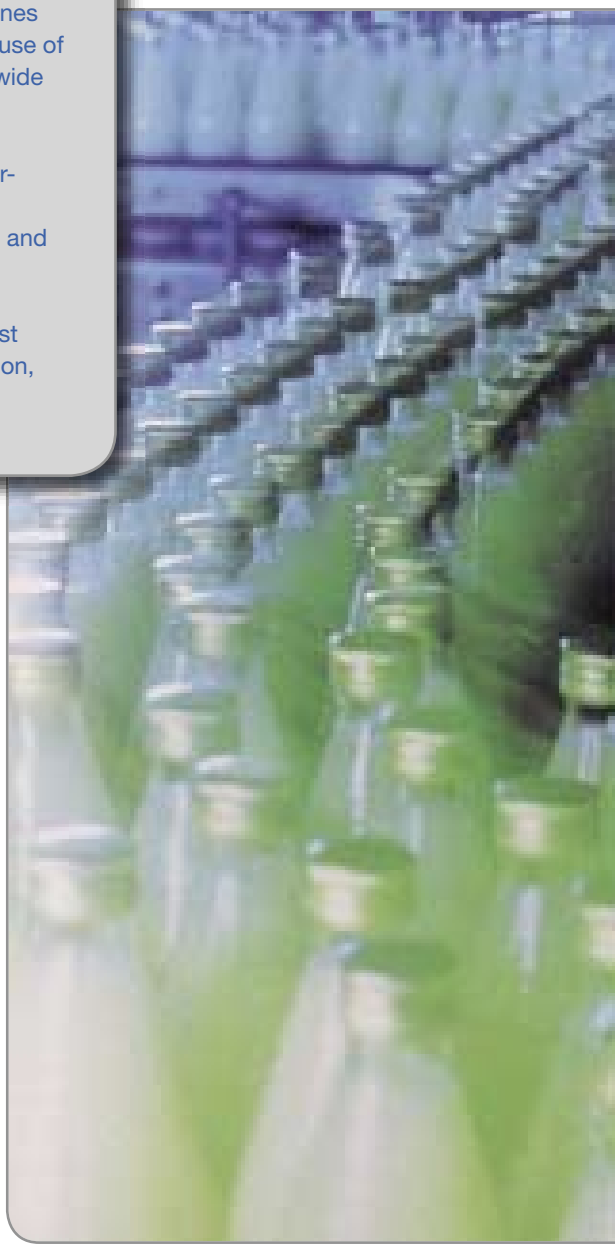
The ERIKS elastomers meeting the 3-A Standard include fluorocarbon, silicone, EPDM and nitrile, allowing manufacturers to select the most appropriate elastomer to temperature, chemical and physical performance criteria.

Formed by the US Food and dairy industry, **3-A Sanitary Standards Inc.** defines specifications and best practice for the design, manufacture, installation and use of hygienic equipment. As with FDA, the 3-A Standards are adopted on a worldwide basis.

Standard N° 18-03, '3-A Sanitary Standard for multiple-use rubber and rubber-like materials used in product contact surfaces in dairy equipment' describes requirements for food quality materials that must also be suitable for cleaning and sanitising.

To comply with the requirements of the Standard, the elastomer materials must comply with FDA CFR § 21.177.2600 and also be resistant to steam sterilisation, milk fat, acid and alkali cleaning solutions and chlorine sanitising agents.

ADI Animal Derived Ingredient free



The European Hygienic Engineering & Design Group (EHEDG) is a consortium of equipment manufacturers, food industries, research institutes and public health authorities. It was founded in 1989 with the aim to promote hygiene during the processes and packaging of food products. European legislation requires that handling, preparation, processing and packaging of food is done hygienically, with hygienic machinery in hygienic premises. EHEDG provides practical guidance on the hygienic engineering aspects of manufacturing safe and wholesome food, focusing particularly on equipment design and installation, cleanability and maintenance.

ADI free (Animal Derived Ingredient free)
BSE (bovine spongiform encephalopathy) is a disease, which is caused by infectious proteins, so called prionics. These proteins are very resistant, it needs steam of 133°C, 3 bar and 20 minutes to destroy them. It is necessary to avoid to introduce any BSE prions into plants or food and beverage industry. Stearates, fatty acids or similar can be based on agricultural or animal production.
ERIKS has checked the standard qualities excluding the use of any animal derived ingredient in order to avoid the risk of contamination with BSE prions.
These qualities are certified with the logo 'ADI free' (Animal Derived

Cleaning procedures

Since sanitising programmes have been commonly established, cleaning and sanitising procedures have to be developed for all food processing equipment. The objective of cleaning and sanitising food contact surfaces is to remove food (nutrients) which bacteria requires so that it can grow, and to kill bacteria that already exists.

ERIKS has wide ranging experience in material and product design compatibility to overcome problems in the cleaning processes used in the food, beverage and pharmaceutical industries.

Cleaning definitions

- Clean: Free from dirt, stain, or impurities and generally unsoiled
- Sanitised: Free from elements that endanger health, reduction of micro-organisms
- Desinfect: Refers to inanimate objects and the destruction of all vegetative cells (not spores)
- Sterilize: Refers to the statistical destruction and removal of all living organisms

Manual cleaning procedures

These procedures could be done by clean-up personnel, using:

- buckets, brushes and hoses or
- HPLV-Systems (High Pressure Low Volume) via spray wands or
- by foaming (cleaning primarily by chemical action)

Mechanical cleaning procedures

System uses an agitated tank to clean components (equipment parts and short section of piping) disassembled and placed in the tank.

CIP (Clean-in-Place)

This cleaning process is usually accomplished via chemical action based on spray or pressure recirculation of the flush, wash, and rinse solutions under controlled conditions of time, temperature and chemical concentration. It involves the washing of processing and storage tanks, the piping systems and integrated equipment.

SIP (Sterilization-in-place)

The objective is to sterilize all sterile product contact equipment at its point of use to eliminate or reduce the need for aseptic additions or connections.

Requirements to seals

The requirements to the seals and plastic parts are:

- chemical resistance against the product
- chemical resistance against the used CIP media
- good cleanable and sterilizable sealing surface
- good resistance against abrasion and wear
- nontoxic sealing material
- installation without any dead spots (spaces)

Compatibility

In addition to the above mentioned requirements, the following parameters strongly influence the quality of the cleaning process as well as the life time of the seals:

- immersion period
- temperature
- type of cleaning media
- concentration of the cleaning solution

Chemical	*Example*	*Concentration*	*Temperature °C*	*Time*	*Cleaning procedure*
Chlorinated alkalies	Mild solution of caustic soda	max. 0,5%	55-70	5-22	CIP
Acidified rinse	Post rinse, fresh water, acid solution	pH 5,5-6,0	RT	-	CIP
Strong alkalies	Caustic soda	0,5-5%	up to 90	45-90	CIP
Strong acids	Phosphoric acid, nitric acid	pH-2	75-90	20-30	CIP
Sanitiser	Sodium hypochlorite	200 ppm active chlorine	cold	a couple of	CIP
Hot water	-	-	80-90	-	CIP
Steam	-	-	+130	-	SIP

Material	*Nitric acid* *85°C,2%*	*caustic soda* *85°C,3%*	*Aqua dest.* *100°C*	*Steam* *140°C*	*Sodium hypochlorite solution* *70°C,5%*	*Solution sodium hydroxide sodiumhypochlorite* *70°C,3%*	*Solution sodium hydroxide sodium carbonate* *70°C,3%*	*Solution hydrogen peroxide peracetic acid* *50°C,3%*	*3-A Sanitary standards 18-03*
PUR	+	+	+	-	+	+	+	+	Class 1,3**
NBR	(-)	+	+at 70°C	(-)	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
H-NBR	(-)	+	+	-	n.d.a.	n.d.a.	n.d.a.	n.d.a.	n.d.a.
Silicone	-	(-)	+	(-)	n.d.a.	+	+	n.d.a.	n.d.a.
Viton®	(o)	o	o	-	o	+	+	+	Class 1

immersion period: 168 hours
n.d.a.: no data available
(+,o,-): n.d.a. supposed to be +, o or -
*** class 1,3: passed all tests for class 1, except the temperature of exposure to product of sterilization (possible up to 100°C)*
+ : resistant
o : limited resistance
- : not resistant

High Performance O-rings and custom moulded parts

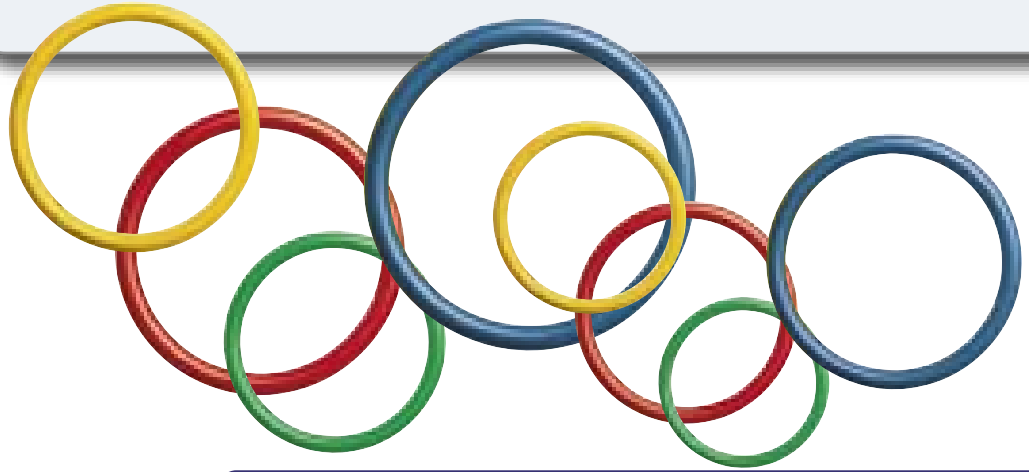
Selecting the right elastomer is a balance of material and design.
All ERIKS compounds listed below are produced from listed ingredients.
We distinguished the following grades:

High Performance O-rings with Certificates

Compound Number	*Material ASTM D1418*	*Colour*	*Hardness IRHD±5°*	*FDA 177.2600 aqueous & fatty foods*	*USP Class VI*	*FDA 177.1550*	*3A*	*BfR BGVV*	*ADI free*	*Temp. resistance °C*
329303	Neoprene	black	75°	X					X	-35/+100
366470	Nitrile-NBR	black	70°	X					X	-30/+120
366010	Nitrile-NBR	grey	70°	X					X	-30/+120
366302	Nitrile-NBR	black	75°	X			X		X	-30/+120
366472	Nitrile-NBR	white	75°	X					X	-30/+120
366490	Nitrile-NBR	black	90°	X					X	-30/+120
886172	HNBR	black	70°	X					X	-30/+150
55641	EPDM	black	70°	X					X	-55/+150
559270	EPDM	black	70°	X					X	-55/+150
559272	EPDM	white	70°	X					X	-55/+150
559273	EPDM	black	70°	X	X				X	-40/+150
55111	EPDM	black	70°	X					X	-55/+150
559274	EPDM	white	70°	X	X				X	-40/+150
559302	EPDM	black	70°	X	X				X	-50/+150
559187	EPDM	black	75°	X					X	-40/+140
55920	EPDM	black	80°	X					X	-50/+150
514670	FKM	black	70°	X					X	-20/+200
514642	FKM	green	70°	X					X	-20/+200
514672	FKM	white	70°	X					X	-20/+200
514674	FKM	blue	70°	X					X	-20/+200
514270	FKM	white	70°	X					X	-20/+200
514002	FKM	green	75°	X					X	-20/+200
514010	FKM	white	75°	X	X				X	-20/+200
514304	FKM	white	75°	X			X		X	-20/+200
514172	FKM	black	75°	X					X	-20/+200
514641	FKM	black	75°	X					X	-40/+200
514676	FKM	black	75°	X	X				X	-20/+200
514312	FKM	black	75°	X	X				X	-20/+200

High Performance O-rings with Certificates

Compound Number	Material ASTM D1418	Colour	Hardness IRHD±5°	FDA 177.2600 aqueous & fatty foods	USP Class VI	FDA 177.1550	3A	BfR BGVV	ADI free	Temp. resistance °C
Genuine Viton® A 514305	FKM	black	75°	X			X		X	-20/+200
Genuine Viton® A 514680	FKM	black	80°	X					X	-20/+200
Tuf-Flex® Viton®	FKM FEP/PFA	black		X	X	X			X	-20/+200
Genuine Viton® A 514690	FKM	black	90°	X					X	-20/+200
Genuine Viton® A 514694	FKM	blue	90°	X					X	-20/+200
Silicone 714742	VMQ	white	40°	X					X	-60/+200
Silicone 714747	VMQ	transl.	40°	X					X	-60/+200
Silicone 714748	VMQ	red	40°	X					X	-60/+200
Silicone 714762	VMQ	white	60°	X					X	-60/+200
Silicone 714767	VMQ	transl.	60°	X					X	-60/+200
Silicone 714768	VMQ	red	60°	X					X	-60/+200
Silicone ST-EC-60-001	VMQ	white	60°	X	X			X	X	-60/+200
Silicone 714177	VMQ	red	70°	X					X	-60/+200
Silicone 714003	VMQ	blue	70°	X					X	-60/+200
Silicone 714001	VMQ	transp.	70°	X	X			X	X	-60/+200
Silicone 714625	VMQ	light red	70°	X					X	-60/+220
Silicone 714002	VMQ	Transp.	75°	X	X			X	X	-60/+200
Silicone 714206	VMQ	red	75°	X					X	-60/+200
Silicone 714006	VMQ	red	75°	X			X		X	-60/+200
Silicone 714782	VMQ	white	80°	X					X	-60/+200
Silicone 714787	VMQ	transl.	80°	X					X	-60/+200
Silicone 714788	VMQ	red	80°	X					X	-60/+200
Teflex® Silicone	VMQ FEP/PFA	red		X	X	X			X	60/+200
Kalrez® 6221	FFKM	white	70°	X	X				X	260
Kalrez® 6230	FFKM	black	75°	X	X				X	260



DuPont
Performance Elastomers

The High Purity Kalrez® concept

Kalrez® perfluoroelastomer parts improve sealing for today's processes

To meet the demand for greater sealing integrity while maintaining process purity, DuPont Performance Elastomers has a family of high-performance perfluoroelastomer sealing materials uniquely suited for pharmaceutical medical manufacturing. Similar to PTFE in cleanliness, heat and chemical resistance, Kalrez® has the resilience and compressive strength that are characteristic for frequently used materials such as ethylene propylene polymers (EPDMs), fluoroelastomers (FKMs) and silicone rubber.

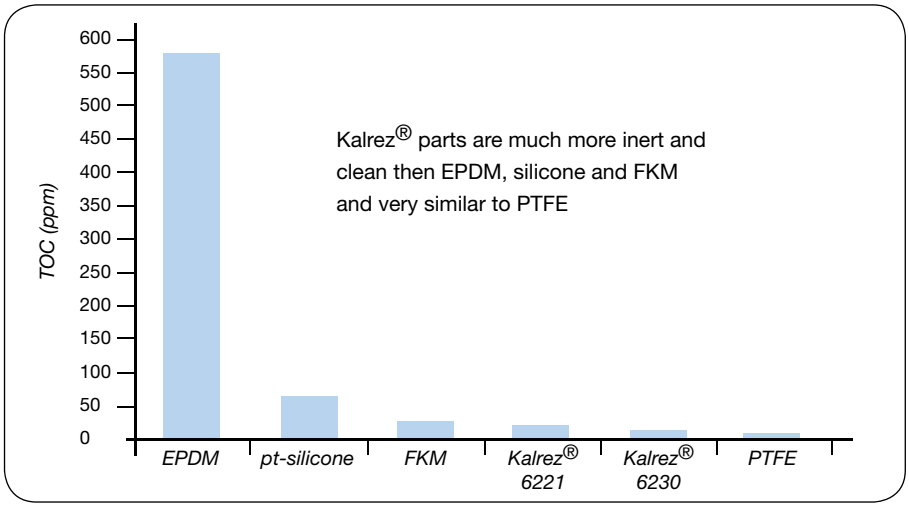
With its combination of thermal/chemical performance and rubber like sealing ability, Kalrez® offers the pharmaceutical industry a new level of protection against process contamination and seal failure. Multi-purpose Kalrez® seals increase process and equipment flexibility and may make it possible to standardize on a single seal material for all process environments.

Kalrez® compounds 6230 (black) and 6221 (white) have been developed to meet the unique sealing needs of today's high-speed, fully automated pharmaceutical and biopharmaceutical manufacturing processes. Kalrez® parts are manufactured by DuPont Performance Elastomers to ensure excellent quality, cleanliness and performance.

FDA and USP compliancy

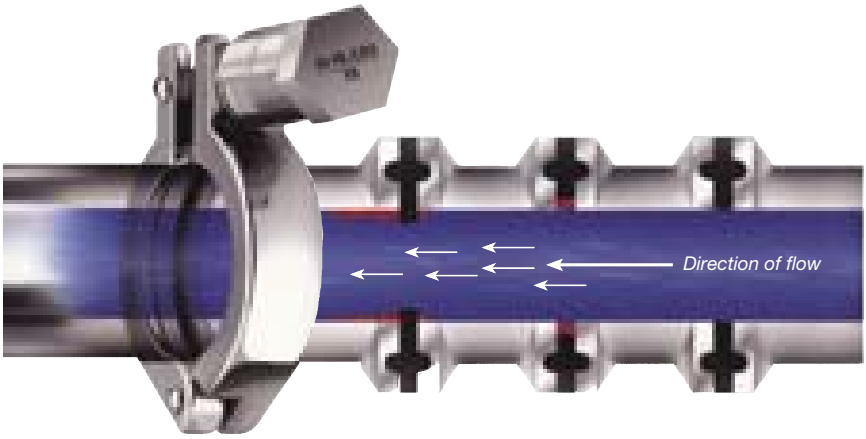
The U.S. Food and Drug Administration (FDA) confirmed the compliance of Kalrez® 6221 and 6230 for repeated use in contact with food by Food Contact Notification (FCN) 000101. FCN 000101 was established through the FDA Premarket Notification Process for food contact substances as described in section 409(h) of the Federal Food, Drug, and Cosmetic Act 21U.S.C.348(h)) and is the primary method by which the FDA authorizes the use of food additives that are food contact substances.
FCN 000101 requires materials to have extractable levels less than 0.2 mg/in^2. Kalrez® 6221 and 6230 have also been tested in accordance with United States Pharmacopeia Class VI (USP Class VI) and met those requirements.

Kalrez® 6221 and 6230 have extractable levels compared to PTFE



EPA method 415; TOC tests performed on 1" sanitary seals, immersed in 50 ml of sterile WFI at 100°C/24hrs. The solution was then diluted to 100 ml and analysis.

Clamp gaskets



Kalrez® is the ultimate choice. This material combines exceptional properties such as thermal and chemical resistance, with excellent sealing properties. More information about this material can be found further in this documentation.

Bio-Pro® is a re-enforced PTFE-gasket, maintaining the good chemical resistance with very low cold flow. This execution is a very competitive alternative to the widely spread envelope gaskets.

Tuf-Flex®: Tuf-flex® is the world's only unitized gasket, setting new standards for purity, performance and flexibility. A Tuf-Flex® Gasket's contact surface is a layer of PTFE unitezed to an EPDM rubber inner core. This totally bounded construction provides a PTFE gasket with the mechanical characteristics, including memory, of an elastomer gasket. Designed to meet critical requirements in biopharmaceutical, ultra-pure water, WFI (water for injection) and difficult food and beverage processing. Tuf-Flex outperforms other gaskets while eliminating costly process inerruptions. Achieve higher performance under SIP/CIP conditions.
Tuf-flex® is a rubber based gasket (EPDM) with a PTFE-liner on the inside of the gasket. Problems with misalignments can easily be solved by using this type of gasket.

Tuf-Steel® is the material of choice if the application involves wide temperature variations, exceptional chemical resistance (such as hydrocarbons, ethanol, ketones, etc.). Outstanding service life.

Tuf-Steel® is a 50-50 blend of PTFE and stainless steel, thus providing excellent mechanical properties beside the general chemical resistance. Due to the mechanical resistance, this material is recommended for hose couplings.

Teflon® (PTFE) is the material of choice except if the application requires wide temperature variations (leakage will develop).

Silicone (platinum cured) has a wide temperature compatibility range and good resistance to chemicals.

Viton® is a good choice, however, service life must be considered and monitored.

EPDM can be used in most applications due to temperature limitations.

Buna-N can be used in most applications due to low temperature thermal limits but does not pass U.S. Pharmacopeia class VI-XXII Certification and Cytotoxicity.

Summary materials for Triclover gaskets

This table indicates general preferences. Unique applications may require further considerations and analysis. When selecting gasket materials it is important to consider many factors: resistance to heat, resistance to SIP, resistance to chemicals like: hydrocarbons, ethanol, ketones, etc, tear strength and flexibility.
The service life of a material depends on the application. Many of the materials are acceptable if the expected service life is very short in duration, however, in extended exposure situations the material can degrade quickly rendering it ineffective or less desirable overall.

This analysis was intended for sanitary gasket applications specifically. Sanitary gasket applications are inherently static and can be dynamic. When different performance attributes are a consideration in dynamic applications, Tuf-Steel® may be the material of choice.

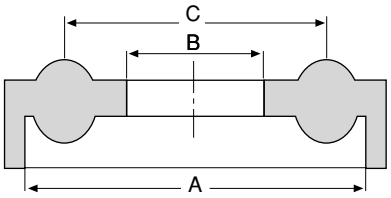
Triclover reference summary

Gasket Type	*Contin. Steam*	*Inter-mittent Steam*	*Pure Water Ambient*	*Pure Water Hot*	*Process Fluids Ambient*	*Process Fluids Hot*	*Process Fluids Variable < 0°C > 100°C*	*Colour*
Kalrez	1	1	1	1	1	1	1	Black or white
Bio-Pro	1	1	1	1	1	2	2	Light blue
Tuf-Flex®	1	2	1	1	1	2	1	Black
Tuf-Steel®	1	1	1	1	1	1	1	Bronze *
Teflon®	1	1	1	1	1	1	3	White *
Silicone (platinum)	2	2	2	2	2	2	1	Translu-cent *
Viton®	0	3	3	3	3	3	2	Black or white
EPDM	0	4	4	4	4	4	4	Black or white
Buna-N	0	0	5	5	5	5	5	Black or white

* = *No pigmentation*

®Tef-Steel is a registered trademark of Rubber Fab Mold & Gasket
®Teflon is a registered trademark of E.I. Dupont
®Viton is a registered trademark of E.I. Dupont

Triclover gaskets dimensional list



Tri-clover gaskets; flanged execution; qualities approved according FDA 177.2600 / 177.1550 / USP class VI

DIN	*ISO*	*Imperial ****		*Diameter*					
32676	*2852*	*Standard*	*Sch 5*	*Flange(A)*	*Groove diam.(C)*	*Inside diam. (B)*	*Flange(A)*	*Groove diam.(C)*	*Inside diam. (B)*
					(mm)			*(inch)*	
10 (x)				34,00	27,50	10,2	1,34	1,08	0,40
15 (x)				34,00	27,50	16,2	1,34	1,08	0,64
20 (x)				34,00	27,50	20,2	1,34	1,08	0,80
		1”		50,50	43,50	22,9	1,99	1,71	0,90
	1” (x)			50,50	43,50	23,10	1,99	1,71	0,91
25 (x)				50,50	43,50	26,2	1,99	1,71	1,03
32 (x)				50,50	43,50	32,2	1,99	1,71	1,27
	1 1/2” (x)			50,50	43,50	35,3	1,99	1,71	1,39
		1 1/2”		50,50	43,50	35,6	1,99	1,71	1,40
40 (x)				50,50	43,50	38,2	1,99	1,71	1,50
			1 1/2”	64,00	56,50	45,2	2,52	2,22	1,78
	2” (x)			64,00	56,50	48	2,52	2,22	1,89
		2”		64,00	56,50	48,0	2,52	2,22	1,89
50 (x)				64,00	56,50	50,2	2,52	2,22	1,98
			2”	77,70	70,50	57,3	3,06	2,78	2,26
		2 1/2”		77,70	70,50	60,2	3,06	2,78	2,37
	2 1/2” (x)			77,70	70,50	60,7	3,06	2,78	2,39
65 (x)				91,00	83,50	66,2	3,58	3,29	2,61
			2 1/2”	91,00	83,50	69	3,58	3,29	2,72
	3” (x)			91,00	83,50	73,2	3,58	3,29	2,88
		3”		91,30	83,50	73,3	3,59	3,29	2,89
			3”	104,80	97,00	84,9	4,13	3,82	3,34
80 (x)				106,00	97,00	81,2	4,17	3,82	3,20
	4” (x)			119,00	110,00	97,8	4,69	4,33	3,85
		4”		119,00	110,00	97,8	4,69	4,33	3,85
100 (x)				119,00	110,00	100,2	4,69	4,33	3,94
115				130,00	122,40	110,5	5,12	4,82	4,35
		4 1/2”		130,00	122,40	110,5	5,12	4,82	4,35
			4”	130,20	122,40	110,3	5,12	4,82	4,34
		5”		144,70	134,00	121,8	5,70	5,28	4,80
125 (x)				155,00	146,0	125,2	6,10	5,74	4,93
	5 1/2”			155,00	146,0	135,9	6,10	5,74	5,35
		6”		167,10	157,00	147,2	6,58	6,18	5,80
			6”	182,80	174,30	163,1	7,20	6,86	6,42
150 (x)				183,00	174,30	150,2	7,20	6,86	5,91
	6 5/8”			183,00	174,30	163,3	7,20	6,86	6,43
		8”		218,00	207,00	198	8,58	8,15	7,80
200 (x)				233,50	225,00	200,2	9,19	8,86	7,88
	8 5/8”			233,50	225,00	214,1	9,19	8,86	8,43
			8”	233,60	225,00	213,9	9,20	8,86	8,42
		10”		267,20	258,00	246,5	10,52	10,16	9,70
			10”	287,50	278,70	266,7	11,32	10,97	10,50
		12”		319,00	308,00	298	12,56	12,13	11,73
			12”	338,50	329,00	315,8	13,33	12,95	12,43

Triclover gaskets materials

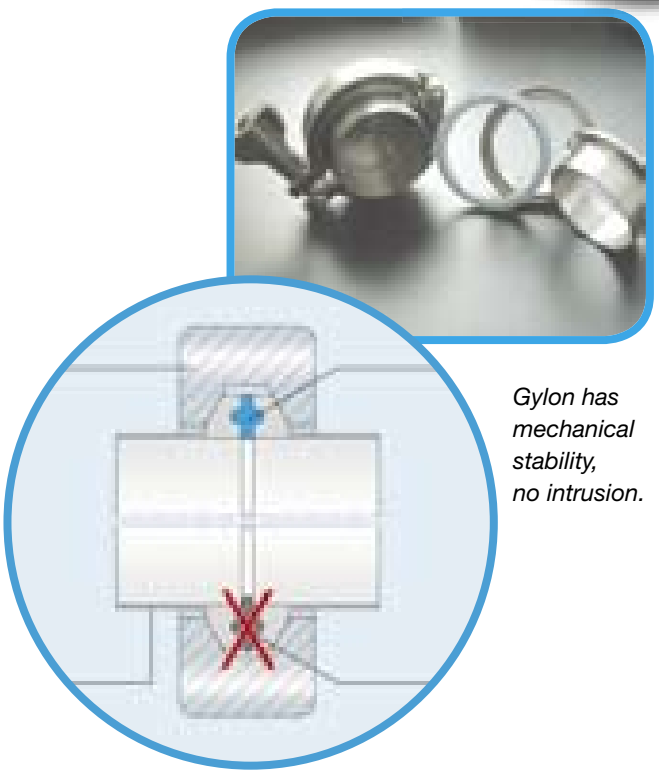
NEW

1	Bio-Pro®	FDA 177.1550 USP class VI	light blue
2	Tuf-Flex®	FDA 17.1550 USP class VI	black
3	Kalrez®	in FDA 177.2600 USP VI-XXII	black
4	Tuf-Steel®	in FDA 177.1550 USP VI-XXII 3A sanitary USDA standards	brown
5	PTFE	in FDA 177.1550 USP VI-XXII envelopes 3A sanitary USDA standards	white white EPDM or Viton®
6	PTFE	in FDA 177.1550 envelopes	white EPDM or Viton®
7	PTFE	in FDA 177.1550 USP VI-XXII 3A sanitary USDA standards	white-blue
8	Viton®	in FDA 177.2600 USP VI-XXII 3A sanitary USDA standards	black
9	Viton®	in FDA 177.2600	white-black-green
10	Silicone Platinium	in FDA 177.2600 USP VI-XXII 3A sanitary USDA standards	transparent-white
11	Silicone Peroxide	in FDA 177.2600	transparent-white
12	EPDM	in FDA 177.2600 USP VI-XXII 3A sanitary USDA standards	
13	EPDM	in FDA 177.2600	black-white
14	NBR	in FDA 177.2600	black-white

NEW

Bio-Pro®, the new modified PTFE-gasket for tri-clampcouplings

A unique alternative for the standard PTFE/envelope gaskets



Gylon has mechanical stability, no intrusion.

As the process conditions in pharmaceutical installations are getting more and more severe (temperature - CIP - SIP -aseptic), the need of a universal applicable product is relevant.

Gylon® Blue (the basic material for the Bio-Pro® gaskets) is a perfect combination between virgin PTFE and glass based microspheres. Due to its inorganic microspheres, Gylon® Blue is highly compressible and can be used in a wide range of applications.

The mix of PTFE with microspheres permits Gylon® Blue to resist to a universal range of liquids, and combines a high temperature resistance with an exceptional good mechanical stability. Indeed, cold-flow, usually recognised as one of the major problems with virgin PTFE-gaskets, is completely eliminated when using a modified PTFE-gasket such as Gylon® Blue.

Gylon® Blue can be used in Low-Stress-applications, which means that this material can be used in plastic, glass as well as in stainless steel couplings.

Bio-Pro®: the new modified PTFE-gasket for tri-clampcouplings

Size	
DIN 32676	*ISO 2852*
DN 10	-
DN 15	-
DN 20	-
DN 25	1"
DN 32	
DN 40	1 1/2"
DN 50	2"
DN65	2 1/2"
DN 80	3"
DN 100	4"

We can also quote for standards, others than the one we mentioned above.

Main properties:

- Temperature : -210 up to +260 °C
- Pressure : up to 55 bar
- Compressibility : 22 to 45%
- Recovery : 30%

Approvals:

- Gylon® Blue conforms to FDA specifications
- Gylon® Blue has recently been tested and proven to be according USP class IV regulations

Dimensions and prices:

Bio-Pro gaskets can be supplied in a different range of sizes and standards, such as DIN 32676 and ISO 2852.

DuPont
Performance Elastomers

Introducing a new standard of efficiency for pharmaceutical process lines...
Kalrez® Sanitary Seals: stainless steel and Kalrez® perfluoroelastomer parts combined in a controlled compression joint seal that provides premium performance.

Bioprocessing and pharmaceutical manufacturing processes must operate at the highest levels of cleanliness to assure product purity. Coupling joints in process lines can be a particularly troublesome source of contamination from various sources if the correct sealing material is not selected, as outlined in ASME's BPEa-2000 Bioprocessing Equipment Standards. Substandard seal performance can also result in excessive process downtime and maintenance costs. Selecting the joint design and sealing material to provide the optimum balance of cleanliness and seal life is an ongoing challenge to the pharmaceutical process engineer.

DuPont Dow Elastomers is answering that challenge with the development of new Kalrez® Sanitary Seal design, a combination of two optimum performance engineering materials - stainless steel and Kalrez®. Developed using Finite Element Analysis to simulate the range of temperatures a seal can see, this seal is designed with a metal retainer that controls compression of the seal and prevents its intrusion into process stream. The result is a prefabricated seal that provides the cleanliness of PTFE and the elastic memory of an elastomer while meeting stringent ASTM requirements for joints intended for clean-in-place (CIP) and steam-in-place (SIP) applications. The Kalrez® sealing element minimizes absorption, desorption and extractables to assure minimal contamination and a long sealing life.

Kalrez® Seal
- Perfluoroelastomer parts provide the ultimate sealing performance for maximum efficiency with FDA compliancy.
- Extractable levels comparable to PTFE.
- Resistant to high operating temperatures (up to 260°C).
- Compatible with most pharmaceutical process media, including CIP and SIP.
- Concave inside diameter forms flush face seal when compressed; prevents intrusion into process stream.

Avoid These Common Coupling Problems by Specifying Kalrez® Sanitary Seals:

• *Intrusion from overcompression:*
Too much sealing pressure can cause some elastomer seals to intrude into the process stream, resulting in
product contamination. Overcompression can also result in seal splitting and loss of joint integrity.

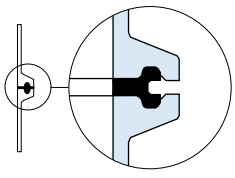
• *Joint leakage:*
Cold flow ('creep') of PTFE and some elastomers can cause loss of sealing pressure over time, requiring frequent inspections and retightening.

• *Seal degradation:*
Incompatibility with fluids in the process line can cause some sealing materials to swell, crack and degrade, resulting in joint failure and process contamination.
High process tempertures or repeated temperature cycling can also deteriorate seals made of many materials.

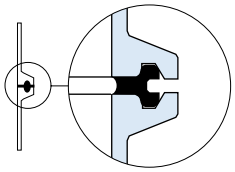
Sizes, Packaging and Availability
Kalrez® Sanitary Seals will be made available in sizes to fit most standard process lines, supplied in individual bags and bar coded for full traceability. Seals for 1,5-in diameter piping are presently available for sampling. Other sizes will be made available soon.

Kalrez® perfluoroelastomer parts, a product of DuPont Performance Elastomers

Stainless Steel Retaining Ring
- Provided for controlled compression resulting in maximum seal life and reduced maintenace (eliminates the need to retorque).
- Rigid stainless steel ring helps maintain alignment during assembly.



In compression

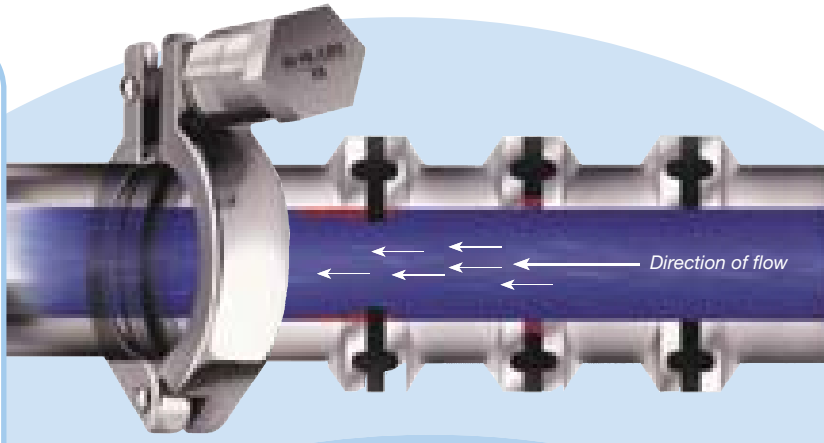


Not in compression

Special clamp products

Torque-Rite for Perfect Surface Gasket System

Torque-Rite
Presenting Rubber Fab's Perfect Surface Gasket System
The perfect union of Torque-Rite and the Perfect Surface Gasket:
Torque-Rite allows you to control compression and expansion while maintaining constant inch/pounds force assuring a Perfect Surface ID when used with a Perfect Surface Gasket. Torque-Rite eliminates the problems associated with over- or under-tightening a gasket which can lead to an unsanitary system.

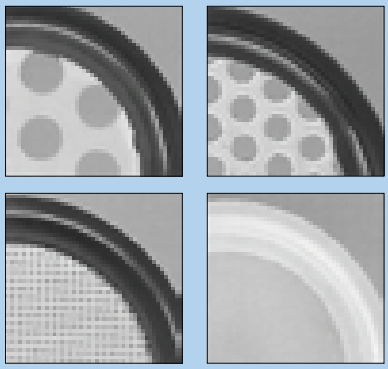


Tri-clamp couplings have a big advantage versus other type of couplings such as DIN 11864 and DIN 11851.
Due to the design of the gasket, it is possible to develop very particular gaskets, applicable in different situations, without the necessity to change the couplings. Hereby you can find an overiew of the most important executions.

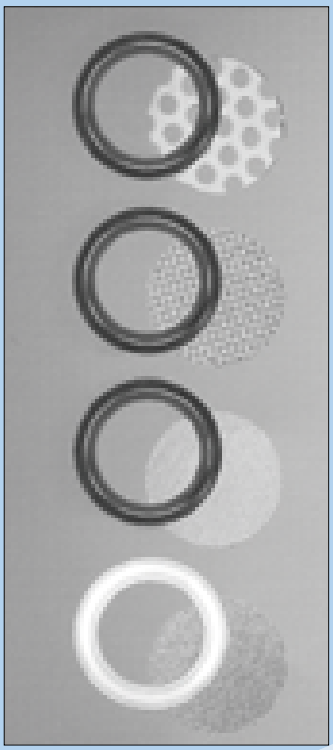
screen gaskets have an inbuilt filter in different sizes and materials.
- mesh 10 – 200
- sizes: 1⁄2" – 4"
- materials screens:
  SS – PTFE – Polypropylene

Applications:
- prefiltration
- protection
- gassing or degassing

...

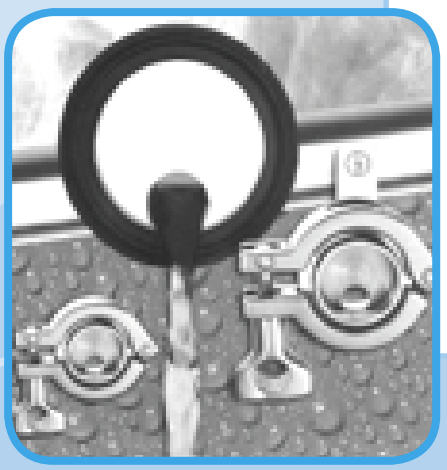


Perforated fluid conditioning gaskets



Removable disc inserts and holders sold separately

Special clamp products



Self draining orifice plates

There's a new standard in orifice plate design. Offered in an eccentrically self draining configuration, the Rubber Fab Orifice Plate prevents dead legs, maintains flow while assuring self drainage thereby eliminating the potential for soil retention.

Orifice plates are standard gaskets with pre-drilled central plate in order to reduce the flow rate in a pipeline.

- Drilled holes from 1/64" up to 1.1/2"
- Eccentrically positioned for self-draining purposes
- Available with or without tabs for verification.

Smart Gasket

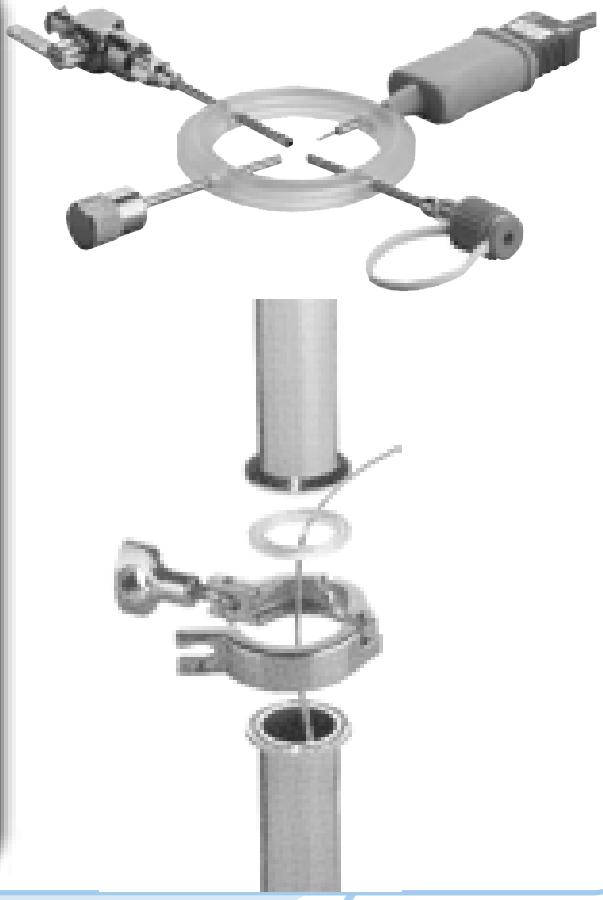
Its value is proven when validating for sterility in a high-purity pharmaceutical system. Your standard sanitary flange utilizing the smart gasket TM is used to obtain the critical thermal mapping information you need during the validation process. Smart gasketTM easily install between 2 standard flanges, using an adapted clamp to secure the flanges. The clamp and gasket provide up to four internal ports for accepting the smart gasketTM thermocouple sampler or accessories.

Features:

- Safe to use
- Ease of installation
- 1, 2, 3 and 4 internal ports available
- Sensors seal with gasket compression
- User friendly
- Reusable

Benefits:

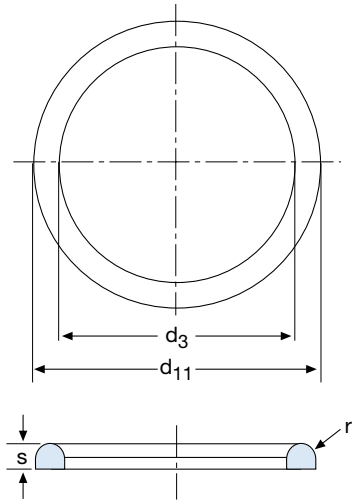
- Use temporarily or permanently without custom thermowells or expensive custom fittings
- Easy to expand to multiple system sites
- Sanitary without a dead leg



Milkcoupling gaskets

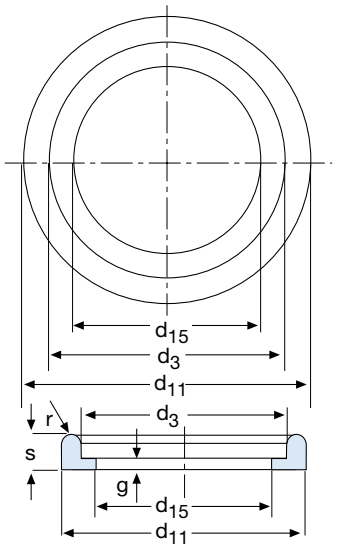
Rings to DIN 11851

NW	d_3	d_{11}	r	s
10	12	20	2,3	4,5
15	18	26	2,3	4,5
20	23	33	2,8	4,5
25	30	40	2,8	5
32	36	46	2,8	5
40	42	52	2,8	5
50	54	64	2,8	5
65	71	81	2,8	5
3[11]	78	88	2,8	5
80	85	95	2,8	5
90	94	104	2,8	5
100	104	114	2,8	6
125	130	142	3,5	7
150	155	167	3,5	7



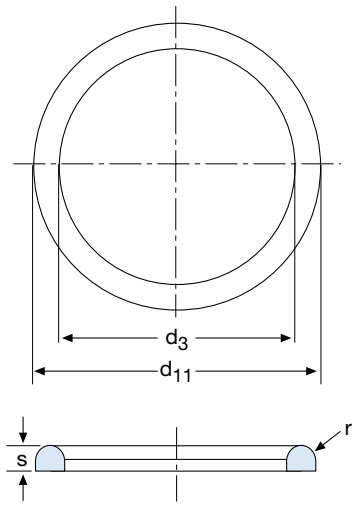
Rings with internal centering ring

NW	d_3	d_{11}	d_{15}	g	s	r
10	12	20	10.5	1,5	5	2,3
15	18	26	16.5	1,5	5	2,3
20	23	33	20.5	1,5	5	2,8
25	30	40	26.5	2	6	2,8
32	36	46	32.5	2	6	2,8
40	42	52	38.5	2	6	2,8
50	54	64	50.5	2	6	2,8
65	71	81	66.5	2	6	2,8
80	85	95	81.5	2	6	2,8
100	104	114	100.5	2	6	2,8
125	130	142	125	2	7	3,5
150	155	167	150	2	7	3,5



Rings

NW	d_3	d_{11}	r	s
25	30	40	2,8	8
32	36	46	2,8	8
40	42	52	2,8	8
50	54	64	2,8	8
65	71	81	2,8	6,5
65	71	81	2,8	8
80	85	95	2,8	6,5
80	85	95	2,8	8
100	104	114	2,8	8



These gaskets are used in combination with the “milkcouplings” according to DIN11851, and mainly used in the milkindustry due to its aseptic concept. Over the years, the standard bleu gasket in NBR has changed into other qualities such as:

- EPDM (black)
- H-NBR (yellow) for temperature up to 150° C
- Viton® for chemical resistance
- Silicone (red or transparent)
- PTFE
- Teflex®, FEP encapsulated gasket with Viton, silicone or EPDM-core
- Elastoguard, rubber with antimicrobial properties (in H-NBR yellow)
- Kalrez® (white or black)
- Gylon® blue

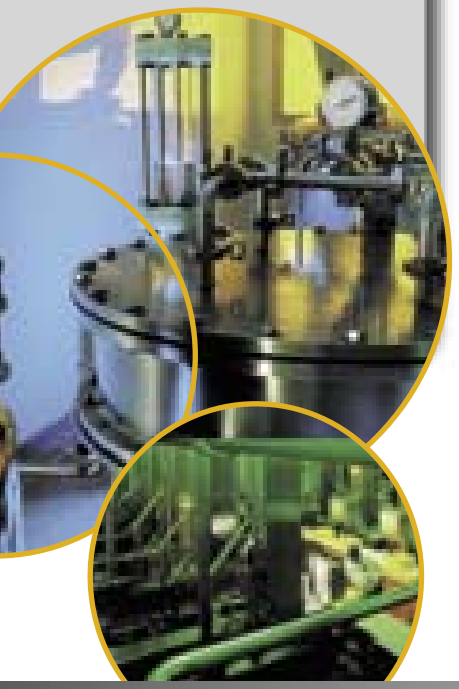
Elastoguard® also available in other rubber compounds.

All these components are FDA compliant.

Teflex® ERI-TITE gasket

ERIKS Teflex® ERI-TITE gasket is composed of a Silicone elastomer encapsulated in seamless FEP cover.
The elastomer works as a rubbermaterial and helps the slow recovery of the FEP or PFA-cover. The chemical resistance of FEP is almost the same as PTFE. Permeability of FEP is much lower than PTFE. FEP complies with the FDA and USP class VI regulations for contact with food and pharmaceuticals.

The Encapsulated Teflex® ERI-TITE gasket is a critical component often used to prevent serious chemical/ solvent spillage which can result in injury and environmental pollution. It is a component which we manufacture responsibly in a high quality manner, subject to stringent controls and only from the best leading name materials available.



Product Description

Chemical Composition	:	2, I äcover{ Copolymer of Hexa-Fluorpropylene and Polytetrafluorethylene (PTFE)
Physical form	:	CAMLOCK Seali Ring
Colour	:	Red; cover: Translucent
Storage stability*	:	10 years

* : Following DIN 7716 conditions

Physical Properties

Test Method	*Norm*	*Test Values*
Specific Weight	ASTM 1817	1,26
Hardness	ASTM D 2240	60° ± 5° IRHD
Tensile Strength at break	ASTM D 412	8,6 MPa
Elongation at break	ASTM D 412	280%
Compression Set, 22h/175°C	ASTM D 395 B	9,2%
FEP cover		
Tensile Strenght	ASTM D 2116	28 MPa
Fusion Point	ASTM D 3418	260°C

Temperature Resistance
with FEP: -60° to +204°C

Chemical Resistance

Concentrated acids	:	very good
Acetone	:	very good
Hydroxides	:	very good
Benzol	:	very good
Crude oil	:	very good
Toluene	:	very good
ASTM Fuel C	:	very good
MEK	:	very good
MTBE	:	very good
Water	:	very good
Steam	:	very good

Advantages
- Excellent chemical resistance, comparable with that of PTFE
- Low compression set of silicone core

Other Information
- Other colours available on demand
- FEP in conformity with Foods and Drugs Administration (21 CFR 177.1550; 21 CFR 177.2600; 21 CFR 175.105, 21 CFR 176.180; 21 CFR 177.1520; 21 CFR 175.300; 21 CFR 176.170)
- Silicone inside compliant with FDA 21 CFR 177.2600
- FEP in conformity with U.S. Pharmacopeia (USP) class VI

Our Gasket profile is designed with large radiused corners. We have no reduction at weld point.

Elastoguard®

Antimicrobial growth problemems and solutions

The most significant breakthrough ever in antimicrobial rubber technology
Imagine a situation where the rubber components you incorporate into your products; that form part of your production line; or you include in your plant specification; require much less costly labour-intensive, routine inspection and sterilisation treatment than they currently demand.
Imagine rubber that inhibits the growth of any micro-organism; bacteria, fungi or algae and will deter it from contaminating or colonising its surface.
Imagine the valuable, virtually unique marketing benefits and added value your products would enjoy.

Imagine the savings on downtime, lost production and maintenace costs.
Just imagine how such a technically advanced antimicrobial rubber could improve your products, your productivity, your profitability.

Elastoguard explained
The growth of microbes on rubber surfaces can lead to foul odours, discolouration, the formation of mildew and slime.

Another potential effect of microbial contamination on rubber components is serious surface degradation; a process that can significantly reduce the component's operational lifespan.

Traditional protection against microbial contamination involves thoroughly cleaning and washing with hot water and detergent. Such cleaning procedures, especially where the rubber components are sited in dificult to access locations, can be costly and time consuming. What's more, these procedures do not offer residual protection against further contamination.

Very often, to ensure compliance with health and hygiene regulations, rubber components are simply scrapped and replaced, frequently at significant expense.

Elastoguard is a pro-active antimicrobial rubber that provides residual protection against microbial contamination, thereby dramatically reducing the necessity for a traditional routine decontamination service agenda.

Innovative patent pending technology
Developed by Milliken Chemical Speciality Elastomers, Elastoguard's innovative patent pending technology can be produced in a wide range of specialist compounds to meet a broad spread of needs. It incorporates **a zirconium phosphate-based ceramic, ion-exchange resin containing silver**, which is acknowledged to be safe for human contact, and is recognised for its antimicrobial effectiveness against a broad spectrum of micro-organisms. Unlike most organic biocides, Elastoguard can be used in food contact situations and is designed for use in pharmaceutical and medical industries.

Elastoguard is not imagination. It is reality. Available now.

Products:
- O-rings
- Oilseals
- Profiles
- Sheets
- Mouldings

Standard Elastoguard RX Types:
- Elastoguard® RX EPDM 70 black
- Elastoguard® RX Viton® 70 black
- Elastoguard® RX Silicon 70 red
- Elastoguard® RX HNBR 70 yellow

Elastoguard®

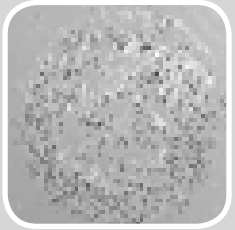
Non-leaching

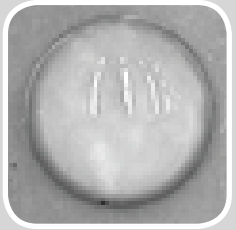
This antimicrobial agent forms an integral part of the rubber compound. It is not simply a skin or liner, and therefore the antimicrobial properties always remain active. Furthermore, any abrasion or wear to the surface of the rubber actually increases the exposure of the silver and with it the efficacy of its antimicrobial qualities.

- Designed for use in pharmaceutical and food processing technology, water treatment, medical equipment, beverage production and dispensing, and for close human contact.
- Provides effective microbial protection against a broad spectrum of micro-organisms.
- Available in a wide range of technical rubber compounds.
- Can be incorporated as part of a customised compounding facility.
- Forms an integral part of the rubber compound, is durable and non-leaching.
- Does not affect colour stability of the compound.
- Has no taste. Contains no smell.
- Non-toxic, non-flammable, non-corrosive.

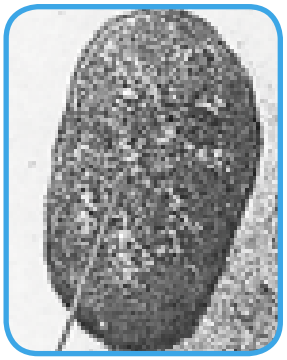
Proven Elastoguard® efficiency is supported by substantial technical data

Pictures show contaminated water droplets. The sample on the left, which is on an untreated rubber surface, displays healthy growth of fungi.
The sample on the right, exposed to silver ions in Elastoguard® rubber is virtually clear of any fungal contamination.





The effect of silver on healthy bacteria



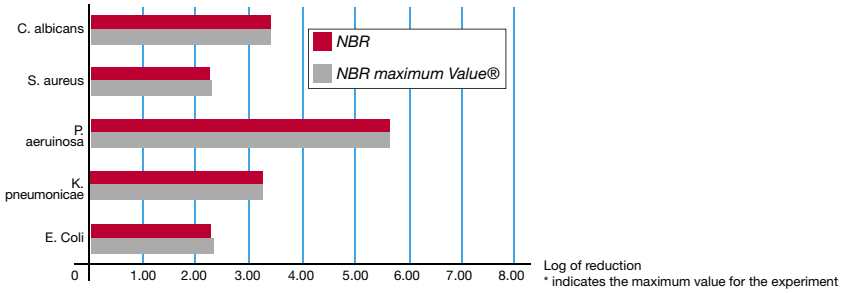
Healthy bacteria

DNA condenses on itself

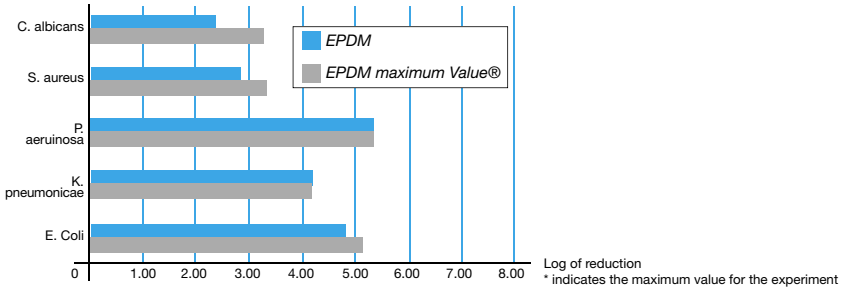
Formation of electron dense granulate

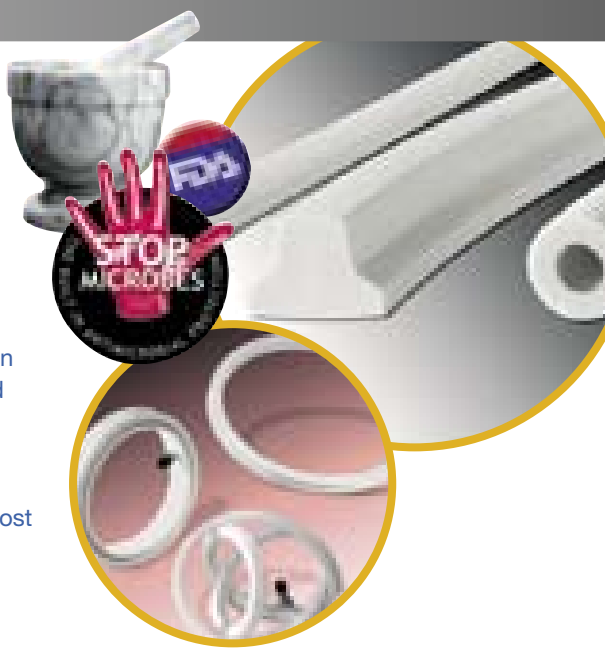
Cell wall decomposes

Elastoguard® NBR Rubber Exhibiting Safe and Durable Antimicrobial properties



Elastoguard® EPDM Rubber Exhibiting Safe and Durable Antimicrobial properties





Bio-Guardian® inflatable seals

The moste effective technique for sealing between surfaces which move in relation to one another is the Bio-guardian® pneumatic seal. Bio-guardian® seals expand and retract to provide a secure, reliable seal that can hold, position, or handle objects in a wide range of applications.

As a result of this patented design, modern manufacturing techniques, and the most advanced elastomers, Bio-guardian® seals can be used in a multitude of sealing, handling and holding applications.
Bio-guardian® seals withstand temperatures from -100°C (-148°F) to +250°C (+482°F) and pressures from 0.5 to 10.4 bar (7 to 150 psi) in a variety of liquid or gaseous media.

Manufacturing
Bio-guardian® pneumatic seals are either moulded or manufactured from extruded profiles that are joined together by a moulded joint. The moulded joint ensures uniform wall thickness while restricting stress at the joint, and provides substantial flexibility. The HP and LP are the standard profiles: however, other profiles and elastomers are available for special sealing, locking, gripping, and handling applications.

Operation
Bio-guardian® seals are homogeneous elastomeric seals with a high modulus of elasticity and considerable tensile strength. The seals are designed to be fitted into grooves and are restricted to low pressures to prevent bursting. They expand and retract with the pressurization and deflation of the seal within a groove. The exact groove and gap dimensions are ***critical*** in designing and producing the correct seal for your application.

Bio-Guardian®
Microbial protection is a must in the medical, pharmaceutical, food and beverage process industry. Avoiding bacteriological and microbial growth on equipment and materials by means of smooth and protected surfaces is a major step forward.
To meet this high level of protection Garlock has deveoloped a new elastomer Bio-Guardian® which formulation provents the development of bacteria and micro-biofilm. Garlock offers the Bio-Guardian® elastomeric compound in extreded profiles, moulded parts and Cefil'air inflatable seals.

The Bio-Guardian® concept
is based on a silver anti-microbial technology. Bio-Guardian® prevents biofilm generation and eliminates micro organism of the surface of the rubber parts.

Conventional rubber elements
Micro-organism at untreated rubber parts promote undesired bacteria throughout the equipment. Undesired effects, eg. foul smell, discoloration and corrosion up to formation of mildew, slime mould occur, thus leading to early damage and destruction.

Bio-Guardian® elements
With a specific technology using silver ions throughout the entire rubber section, the Bio-Guardian® inhibits and blocks any growth of micro-organism.

GARLOCK
SEALING TECHNOLOGIES

- World premiere
- Extruded Silicone Profiles
- Inflatable Cefil'air® Seals
- Endless Tubular Seals
- Moulded Parts
- Microbes
- Biofilm
- Silver

Cellular qualities

Cellular rubber 329 H 096
Neoprene/EPDM FDA compliant.

- CR (Chloroprene)/ EPDM / Polyolefin
- Soft elastic cellular rubber with closed

Physical Properties

Test Method	*Norm*	*Test Values*
Density	DIN 53 420	96 kg/m^3 ±15
Oil resistance, Fluid immersion 7 days at 23°C		pass
Elongation at break	DIN 53571	305 %
FDA Approval		ingredients are approved
Compression Set Suffix B, 25 % max.	ASTM D 1056	20 %
Compression Deflection at 25 %	ASTM D 1056	37,9 kPa
Ozone Test	ASTM D 1171	no cracks, pass
UV-Resistance, 120h Ultra-violet light exposure		excellent
Water Absorption	DIN 54 428	5 % max.
Flame Retardant	UL 94 HF1 ASTM D 1056 99 SAW J 18 99 Mil R 6130, type II grade A, B & C. Mil C 3133, SCE42 & SCE 7	self-extinguishing, pass 2C2 2C2 pass pass

Temperature Resistance
- -40° to +70°C
- Short duration up to +90°C

Application
- Ozone, air and UV resistant
- Weather resistant
- Food
- Seawater
- Petroleum
- Fuel and lubrication oil

Other Information
- Size tolerances according DIN 7715 P3.
- Material can be waterjetcut, cut, stamped, milled, grind, glued. very fine cells

Cellular qualities

Cellular silicone sheet material in FDA grade with numerous advantages for multi purposes.

Advantages such as:

- Excellent performances at high and low temperatures
- Superb compression set
- Durable long term resilience and long service life evening dynamic applications
- Low water absorption and excellent resistance against UV light and ozone
- Temperature tolerance from - 55°C to + 200°C
- Formulated to meet BgVV, XV and FDA 21.CFR 177.2600.

All products are supplied in maximum sheets of 914x914mm. Thicknes available in inch dimensions. Material can be cut easily by die cutting in different gaskets.
Material can be delivered with or without self adhesive layer.

SI 714 R 200 PR, SI 714 R 320 PR, SI 714 R 380 PR

Properties	*Unit*	*SI 714 R 200 PR*	*SI 714 R 320 PR*	*SI 714 R 380 PR*
Specific gravity	kg/cm^3	192	320	384
Compression force deflection	ASTM D1056 kpa 25% deflection	7-35	41-79	83-138
Compression set	ASTM D1056 100 °C	< 5%	< 5%	< 5%
Tensile strength	ASTM D412 kpa	241	310	414
Elongation	ASTM D412 %	90	80	65
Low temperature brittleness	ASTM D476 (B) °C	-55	-55	-55
Water absorption	ASTM D471	3,50%	1,40%	0,80%
Cell structure		Open cell	Closed cell	Closed cell
Colour		White-Gray	Gray	Gray
Thickness		1,6 upto 25,4mm	0,8 upto12,7mm	0,8 upto 6,4mm

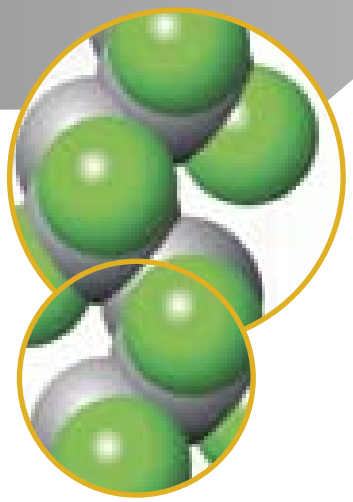
Silicone sponge profiles in FDA grade:

- This platinum-cured food grade silicone sponge is resistant to ultra-violet light, corona, arcing and ozone.
- Excellent for vibration damping and for protecting and cushioning components.
- Excellent chemical resistance (but not suitable for use with many solvents, oils or concentrated acids).
- Low degree of moisture absorption, therefore mechanical properties show little change, even after prolonged periods of immersion.

SI 714 S 400 PR, SI 714 S 600 PR

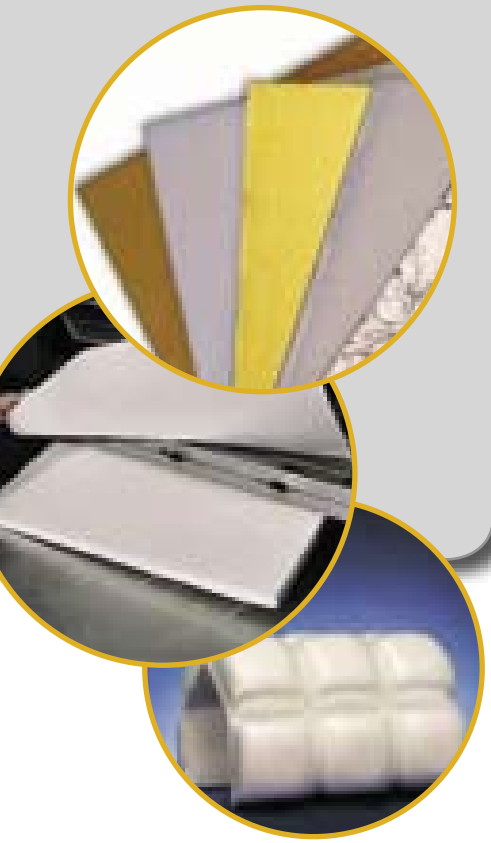
Properties	*Unit*	*Test*	*SI 714 R 400 PR*	*SI 714 R 600 PR*
Specific Gravity	g/cm^1	D792	0.40	0.60
Compression Set (22 hrs at 100°C)	D395	%	<50	<50
Tensile Strength	Mpa	D412 DIE C	1.5	2.0
Elongation at Break	%	D412 DIE C	300	400
Tear Strength	kN/m	D624 DIE B	5	11
Plasticity Williams	mm/100	D926 67	240	240
Low Temperature Brittleness		ASTM D746-98 -55°C	No Cracks	No Cracks

Figures given above are for guidance only and should not be used in preparing specifications.



ZOTEK®
High Performance PVDF Foams

Kynar exhibits exceptionally wide temperature tolerance (to 160°C), excellent UV, nuclear radiation and ageing resistance, high dielectric strength and outstanding resistance to a wide range of solvents and aggressive chemicals. It is biologically inert, thermally stable across a wide temperature range and is of a very low order of toxicity. In ZOTEK® F and ZOTEK® F HT, these properties are combined with light weight, flexural response, buoyancy and thermal and acoustic insulation They are physically expanded using fabrication techniques such as sawing, properties derived from the foaming process. Like their parent resins, ZOTEK® F and ZOTEK® F HT foams are expected to exhibit outstanding durability and longevity.



PERFORMANCE INDICATIONS:

Fire Retardant Properties
ZOTEK® F and ZOTEK® F HT foams are inherently fire retardant, low smoke, low heat release materials. The materials have been tested to a variety of relevant fire standards including stringent aviation, aerospace and building materials standards.

Thermal Conductivity
The thermal conductivity of ZOTEK® F and ZOTEK® F HT grades has been tested in accordance with ISO, DINand ASTM test methods at a range of temperatures.

Resistance to Fungal Growth
Selected ZOTEK® F and ZOTEK® F HT grades have been subjected to microbiological testing in accordance with RTCA DO1600, Category F, Section 13 and the results evaluated and laid out as per MIL-STD-81E method 508.4. Both products showed no fungal growth.

Biocompatibility
Selected ZOTEK® F and ZOTEK® F HT grades have been tested to the relevant sections of ISO 10993. The foams were shown to be suitable for use in medical surface devices in contact with the skin or surface devices in contact with mucosal membranes or breached or compromised surfaces for limited or prolonged exposure.

Chemical Resistance
General guidelines for chemical resistance of PVDF resins are that they exhibit excellent resistance to a wide range of chemicals. They are resistant to attack from most inorganic acids and alkalis, aliphatic and aromatic hydrocarbons, organic acids, alcohols and halogenated solvents. However, they are susceptible to attack from strong alkalis (i.e. pH>12) and strongly polar solvents (e.g. acetone, methyl ethyl ketone, ethyl acetate, dimethylformamide and dimethylacetamide).

Solvent Resistance
Selected ZOTEK® F and ZOTEK® F HT grades have been independently tested for resistance to a wide range of solvents including fuels, lubricating oils, de-watering fluids, hydraulic fluids and alcohol solvents. No cracking, deterioration, punctures or other detrimental effects were observed.

UV Resistance
Selected ZOTEK® F and ZOTEK® F HT grades have been tested and found to have exceptional UV resistance.

DETECTASEAL™

Metal detectable elastomer seals
The latest advance in contamination detection and containment

Do you use an in-line metal detector to detect contamination in process lines?
Does it identify contamination from elastomer seals?
Now it can!

The new DETECTASEAL™ range includes FDA compliant grades of EPDM, Nitrile, Fluorocarbon (FKM) compounds. Available in blue and black, DETECTASEAL™ O-rings have been tested and proven in use at leading pharmaceutical and food manufacturing plants. Fragments of DETECTASEAL™ as small as 2 mm can be identified by metal detector equipment.

A Maintenance Manager at a leading European Food manufacturer said:
"The seal and fragment detection trials were successful and represent a significant step forward from where we are now in contamination detection".

PPE provides fast and responsive lead-times and hygienic seal design services, suported by expert Material and Engineering Development teams

Features of DETECTASEAL™ materials:

- Early detection and containment of contamination
  - reduced product loss
  - increased productivity
- FDA compliant elastomer materials
- Free from animal derived ingredients
- Blue seals to assist in easy identification

DETECTASEAL™ is a trademark of PPE

Flat Gaskets

Gylon® PTFE gaskets

Gylon® Standard Style 3500 and Style 3501E

These general purpose gasketing materials offer significant advantages over conventional PTFE in regard to functionability at higher temperature/pressure combinations. Style 3500 and 3501 E GYLON® gasketing conform to FDA specifications.

Gylon® Off-White Style 3510

Style 3510 GYLON® has a very wide chemical resistance (the optimum of all the GYLON® gasketing products). It is particularly suited for service against hydrofluoric acid and other strong chemicals such as potassium and sodium hydroxide, hydrogen fluoride, aluminium fluoride and chrome plating solutions. Conforms to FDA specifications.

Gylon® Blue 3504

Gylon® Blue is specially developed for Food and Pharmaceutical applications. Ideal for email flages and for those applications where low bolt forces are available. Conforms to FDA-specification, and is approved according USP class VI.

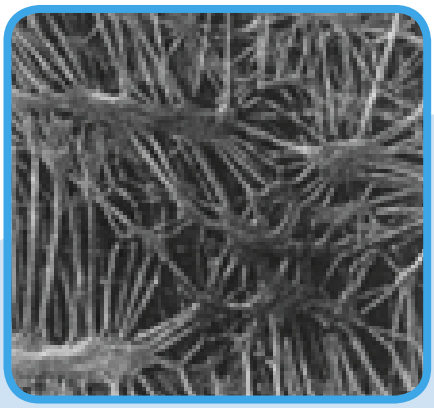
GYLON® - technical data

	GYLON® standard Style 3501 E	*GYLON® Blue Style 3504*	*GYLON® Off-White Style 3510*
Temperature range	-210 to +260°C	-210 to +260°C	-210 to +260°C
Pressure load	83 bar	55 bar	83 bar
P x T, max. thickness : 1 and 1,5 mm	12000	12000	12000
3,0 mm	8600	8600	8600
Compressive creep strength (DIN 52913) 150°C - 30 N/mm^2	16	15	14
175°C - 50 N/mm^2	25	-	-
Modules at 100% Elongation (ASTM D1708)	11 N/mm^2	10 N/mm^2	9 N/mm^2
Compressibility (ASTM F 36)	7-12%	25-45%	4-10%
Recovery (ASTM F 36)	40%	30%	40%
Creep relaxation (ASTM F 38)	18%	40%	11%
Tensile strength (ASTM D 1708)	14 N/mm^2	14 N/mm^2	14 N/mm^2
Sealability (ASTM F 37 B) ASTM Fuel A: Internal pressure = 0,7 bar, Gasket load = 7 N/mm^2	0,1 ml/h	0,12 ml/h	0,04 ml/h
Gas sealability (DIN 3535/6)	0,10 cm^3/min	0,15 cm^3/min	0,10 cm^3/min
Leak rate (DIN 28090-2), λ 2,0	<0,001 mg/(s x m)	<0,001 mg/(s x m)	<0,001 mg/(s x m)
Density (DIN 28090-2)	2,19 g/cm^3	1,70 g/cm^3	2,80 g/cm^3
Quality	FDA	FDA	FDA

Other materials conform to FDA:
- *Eriks EPDM white*
- *Eriks Blanca (NR/SBR)*
- *Eriks silicone*

Flat Gaskets

GORE® gaskets



GORE® sealants are among the world's tightest, chemically resistant gaskets. They have proven value to companies that handle aggressive or toxic materials that must be kept in compliance with environmental and safety regulations. Made from 100% expanded PTFE, GORE® gaskets are suitable for use throughout the entire pH range, except molten alkali metals and elemental fluorine. They withstand temperatures from -450°F to 600°F (-268°C to 315°C) which makes them ideal for high temperature as well as cryogenic applications.

Physiological Safety
GORE®, gasket tape, GORE-GR® Style R sheet gasketing and GORE-TEX® TriGuard may be safely used as articles or components of articles used in producing, manufacturing, packaging, processing, preparing, treating, transporting or holding foods. Physiologically harmless in prolonged installation at temperatures up to +260°C according to VDI/VDE guide-line 2480, complies to FDA 21 CFR 177.1550 5PTFE) requirements for food.

GORE-GR® Style R Sheet Gasketing
GORE-GR® Style R Sheet gasketing is manufactured using Gore's unique pro-prietary expanded ePTFE process. Its multidirectional strength inhibits creep and cold flow and also limits the pos-sibility of blow out.
GORE-GR® Style R Sheet gasketing is a development based on GORE-GR® sheet gasketing. It provides a 6-fold increase in bend resistance making the gaskets easier to handle.

GORE® Gasket Tape
A form-in-place ePTFE gasketing mate-rial available in a variety of profiles to suit virtually any sealing configuration. Ideal for full-face gaskets where precise compressed thickness is essential.

GORE® - technical data

Availability	*DF Tape*	*Series 300 and 600 Tape*	*GR/GR Style R Sheet and cut gasket*
Installation	Apply overlap, cut, tighten up		Cut to shape, insert, tighten up
Temperature range	-240°C to +270°C for short periods up to +315°C	-240°C to +270°C for short periods up to +315°C	-240°C to +270°C for short periods up to +315°C
Pressure	210 bar	210 bar	210 bar
Chemical resistance	pH 0-14	pH 0-14	pH 0-14
Sealing factor $k_{1(PN40)}$ = $k_0 x k_{D(PN40)}$ =	1,6 x b_D 1,95 x b_D	2,5 x b_D 25,4 x b_D	2,5 x b_D 25,4 x b_D
Material characteristics	Expanded PTFE	Multi-directional orientated ePTFE	Multi-directional orientated ePTFE

Hoses

RX®-LABO SILICONE MEDICAL 60° Shore transparent

Application :
- Specially designed for the food and pharmaceutical industry
- "Medical Grade" : ST-EC-60-01
- For foodstuff contact approved by:
  - FDA CFR 21 177.2600
  - USP XXI Class VI
  - BGA
- No toxic ingredients

Temperature range :
-70 °C tot +200 °C continuous

Tube :
- Silicone rubber, semi-transparent
- Hardness : 60° shore

Reinforcement :
None

Cover :
- Natural silicone rubber, smooth, semi-transparant
- Hardness : 60° shore

Marking :
None

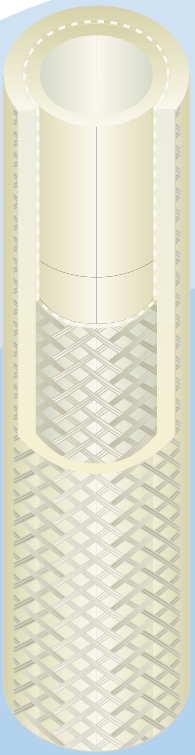
Extra :
Also available in colour depending on the quantities

RX®-LABO SILICONE MEDICAL

ERIKS art.nr.	*Int. diameter*	*Wall thickness*	*Weight*	*Length coil*
	mm	*mm*	*mm*	*kg/m*
10015203	2	1.5	0.02	25
10015204	2	2	0.03	25
10015205	3	1	0.03	25
10015206	3	2	0.04	25
10015207	4	1	0.03	25
10015208	4	1.5	0.04	25
10015209	4	2	0.05	25
10015210	5	1	0.04	25
10015211	5	2	0.05	25
10015212	5	3	0.09	25
10015213	6	1	0.03	25
10015214	6	1.5	0.04	25
10015215	6	2	0.06	25
10015216	6	3	0.10	25
10015217	7	1	0.04	25
10015218	8	2	0.07	25
10015219	8	3	0.13	25
10015220	8	4	0.18	25
10015221	9	1	0.07	25
10015222	10	2	0.10	25
10015223	10	2.5	0.12	25
10015224	10	3	0.15	25
10015225	12	2	0.12	25
10015226	15	3	0.20	25
10015227	18	3	0.22	25
10015202	19	3	0.25	25

Hoses

RX®-SILIPRESS MEDICAL 70° Shore transparent



Application :
- Specially designed for the food and pharmaceutical industry
- An ideal solution for filling equipment, load cell connections and food processing
- "Medical Grade"
- Lightweight hose for ease of handling
- For foodstuff contact approved by:
  - FDA CFR 21 177.2600
  - USP XXI Class VI
  - German BgVV
- No toxic ingredients

Temperature range :
-60 °C tot +180 °C continuous

Tube :
- Natural, smooth bore, silicone rubber, semi-transparent
- Liner will not affect taste, colour or odour of product
- Detergent or caustic (CIP) cleanable

Reinforcement :
Plies of glass fibre

Cover :
- Natural, silicone rubber, smooth
- Food quality according BGA and FDA
- Hardness: 60° shore

Marking :
None

Extra :
Also available in colour depending on the quantities

RX®-SILIPRESS MEDICAL

ERIKS art.nr.	*Internal diameter*	*Wall thickness*	*Working pressure*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*mm*	*kg/m*	*m*
	3	3	20	10	0.08	25
10015230	4	3	20	10	0.09	25
	5	3	15	15	0.09	25
10015231	6	3	12.5	15	0.09	25
	7	3	11	18	0.10	25
10015232	8	3.5	10	28	0.12	25
10015233	10	3.5	9	38	0.12	25
10015234	12.5	3.5	9	50	0.15	25
10015235	16	5	7.5	60	0.20	25
10015236	19	5	7.5	60	0.20	25
10015237	25	6	5	100	0.25	25

Technical data at 20 °C.

Hoses
RX®-SILIPRESS SPIRAL

Application :
- Very flexible inert suction and delivery hose with mirror-like liner, specially designed for the food and pharmaceutical industry
- For foodstuff contact approved by:
  - FDA CFR 21 177.2600
  - USP XX1 Class VI and 3A
- Autoclavable
- Detergent or caustic (CIP) cleanable
- Steam cleanable (SIP)
- Suitable for the use in food, beverages and pharmaceutical applications, where the highest levels of purity are critical

Temperature range :
-100°C - +300°C

Tube :
- Natural, smooth bore, silicone rubber platinum cured, semi-transparent
- Liner will not affect taste, colour or odour of product

Reinforcement :
- 4 Plies of polyester fibre
- Fully embedded stainless steel wire helix

Cover :
- Natural, silicone rubber, smooth, platinum cured
- UV- and aging resistant

Marking :
None

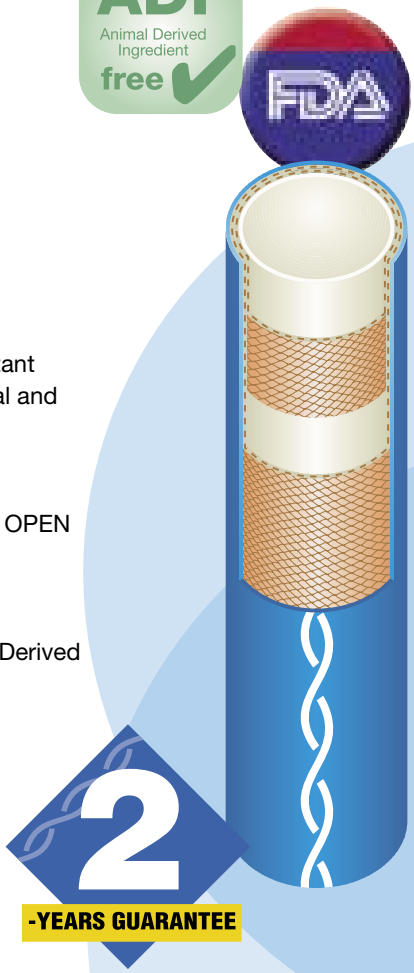
Extra :
Also available in colour depending on the quantities

SILIPRESS SPIRAL

ERIKS art.nr.	*Int. diameter*	*Wall thickness*	*Working pressure*	*Burst pressure*	*Maximum Vacuum*	*Minimum Bend radius*
	mm	*mm*	*bar*	*bar*	*%*	*mm*
-	12,7	4,6	17	55	95	50
-	19	4,6	17	55	95	50
-	25	4,6	17	55	95	75
-	38	4,6	17	55	95	100
-	50	4,6	16	48	95	150
-	63	6,2	14	41	95	210
-	76	6,2	12	27	95	250
-	102	6,2	11	24	95	300

Hoses

RX®-CLEANFIXX FDA



Application :
- Food quality steam hose for heavy duty steam cleaning and hot water wash down service in dairies, creameries and food processing plants.
- The hose does not leave stripes on the floor.

Temperature range :
- For Water:
  At 95°C working pressure 20 bar, burst pressure ≥ 3 times working pressure.
- For steam:
  At 164°C working pressure 6 bar, burst pressure ≥ 10 times working pressure

Tube :
- EPDM-based rubber, light colour, mirror-like, smooth.
- Rubber compound complying with FDA food standards
- This hose is free from Animal Derived Ingredients (ADI)

Reinforcement :
- Plies of synthetic cord

Cover :
- EPDM-based rubber, blue,
- Smooth with cloth finish
- abrasion and weather resistant
- Resistant to traces of animal and vegetable fats

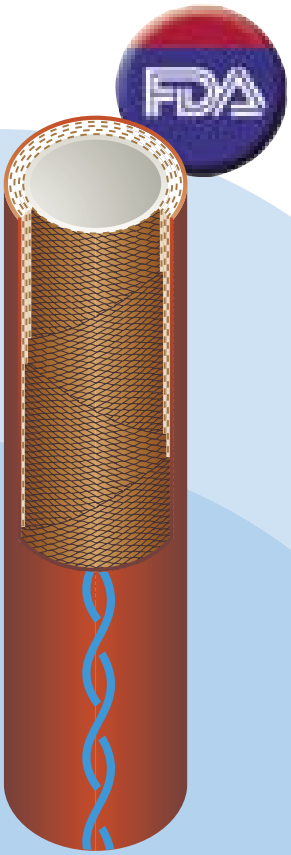
Marking :
"RX CLEANFIXX FDA STEAM OPEN SYSTEM 6 BAR 164°C "

Other information :
This hose is free from Animal Derived Ingredients (ADI-free)

RX®-CLEANFIXX FDA

ERIKS art.nr.	*Int. diameter*	*Wall thickness*	*Working pressure Steam 164°C*	*Working pressure Water 95°C*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*bar*	*mm*	*kg/m*	*m*
10069593	10	5	6	20	75	0.27	40
11089003	13	5	6	20	100	0.34	40
11241415	16	6	6	20	120	0.51	40
11089004	19	6	6	20	160	0.60	40
11089005	25	7	6	20	200	0.89	40
11089006	32	7	6	20	260	1.10	40
11089007	38	8	6	20	300	1.65	40
11089008	50	10	6	20	380	2.35	40

RX CLEANFIXX FDA STEAM OPEN SYSTEM 6 BAR 164°C



Hoses

RX®-DELIFIXX

- A flexible suction and discharge hose for use in wine cellars and breweries, in the food and beverage industry.
- White EPDM-Tube, food quality, high temperature-resistance to aggressive cleaning.
- Suitable for conveying alcohol (up to 40%), soft drinks and non-fatty foods.
- For the application of cleaning liquids please see our separate information sheet.
- The hose complies with the 'Recommendation XXI, Category 2' of BGVV, KTW and FDA.

Temperature:
Tube shortly up to +95 °C for water, lowest temp. at which the hose remains flexible: -35°C, brief steam; sterilisation up to max. 130°C/30 min.

Safety factor : 3,15 : 1

Tube : EPDM, white, smooth, food quality

Reinforcement : textile, wrapped

Cover : NR/SBR, red, smooth, abrasion resistant, cloth impression

Identification :
- Blue marking stripe with text: "RX DELIFIXX BEER/WINE 12 BAR D"
- Embossed text: "RX DELIFIXX EPDM D diam. 12 bar "

RX®-DELIFIXX

ERIKS art.nr.	*Internal diameter*	*Wall thickness*	*Working pressure*	*Vacuum*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*%*	*mm*	*kg/m*	*m*
11088581	13	5	12	50	50	0.40	40
11088582	19	5	12	50	100	0.55	40
11088583	25	6	12	50	150	0.85	40
11088584	32	8	12	50	170	1.45	40
11088585	38	9	12	50	200	1.85	40
11088586	40	10	12	50	250	2.25	40
11088596	50	11	12	50	350	2.95	40
11088597	65	12	12	40	450	4.05	40
11088598	75	15	12	40	600	6.10	40
11088599	80	15	12	30	650	6.40	40
11088600	100	15	12	20	750	7.75	40

Hoses

RX®-PHARMAFLON MFA

Application :
- Universal suction and delivery hose designed to convey manifold chemical, pharmaceutical, cosmetic and alimentary products within the pharma-cosmetic, biotech and food industry.
- It exceeds the quality standards of the most impermeable and ultra-smooth fluorinated inner line available on the market superior to any other similar material.
- The non-toxic outer surface prevents contamination of the working environment.
- It offers excellent resistance to extreme temperatures and good resistance to mechanical stress.

Temperature range :
- From -50°C up to +170°C depending on conveyed product.
- Sterilisation up to 150°C / 30 minutes

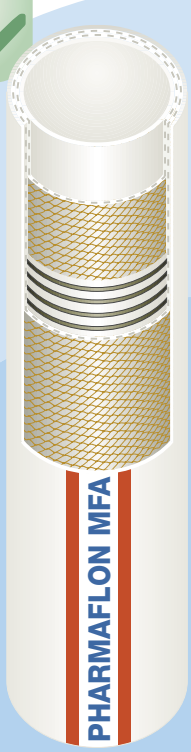
Tube :
- MFA (Perfluoralkoxy polymer), fully fluorinated, white, mirror-like, smooth.
- Very high thermal endurance, stress-craking resistance, bending and oxidation resistance.
- For foodstuff contact approved by:
- US Pharmacopeia (USP 23 Class VI), USA Federal Drug and Cosmetic Act
- FDA Title 21 P.177.1550);
- Conform EU Directives 82/711 EEc; 85/572 EEC; 90/128 EEC; 92/39 EEC; 93/9 EEC; 95/3 EEC; 96/11 EEC
- This hose is free from Animal Derived Ingredients (ADI-free)

Reinforcement :
- High strength plies of synthetic cord, embedded steel wire helix and two crossed copper wires to ensure the dissipation of static electricity

Cover :
- EPDM-based rubber, white, smooth, non-toxic, abrasion, ozone and weather resistant, cloth finish.
- Approved by USA Federal Drug and Cosmetic Act (FDA).

Marking :
"PHARMAFLON MFA"

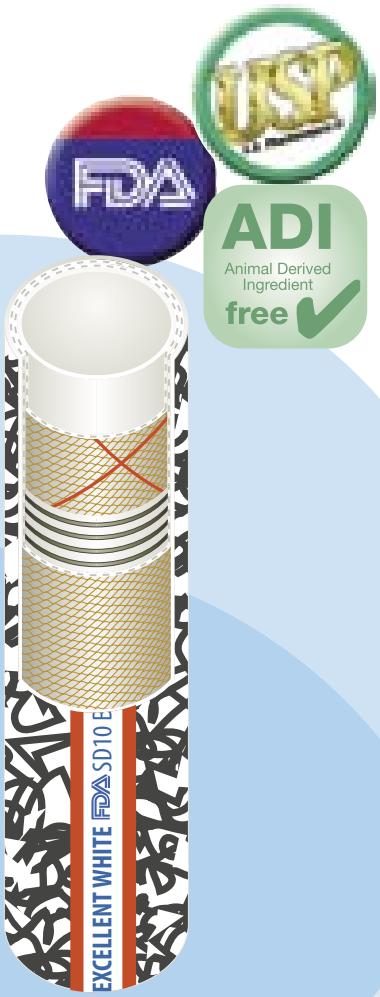
Safety factor :
≥ 4 times working pressure.



RX® PHARMAFLON MFA

RX®-PHARMAFLON

ERIKS art.nr.	*Internal diameter*	*Wall thickness*	*Working pressure*	*Vacuum*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*%*	*mm*	*kg/m*	*m*
11294914	13	6	10	90	60	0,550	20
11294915	19	6	10	90	90	0,720	20
11294916	25	6	10	90	140	0,890	20
11294917	32	6,5	10	90	200	1,160	20
11294918	38	6,5	10	90	250	1,470	20
11294919	51	7,25	10	90	300	2,080	20
11294920	63,5	8	10	90	380	2,800	20
11294921	75	8	10	90	500	3,480	20
	100	8	10	90	550	4,380	20



Hoses

RX®-EXCELLENT WHITE

Application :
- Universal sanitary hose with PFA liner designed to handle alimentary, cosmetic and pharma-chemical products.
- Specifically suitable for use on filling machines.
- Fluorinated, ultra smooth, inert liner of the newest generation ensuring utmost degree of impermeability and absolute hygienic and contamination-free delivery of the medium

Temperature range :
- From -40°C up to +130°C (depending on product and combinations).
- Sterilisations up to +150°C for a maximum time of 30 minutes.
- In case of dynamic applications: from +10°C up to +40°C.

Tube :
- PFA (Alkoxy polymer), fully fluorinated, white colour, smooth, mirror-like.
- No pick-up of taste and odour.
- Excellent flex-performance (resistance to repeated cycles of bending in accordance with ASTM D 2176).
- For foodstuff contact approved by:
- US Pharmacopeia (USP 23 Class VI), USA Federal Drug and Cosmetic Act
- FDA Title 21 P.177.1550);
- This hose is free from Animal Derived Ingredients (ADI-free)

Reinforcement :
- High strength plies of synthetic cord
- Embedded steel wire helix
- Built-in copper wires to ensure the dissipation of static electricity

Cover :
- Patented marble-like, white-black colour surface with a very compact and smooth texture.
- Suitable for applications in the pharmaceutical industry and in general in processes requiring the use of inert, non-polluting materials.
- Odourless and tasteless according FDA 21P.177 2600
- Slides easily over the working floor and does not create friction.
- It does not taint contact surfaces at all and is totally inert.
- Highly resistance to chemicals and can easily be washed.
- Superb resistance to abrasion, ozone and the aggression of weather.
- Antistatic according to EN 12115 parameters. ($R<10^6$ Ohm)

Marking :
"RX®-Excellent White USP VI FDA SD 10 Bar"

Safety factor :
≥ 4 times working pressure

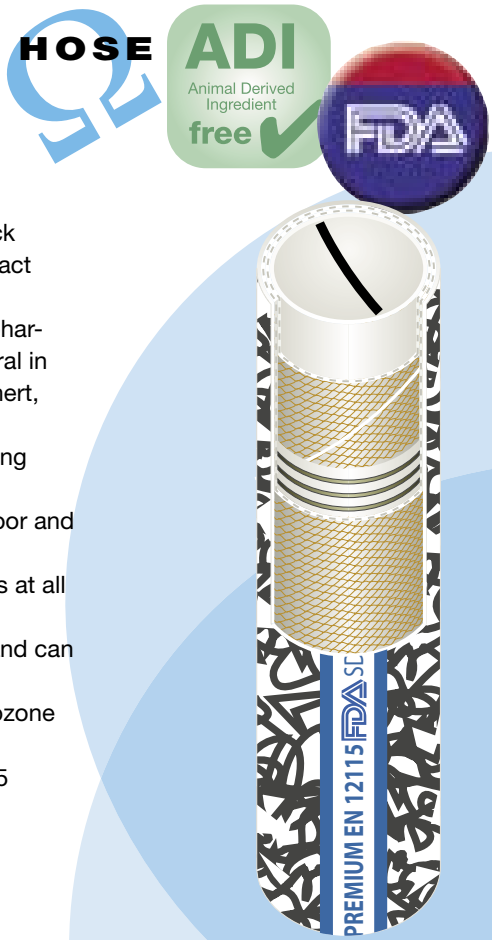
RX®-EXCELLENT WHITE

ERIKS art.nr.	*Internal diameter*	*Wall thickness*	*Working pressure*	*Vacuum*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*%*	*mm*	*kg/m*	*m*
11384124	13	6,0	10	90	60	0,55	20
11384125	19	6,0	10	90	90	0,72	20
11384126	25	6,0	10	90	140	0,89	20
11384127	32	6,5	10	90	200	1,16	20
11384128	38	6,5	10	90	250	1,47	20
11384129	51	7,25	10	90	300	2,08	20
11384130	63,5	8,0	10	90	380	2,80	20
11384131	76	8,0	10	90	500	3,48	20

Technical data at 20° C.

Hoses

RX®-PREMIUM *according to EN 12115*



Application :
- Versatile suction and delivery hose with UPE liner to convey a broad range of pharmaceutical, chemical and alimentary products.
- Meets the standard EN 12115
- Conform FDA, BgVV and M.D. 21.03.73.

Temperature range :
- From –35° C up to +100°C.
- Resistant to steam up to +130°C for a maximum time of 30 minutes.

Tube :
- UPE (ultra High Molecular Weight Polyethylene)
- Clear colour, smooth
- Conductive (R<106 Ohm) through a black UPE helix stripe.
- Inner liner approved by BgVV and conforming to FDA standards as well as to the M.D. 21.03.
- This hose is free from Animal Derived Ingredients (ADI-free)

Reinforcement :
- Plies of high strength synthetic cord.
- Embedded steel helix wire.
- Copper wires

Cover :
- Patented marble-like, white-black colour surface with a very compact and smooth texture.
- Suitable for applications in the pharmaceutical industry and in general in processes requiring the use of inert, non-polluting materials.
- Odourless and tasteless according FDA 21P.177 2600
- Slides easily over the working floor and does not create friction.
- It does not taint contact surfaces at all and is totally inert.
- Highly resistance to chemicals and can easily be washed.
- Superb resistance to abrasion, ozone and the aggression of weather.
- Antistatic according to EN 12115 parameters. (R<10^6 Ohm)

Marking :
"RX®-Premium EN 12115 FDA SD 16 Bar Ω"

Safety factor :
≥ 4 times working pressure up to ID 75 mm
≥ 3 times working pressure over ID 75 mm

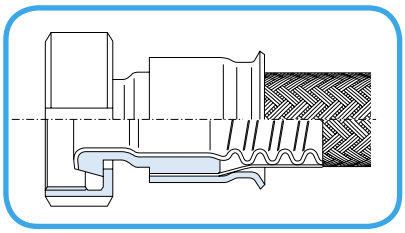
RX®-PREMIUM EN 12115 FDA SD 16 bar Ω

RX®-PREMIUM

ERIKS art.nr.	*Internal diameter*	*Wall thickness*	*Working pressure*	*Vacuum*	*Bend radius*	*Weight*	*Length coil*
	mm	*mm*	*bar*	*%*	*mm*	*kg/m*	*m*
	19	6,0	16	90	125	0,65	40
	25	6,0	16	90	140	0,89	40
	32	6,0	16	90	200	1,16	40
	38	6,5	16	90	250	1,47	40
	50	8,0	16	90	275	2,10	40
	63,5	8,0	16	90	300	2,60	40
	75	8,0	16	80	350	3,10	40
	100	9,0	12	80	450	4,90	40

Technical data at 20° C.

The convoluted PTFE hoses

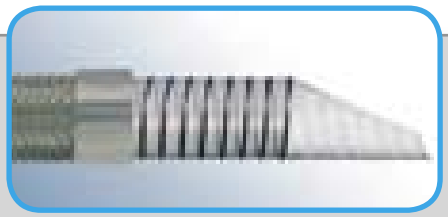


The helically convoluted PTFE (polytetrafluorethylene) inner tube with an outer cover of AISI304 high tensile stainless steel braid are assembled in our ware hose.
The PTFE hoses are virtually resistant to all chemicals with a temperature range from -70°C to +260°C.
Special range: Antistatic PTFE hoses

Properties :
- Non-sticking, easy to clean.
- Excellent mechanical resistance for vibrations and flexing.
- FDA approved resin that guarantees food, cosmetic and pharmaceutical applications.
- Non-flammable.
- Non-aging and very good U.V. resistance.
- Chemically inert.
- Good dielectric properties.
- Low coefficient of friction ensuring low pressure drop.

Fittings :
PTFE- hoses are mainly offered with PTFE flared couplings or hose fittings with PTFE tails. An extended range of assemblies can be offered to all customer specific demands.

The smooth bore PTFE hoses: Smoothflex



Construction:
- Ultra hygienic non-convoluted PTFE (polytetrafluorethylene) liner with stainless steel helix and a AISI 304 high tensile, stainless steel braid.
- The hose has exceptionally good vacuum- and kink resistance properties for extreme performance.
- Smoothflex should be specified for applications where Ultra hygienic non-convoluted hose and high flexibility are imperative, e.g. Food, Bio, Pharmaceutical and Cosmetic industry.
- Only available in complete hose assembly form.

Temperature:
-70°C +260°C

Other types available:
- Type TWF - TAWF
  Type TWF SMOOTHFLEX Smooth bore flexible Teflon® hose with a stainless steel helix.
- Type TWFB6 - TAWFB6
  Type TWFB6 SMOOTHFLEX Smooth bore flexible Teflon® hose with a stainless steel helix and a polypropylene braid.
- Type TWFB9 - TAWFB9
  Type TWFB9 SMOOTHFLEX Smooth bore flexible Teflon® hose with a stainless steel helix and a PVDF (Kynar) braid.
- Type SIW1
  Type SIW1 Smooth bore Silicon hose with stainless steel helix

Smoothflex type TWFB1-TAWFB1

Size	*D1*	*D2*	*D3*	*R*	*WP*	*BP*	*Weight*	*REF*	*REF*
	min.	*min.*	*min.*	*mm*	*Bar 20°C*		*gr/m*	*VIRGIN*	*Antistatic*
1/2”	11,50	1,25	17,80	38	50	250	290	TWFB1012	TAWFB1012
5/8”	15,50	1,25	21,80	42	50	250	361	TWFB1016	TAWFB1016
3/4”	20,00	1,5	26,70	50	60	290	430	TWFB1020	TAWFB1020
1”	22,80	1,5	29,80	70	40	210	653	TWFB1025	TAWFB1025
1 1/4”	30,50	1,5	37,50	85	45	210	750	TWFB1032	TAWFB1032
1 1/2”	36,50	2	46,50	100	40	175	800	TWFB1040	TAWFB1040
2”	48,50	2	58,30	140	25	135	950	TWFB1050	TAWFB1050

SMS Couplings

Female threaded SMS coupling with smooth hose shank to DIN 2817

ID	*Inch*	*ND*	*Thread*	*Material*
25.0	1"	25	40 x 1/6"	Stainless
32.0	1 1/4"	32	48 x 1/6"	Stainless
38.0	1 1/2"	40	60 x 1/6"	Stainless
51.0	2"	50	70 x 1/6"	Stainless
63.5	2 1/2"	65	85 x 1/6"	Stainless
76.0	3"	80	98 x 1/6"	Stainless
101.6	4"	100	132 x 1/6"	Stainless

Female threaded SMS coupling with hose shank for crimping

ID	*Inch*	*ND*	*Thread*	*Material*
25.0	1"	25	40 x 1/6"	Stainless
32.0	1 1/4"	32	48 x 1/6"	Stainless
38.0	1 1/2"	40	60 x 1/6"	Stainless
51.0	2"	50	70 x 1/6"	Stainless
63.5	2 1/2"	65	85 x 1/6"	Stainless
76.0	3"	80	98 x 1/6"	Stainless
101.6	4"	100	132 x 1/6"	Stainless

Male threaded SMS coupling with smooth hose shank to DIN 2817

ID	*Inch*	*ND*	*Thread*	*Material*
25.0	1"	25	40 x 1/6"	Stainless
32.0	1 1/4"	32	48 x 1/6"	Stainless
38.0	1 1/2"	40	60 x 1/6"	Stainless
51.0	2"	50	70 x 1/6"	Stainless
63.5	2 1/2"	65	85 x 1/6"	Stainless
76.0	3"	80	98 x 1/6"	Stainless
101.6	4"	100	132 x 1/6"	Stainless

Male threaded SMS coupling with hose shank for crimping

ID	*Inch*	*ND*	*Thread*	*Material*
25.0	1"	25	40 x 1/6"	Stainless
32.0	1 1/4"	32	48 x 1/6"	Stainless
38.0	1 1/2"	40	60 x 1/6"	Stainless
51.0	2"	50	70 x 1/6"	Stainless
63.5	2 1/2"	65	85 x 1/6"	Stainless
76.0	3"	80	98 x 1/6"	Stainless
101.6	4"	100	132 x 1/6"	Stainless

SMS Couplings

Nut SMS

ID	*Inch*	*N*	*Thread*	*Material*
25.0	1"	25	40 x 1/6"	Stainless
32.0	1 1/4"	32	48 x 1/6"	Stainless
38.0	1 1/2"	40	60 x 1/6"	Stainless
51.0	2"	50	70 x 1/6"	Stainless
63.5	2 1/2"	65	85 x 1/6"	Stainless
76.0	3"	80	98 x 1/6"	Stainless
101.6	4"	100	132 x 1/6"	Stainless

Gasket SMS

ID	*Inch*	*N*	*Material*
25.0	1"	25	EPDM
32.0	1 1/4"	32	EPDM
38.0	1 1/2"	40	EPDM
51.0	2"	50	EPDM
63.5	2 1/2"	65	EPDM
76.0	3"	80	EPDM
101.6	4"	100	EPDM

Couplings according to DIN 11851 for food industry

Female coupling with hose shank to DIN 2817 (AISI 316 = DIN 1.4401 - nut AISI 304)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1"	40	65 x 1/6"	Stainless
50	1"	50	78 x 1/6"	Stainless
63	1"	65	95 x 1/6"	Stainless
75	1"	80	110 x 1/4"	Stainless
100	1"	100	130 x 1/4"	Stainless

Male coupling with hose shank to DIN 2817 (AISI 316 = DIN 1.4401)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Female coupling with hose shank for crimping

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Male coupling with hose shank for crimping

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

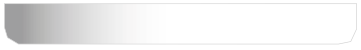
Couplings according to DIN 11851 for food industry

Nut to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Gasket

ID	*Inch*	*N*	*Material*
13	1/2"	15	EPDM
19	3/4"	20	EPDM
25	1"	25	EPDM
32	1 1/4"	32	EPDM
38	1 1/2"	40	EPDM
50	2"	50	EPDM
63	2 1/2"	65	EPDM
75	3"	80	EPDM
100	4"	100	EPDM



Male threaded welding coupling to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Cone welding coupling to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Material*
13	1/2"	15	Stainless
19	3/4"	20	Stainless
25	1"	25	Stainless
32	1 1/4"	32	Stainless
38	1 1/2"	40	Stainless
50	2"	50	Stainless
63	2 1/2"	65	Stainless
75	3"	80	Stainless
100	4"	100	Stainless

Couplings according to DIN 11851 for food industry

Male plug to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Female cap to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Thread*	*Material*
13	1/2"	15	34 x 1/8"	Stainless
19	3/4"	20	44 x 1/6"	Stainless
25	1"	25	52 x 1/6"	Stainless
32	1 1/4"	32	58 x 1/6"	Stainless
38	1 1/2"	40	65 x 1/6"	Stainless
50	2"	50	78 x 1/6"	Stainless
63	2 1/2"	65	95 x 1/6"	Stainless
75	3"	80	110 x 1/4"	Stainless
100	4"	100	130 x 1/4"	Stainless

Cone welding coupling to DIN 11851 (AISI 304 - 1.4301)

ID	*Inch*	*ND*	*Material*
13	1/2"	15	Stainless
19	3/4"	20	Stainless
25	1"	25	Stainless
32	1 1/4"	32	Stainless
38	1 1/2"	40	Stainless
50	2"	50	Stainless
63	2 1/2	65	Stainless
75	3"	80	Stainless
100	4"	100	Stainless

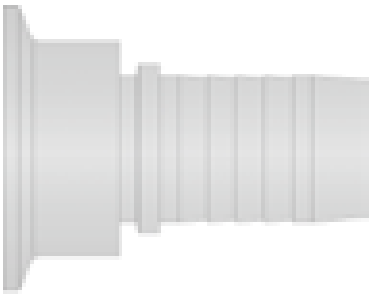
Gasket

ID	*Inch*	*ND*	*Material*
13	1/2"	15	EPDM
19	3/4"	20	EPDM
25	1"	25	EPDM
32	1 1/4"	32	EPDM
38	1 1/2"	40	EPDM
50	2"	50	EPDM
63	2 1/2	65	EPDM
75	3"	80	EPDM
100	4"	100	EPDM

Triclover Couplings

Hose shank

ID	*Inch*	*Flange*	*Material*
06	1/4'	25	Stainless
06	1/4'	34	Stainless
06	1/4'	50	Stainless
10	3/8'	25	Stainless
10	3/8'	34	Stainless
10	3/8'	50	Stainless
12	1/2'	25	Stainless
12	1/2'	34	Stainless
12	1/2'	50	Stainless
20	3/4'	25	Stainless
20	3/4'	34	Stainless
20	3/4'	50	Stainless
20	3/4'	64	Stainless
25	1'	33,5	Stainless
25	1'	50,5	Stainless
25	1'	64	Stainless
32	1 1/4'	50,5	Stainless
32	1 1/4'	64	Stainless
38	1 1/2'	50,5	Stainless
38	1 1/2'	64	Stainless
50	2'	64	Stainless
50	2'	77,5	Stainless
50	2'	91	Stainless
65	2 1/2'	77,5	Stainless
65	2 1/2'	91	Stainless
75	3'	106	Stainless

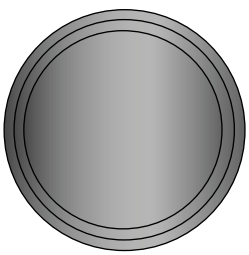


Heavy duty clamp

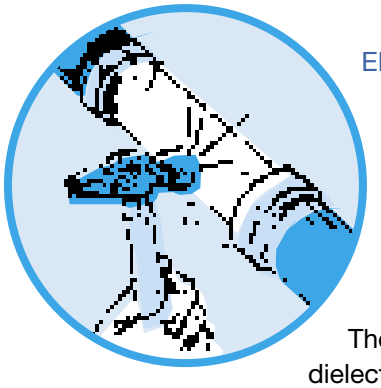
Flange	*Material*
25	Stainless
33,5	Stainless
50,5	Stainless
64	Stainless
77,5	Stainless
91	Stainless

Solid end cap

Flange	*Material*
50	Stainless
77	Stainless

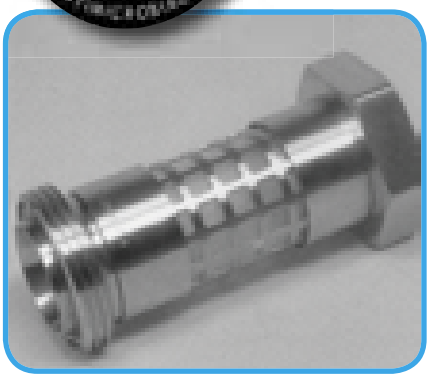


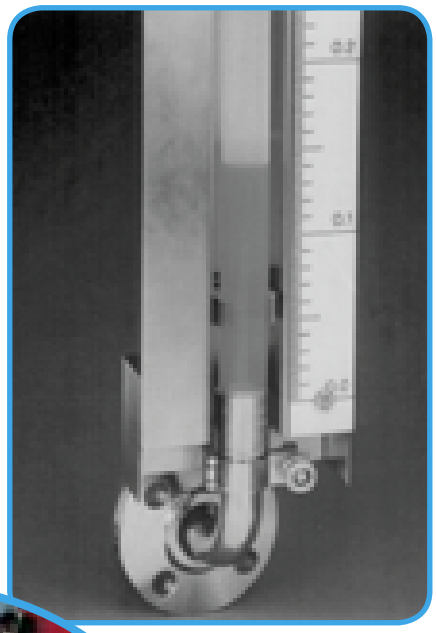
FLEX-RITE:
sight glasses and vessel level indicators



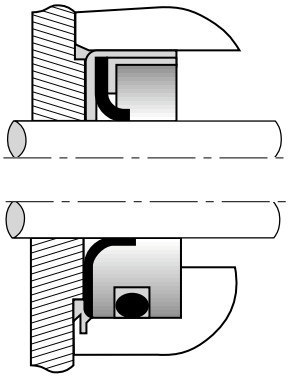
ERIKS provides a complete range of In-Line and stand alone non-glass sight glasses and vessel level indicators that are partially or fully lined in FEP - a melt processable fluoropolymer with similar characteristics to PTFE.

The robust range offers outstanding dielectric properties, chemical inertness, low coefficient of friction, anti-stick properties and weather ability. It is transparent, ideal for sight gauges and can be steam or chemically sterilised by normal industrial methodes.
It meets FDA requirements for repeated contact with food and its non-stock properties can transport viscous and sticky materials without line clogging.
The In-Line Sight Glass provides product viewing for process or safety reasons, whilst the hose assembly is connected.





PTFE lipseals and energised seals



Eriflon's PTFE Lip Seal was introduced in the early 1970's. The seals were designed to bridge the gap between conventional elastomer lip seals and mechanical face seals. Hostile environments such as extreme temperatures, aggressive media, high surface speeds, high pressures, and lack of lubrication forced the designer to specify the expensive and complicated mechanical face type seals. Eriflon's PTFE Lip Seal provides the designer a significant iprovement in performance over elastomer lip seals at a much lower cost than the mechanical face seal.

Due to our unique manufacturing capabilities we are able to quickly supply the geometry and material which best meets your requirements. This is accomplished by utilising
modern computer-controlled equipment and the stocking of semi-finished components.
Eriflon PTFE Lip Seals solve difficult applications which are not addressed by conventional elastomer seals.

We exceed the performance of elastomer lip seals in the following areas:

- Greater chemical resistance
- Lower friction
- Capable of surface speeds to +30 meters/second
- Works to temperature extremes (-70°C to +250°C)
- Has extended seal life in dry or abrasive media
- Handles pressures to 35 bar
- Shaftspeeds up to 36 m/s

Successful Applications:

- Hydraulic motors and pumps
- chemical pumps
- Rotary unions
- Vacuum pumps
- Blowers
- Drilling and tapping spindles
- High-speed gearboxes
- Crankshafts of engines and compressors
- Robotics
- Pharmaceutical and food processing equipment
- Mixers
- Chemical processing equipment
- Actuators
- Alternators and generators
- Encoders
- Radar/targeting devices

Note:

- We stock the unique Garlock® PS-Seal in ca. 100 different dimensions
- PS-Seals are seen as the best PTFE-seals worldwide
- PS-Seals give the best results in lifetime-tests under the most difficult circumstanses
- Some types also have BGA-approval

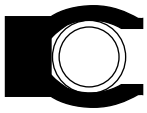
Element materials

Material Code	*Name and description*	*Application details*
R D@KHMF ☒K H☒L @SDQH@KR☒		
72	**Rulon® 641** Proprietary filled PTFE White colour	Meets FDA requirements. Moderate wear and heat resistance. Suitable for use on soft shafts such as 316 Stainless Steel.
F8	**Gylon 3510** Special filled PTFE White colour	Extreme wear resistant material for use in high-speed applications in dry or non-lubricating environments. Excellent material for use in water. Requires a shaft hardness of 55 HRC minimum. • Gylon white complies with FDA 21CFR1550. • It meets ingredient and extract requirements. • The fillers are acceptable under 21CFR 177.2600 • Branding ink complies with FDA 21 CFR.175.300
L DS@K☒B N L ON MDMS R☒		
M1	**Low-carbon steel**	Used for outer case, inner case and washers. Low cost. Limited corrosion resistance.
M2	**Aluminium**	Lightweight material used for outer case, inner case and washers. Low cost. Limited corrosion resistance.
M3	**Stainless Steel 304**	Used for outer case, inner case, washers and support rings. Good corrosion resistance.
M4	**Stainless Steel 316**	Used for outer case, inner case, washers and support rings. Good corrosion resistance.
M5	**Stainless Steel 316 TI**	Used for outer case, inner case, washers and support rings. 316 Stainless Steel with titanium for superior corrosion resistance.

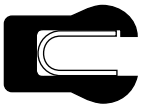
Rulon® is a registered trademark of Furon Company. Ekonol® is a registered trademark of SOHIO Company. Ask for our technical documentation.

Eriseals

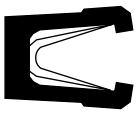
We have different executions. Please ask:
- Our technical 'omniseal documentation'
- FDA execution filled with silicone



Temp.: -70/+260°C
Velocity: 15 m/s
Helicoidal spring
200 bar
Type: 230-239

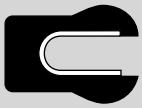


Temp.: -70/+260°C
Velocity: 15 m/s
V-spring
450 bar
Type: 220-225



Temp.: -70/+260°C
Static
V-spring
Type: 320-323

Temp.: -70/+260°C
Static
V-spring
Type: 348-349



FDA, filled with silicone
Omniseal 400A can be supplied with an FDA-silicone-filling.

Type RS
In this unique design the inserted stainless steel spring is totally protected by the PTFE-coating on the media side. Applications with high temperatures, defined friction forces and very elastic behaviour are characteristics for this sealing element. Even extra-pure media can be conveyed or sealed off with this seal, where the medium may not get into contact with the metal. This type is FDA approved and admitted for food and pharmaceutical drugs.

Type JS
The series JS is a variant of the RS type, but with a machined synthetic material jacket. Available in all sizes without additional costs. Mostly for small quantities. The jacket is available in PTFE or also in FDA approved UHMW-Polyethylene.

High Purity Plastics

°C
260

TECAPEEK

Properties:

- unfilled, high crystalline plastic
- high mechanical properties
- resistant up to 260 °C in air, short term up to 300 °C
- very stable
- excellent chemical and hydrolysis resistance up to +200°C
- extremely good radiaton resistance (gamma-Röntgen)
- FDA conformity

TECAPEEK TF10

Properties:

- PTFE filled
- lower coefficient of friction
- good electrical isolating properties
- FDA conformity

TECAPEEK MT black

Properties:

- black
- FDA conformity
- biocompatibility acc. to ISO 10993
- other colours possible, not acc. to ISO 10993
- resistant to sterilisation, up to 134 °C
- resistant to detergents and desinfection solvents

TECAPEEK CLASSIX

Properties:

- biocompatibility acc. to USP class VI
- FDA 21 CFR 177.2415 conformity
- delivered with certificate
- extremely resistant to hydrolysis
- can be sterilised with steam, gamma radiation and ethyleneoxyde
- standard colour is cream
- very high mechanical values
- suitable for many medical-technical applications:
  Examples are catheters, medication dosing systems, devices in contact with blood (dialysis), endoscopes, surgical instruments, analytical instruments, measurement probes in the pharmaceutical area and short-term implants.
  Further examples of use are for functional parts in production, filling and packaging plants for pharmaceuticals.

Applications TECAPEEK:

- back-up rings in seals
- scrapers in the food industry
- medical devices
- bearings in pumps for high pressure
- FDA conformity
- low smoke emission (V-0)

This page gives an overview of standard available high purity semi-finished products. Our machine shop realises your finished product.

Biocompatibility for Life Science Products:
The biocompatibility describes the compatibility of a material to the tissue or the physiological system of the patient. The assessment is performed using various tests acc. to USP (US Pharmacopoeia) Claas VI or acc. to ISO 10993.
Resistance to different sterilisation procedures and chemicals: multiple-use equipment in medical technology has to have good resistance towards preparatory procedures such as sterilisation and disinfection. The requirements are best met with high-performance plastics.

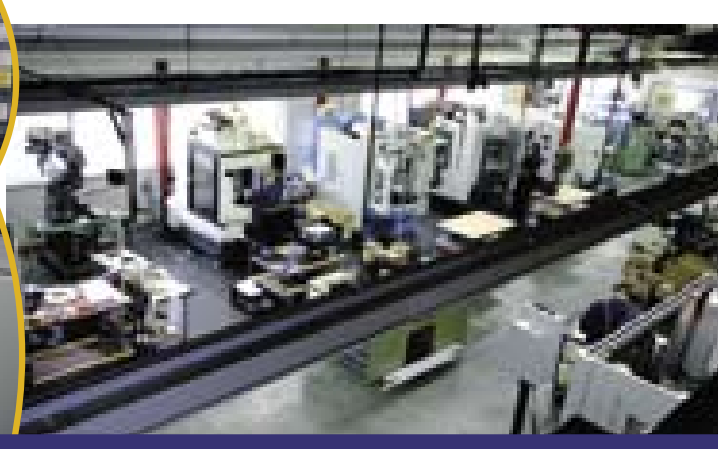
The table below gives a summary of the FDA CFR 21, ISO10993 and USP Class VI materials.

Applications in food/pharma technologies

Material	*DIN description*	*FDA conformity*	*USP class VI conform*	*ISO 10993*	*Sterilisation*	
					Steam 134 °C	*Gamma radiation*
TECAPEEK MT black	PEEK	X		X	+	+
ERIFLON PTFE	PTFE	X			+	-
TECASON E	PES	X			0	+
TECASON P	PPSU	X	X		+	+
TECASON S	PSU	X	X		0	+
PVDF	PVDF	X			+	+
TECANAT	PC	X			-	+
TECAMID 66	PA 66	X			-	0
TECAPET	PETP	X			-	+
TECAFORM AH MT	POM-C	X			0	-
MULTILENE	HMPE	X			-	0
TECAPRO MT	PP (stab)	X			0	-
TECAPEEK	PEEK	X	-	X	-	
TECAPEEK classix	PEEK	X	X	X	+	+

X FDA conformity and biocompatibility / + resistant / 0 medium resistant / - not resistant

We produce your product in our modern production plant.



Tecapeek Classix™

for medical-technical applications

Tecapeek Classix™ is an ultra-high performance biocompatible thermoplastic, the mechanical properties of which are comparable with those of Tecapeek and Tecapeek MT.

Polyaryletherketone belongs to the group of polymers which have the best chemical resistance and biocompatibility. It shows a particularly good combination of strength, rigidity, thoughness and hardness, which proves ideal for medical-technical applications.

The polymer can be processed and shaped using customary processes, such as injection moulding, extrusion, machining and compression moulding.
This gives manufacturers of medical products and applications wide-ranging flexibiity in design and manufacture.

Main characteristics

- extremely good chemical resistance
- mechanical strength
- dimensional stability
- excellent abrasion and impact strength
- can be frequently and repeatedly sterilised with conventional methods (hot steam, gamma radiation, plasma and ethylene oxide) without interfering with the mechanical properties
- extreme resistance to hydrolisis, even at high temperatures
- can be produced as thin as wall tubes
- standard colour is currently creamy-white, further colours and modifications upon request

Applications

Tecapeek Classix™ is suitable for many medical-technical applications. Examples are catheters, medication dosing systems, devices in contact with blood (dialysis), endoscopes, surgical instruments, analytical instruments, measurement probes in the pharmaceutical area and short-term implants. Further examples of use are for functional parts in production, filling and packaging plants for pharmaceuticals.

Specifications

The basic prerequisites for the medical-technical area have been demonstrated and are, of course, satisfied by Tecapeek Classix™ with regard to FDA conformity and biocompatibility testing according to USP. In addition, each raw material batch undergoes cytotoxicity testing. Semi-finished goods are also tested for cytotoxicity according to ISO 10993 after the raw material stressing processes of extrusion and tempering for each production batch.
In this way, the medical device industry has a highly qualified product at its disposal, which includes development safety and reliability.

Tecapeek Classix™ is suitable for medical-technical applications with less than 30 days blood contact. It is unsuitable, however, for applications in permanent implants, which are in contact with blood or tissue for longer than 30 days. For requirements which go beyond this, Peek Optima™ is available.

Tecapro MT

dimensionally stable and light weight.

Resistant to chemicals with stable colour.

Sterilisation containers, eg. for surgical instruments have to provide high dimensional stability, especially throughout repeated sterilisation cycles.
Due to a special stabilisation process, Tecapro MT shows a better resistance to higher temperatures than standard polypropylene. Compared to other materials, eg. stainless steel and PTFE, Tecapro MT possesses a much lower density which results in a reduced weight of the component parts. Standard colour is white, however, other colours can be produced according to customer preferences.

Preferred fields
Medical technology and food processing

Applications
Surgical trays, surgical related equipment, implant trials

Properties
- good resistance to cleaning agents and disinfectants
- can be repeatedly sterilised with hot steam
- high dimensional stability
- good machinability
- laser marking possible
- FDA conformity of raw material and colour pigments

Tecapro MT is also available as Tecapro San with an antimicrobial additive to provide additional safety.

Very stable after exposure to chemicals
Exposure in two different chemical systems for cleaning and hot steam autoclaving:
- Ecolab chemistry
- Boxer chemistry
- 300 cycles of exposure

The comparison between Tecapro MT and Tecafine PP shows good resistance to chemical agents. Minimal property variation of Tecapro MT in the Ecolab and Borer tests.

- no optical changes
- no serious changes in mechanical properties

RX® PP layerpads

innovation for your sterilisation process!

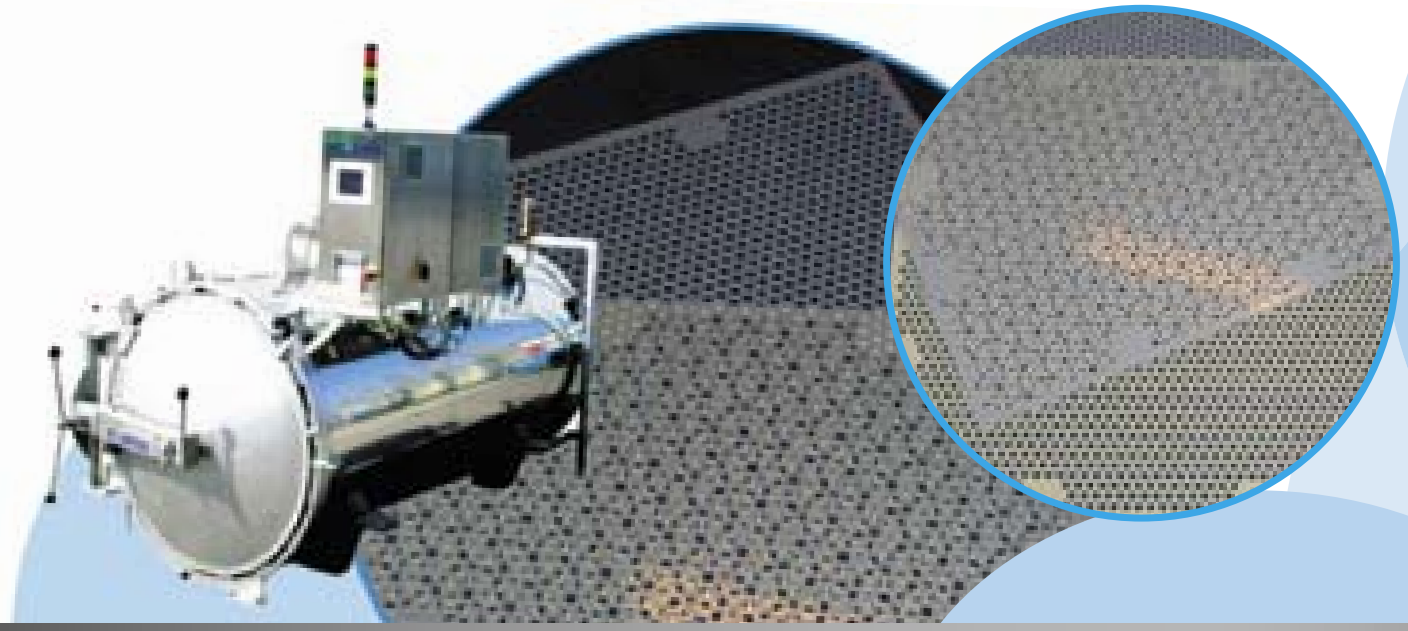
Advantages:

- Longer lifetime thanks to higher HDT
- Increased rigidity with higher temperatures
- CNC-made holes: no burrs or permanent distortion with die-cutting
- Possibility to obtain with 1 structured side, preventing sticking together of the sheets when loaded automatically
- FDA-compliant: suitable for direct contact with foodstuffs
- Thickness: 1 - 5 mm
- Max. width: 1500 mm

In order to offer our customers a solution for the restricted resistance to sterilisation cycles, ERIKS has developed 2 special types of materials:

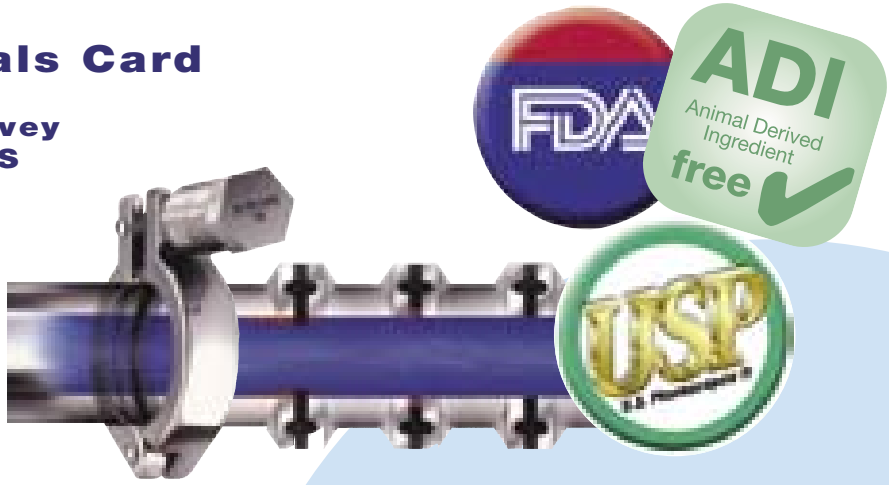
- RX® PPH-0: special granulated polypropylene with improved mechanical properties
- RX® PPH-2: polypropylene with 30% talcum for 130°C

Properties	*Test Methode*	*RX® PPH-2*	*RX® PPH-0*	*RX® PPH*	*Unit*
Density	ISO 1183	1,09	0,91	0,91	g/cm^3
Flexural Modulus (23°C)	ISO 178	2800	2200	1150	MPa
Tensile Strength	ISO 527	40	40	32	MPa
Impact Strength	ISO 179-1	1,85	2,6	7	KJ/m^2
Hardness	ISO 868	80	80	70	Shore D
Vicat Softening Temp.	ISO 306/A	160	160	90	°C
HDT at 0,45 MPa	ISO 75/B	140	130	86	°C
HDT at 1,8 MPa	ISO 75/A	110	81	53	°C
FDA		Yes	Yes	Yes	compliancy



High Purity Seals Card

Below you find a survey of the services ERIKS can provide:



HIGH PURITY SEALS CARD

Product Services	Technical Support	Packaging	Certificates	Inventory Systems
O-rings	Application Engineering	One by one	FDA 177.2600	Kanban
Oil seals	R & D	Clean Room	FDA 177.1550	Local branch
PTFE seals	Product Search	Barcode	USP class VI	In plant shop
Rubber parts	Technical Data	Your ID number	USDA	Express production
Clamp seals	Independant labs	FDA or USP labels on packaging	NSF	Kitting
Hydraulic seals			KTW-BGVV	e-business
Rubber profiles			KIWA	Just-in-time
			WRC-ACS	EDI
			Cytotoxicity testing	
			3A standards	
			Namsa	
			Full Traceability