

GYLON BIO-LINE® / GYLON BIO-LINE® PLUS

Quality seals for the food and pharmaceutical industry



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GYLON BIO-LINE®

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Process and equipment reliability

Pharmaceutical and food processing industries strive to limit and avoid operational down time, caused due to cleaning and maintenance procedures. Sterilization cycles are carried out in the shortest possible time with highly concentrated chemicals, high temperatures and increased flow rates. Exposed to these conditions elastomeric seals failure due to exceeding their limits, thus resulting in short exchange intervals. GYLON BIO-LINE® and GYLON BIO-LINE® PLUS offer approved sealing materials for high temperatures and demanding processes - while at the same time entirely compliant to all major food regulations.

When seeking materials resistant to acids, caustics and sensitive media, performing at demanding temperatures and pressures, established options are hardly present. The available elastomers generally fail in at least one of these requirements and conventional PTFE is not suitable due to its cold flow properties. The modified and restructured PTFE of the GYLON BIO-LINE® as well as the restructured PTFE of the GYLON BIO-LINE® PLUS are well-proven in the industries to meet all these criteria since many years. Not only providing safe and economical processes but also optimizing stock keeping.

GYLON BIO-LINE® and GYLON BIO-LINE® PLUS are superior in dimensional stability. Elastomeric seals always tend to extrude from connections due to mechanical stresses from vibrations and misalignment. The elastomeric ability to compensate misalignment at mounting is a widespread misbelief. In fact compression stress distribution gets unbalanced resulting in increased tension and extrusion on one side and a loss on the opposite side. Extruded elastomeric seals create dead spaces that impair the cleaning and sterilization. A contamination threat of subsequent charges through residues on the sealing material is a consequence. GYLON BIO-LINE® and GYLON BIO-LINE® PLUS seals remain flexible, tight and flush with the pipe bore even under high loads.

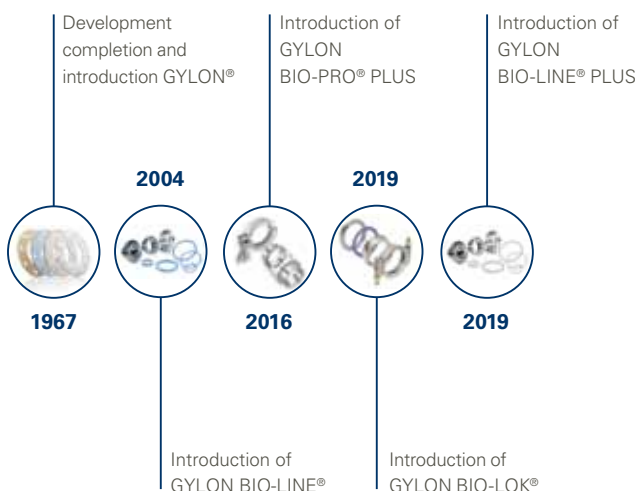
The pharmaceutical and food processing industries uses numerous types of seals whose standard sizes differ and overlap. One example is ISO 1127 for internal pipe cross sections, which allows several sealing profiles. We are well aware of these shortcomings and are pleased to support you in selecting the optimal GYLON BIO-LINE® and GYLON BIO-LINE® PLUS seal.

* PTFE – polytetrafluoroethylene

New perspectives for all sanitary gaskets in the pharmaceutical and food industry

GYLON® was developed back in 1967 as the 3rd Generation PTFE by Garlock. Since then, GYLON® was constantly enhanced and optimized over the decades to succeed in various fields of application. Through its revolutionary PTFE calendaring process an intense cross-linking of the PTFE molecular chain is achieved. This results in a unique tensile strength which constraints cold flow under load stress.

Innovation by tradition



Unparalleled reliability and service

The Garlock family of GYLON® products has evolved over the years with a focus on quality to meet and exceed customer expectations. The use of employee involvement, statistical process control, vendor assurance programs, and a continuous improvement philosophy continues to guarantee end users the highest quality products available.

Testing is performed regularly on all styles and thicknesses to ensure the consistency of Garlock quality in GYLON® sheets. Quality products, years of experience and value-added service programs, all are reasons why the GYLON® family of products has become such a major sealing component in the industry today.

There is no doubt that demands will change in the future. But one thing is certain - Garlock will continue to answer those changes and demands with products that are innovative and timely. GYLON®, a name you can trust and a complete family of products to choose for your sealing needs.

GYLON BIO-LINE® / GYLON BIO-LINE® PLUS

Quality seals for the food and pharmaceutical industry

Food & Pharma Gaskets	GYLON BIO-LINE® Style 3504	GYLON BIO-LINE® PLUS Style 3522
Ideal for		
	» Food	» Pharmaceutical
	» Beverage	» Bio-Pharmaceutical
	» Cosmetic	» Dairy
		» Food
		» Beverage
		» Cosmetic
Composition	PTFE with Aluminosilicate microspheres	100% PTFE – free of fillers and pigments
Media Resistance	Almost universal chemical resistance	Almost universal chemical resistance
Approvals and Certificates		» 3-A 20-27
	» EC1935/2004 ¹ incl. EC10/2011 ¹	» EC1935/2004 inkl. EC10/2011
	» USP Class VI <87, 88>	» USP Class VI <87, 88>
	» Meets FDA 21 CFR177.1550	» Meets FDA 21 CFR177.1550
	» NSF 61 Standard ²	» NSF 61 Standard
	» 62.BfR	» 62.BfR
	» USP Part <31, 281, 661>	» USP Part <31, 281, 661>
	» ADI free (TSE, BSE)	» ADI free (TSE, BSE)
	» EMEA 410/01	» EMEA 410/01
	» Phthalate and softener free	» Phthalate and softener free
	» TA – Luft incl. Blow-out Proof (Material only)	» TA – Luft incl. Blow-out Proof (Material only)
» BAM	» BAM	
Continuous max. Temperature	260 °C / 500 °F	260 °C / 500 °F
Minimum Temperature	-268 °C / -345 °F	-268 °C / -345 °F
Maximum Pressure	55 bar / 800 psig	55 bar / 800 psig
Key Attributes	» Traceability optional ¹ : Batch number on the gasket	» Traceability by default: Batch number on the gasket
		» Hygienic design according to EHEDG
	» High resistance to almost all chemicals and temperature cycles	» High resistance to almost all chemicals and temperature cycles
	» Reduced cold flow and decreased creep relaxation	» Reduced cold flow and decreased creep relaxation
	» Dimensionally stable – no intrusion or extrusion into the process flow	» Dimensionally stable – no intrusion or extrusion into the process flow
	» Universal with unlimited shelf life	» Universal with unlimited shelf life
	» Ideal for SIP & CIP processes	» Ideal for SIP & CIP processes

¹This material also is used within process and industries, which are not rated to EC 1935/2004 and only is delivered with traceability under request within ordering process.

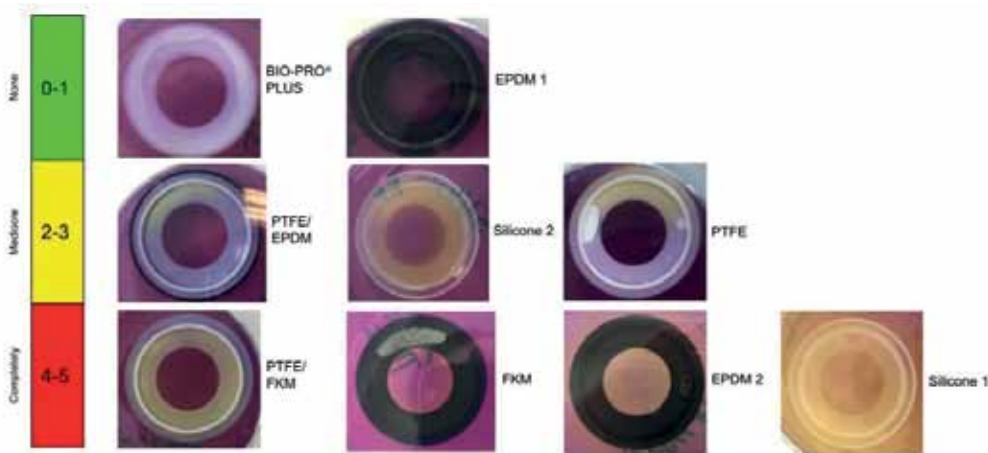
²Only possible under request within ordering process.

GYLON BIO-PRO® PLUS: Cleanability Test

According EHEDG guideline No. 2 in order to compare material cleanability

Test Results

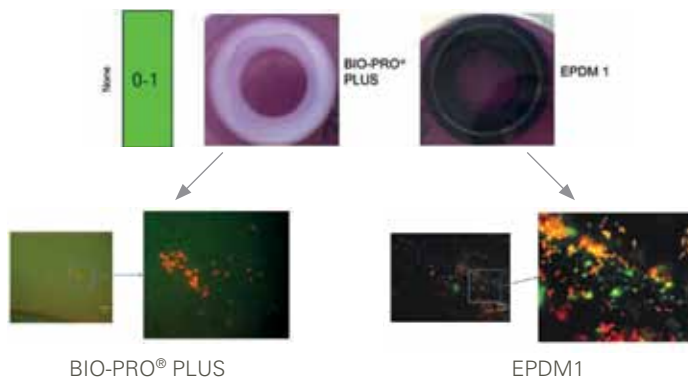
In order to assess the cleanability of the gaskets after the simulated cleaning procedure according to EHEDG guideline 2, they were tested for residual microorganisms. The evidence was provided by a color change of the nutrient medium from violet to yellow. This color change is caused by the pH indicator Bromocresol purple in the presence of acid-forming microorganisms. The material GYLON® Style 3522 repeatedly showed only good cleaning results. Only if the contaminants are able to grow in the special nutrient media used, it will show yellow coloring during the detection procedure. The acid formation of the test organism during the growth phase (by-product of cell growth) causes the corresponding color change (violet to yellow) of the nutrient medium.



Results test for residual microorganism

The EPDM 1 gasket showed no yellow coloring in the tests, which according to EHEDG means that the gasket is free of contamination. However, further investigations using fluorescence microscopy have shown that the EPDM 1 gasket was completely covered with contaminants. It was therefore concluded that the EPDM 1 gasket had antimicrobial properties which led to a failure of the test procedure and a false positive result. In comparison GYLON BIO-PRO® PLUS showed no yellow coloring in the test and in the fluorescence microscopy only few contaminants.

The material GYLON® Style 3522 repeatedly showed only good cleaning results.



Fluorescence microscopy pictures

GYLON BIO-PRO® PLUS: Intrusion Test

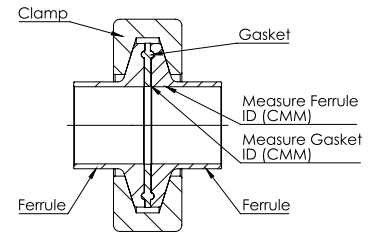
Compare the intrusion inside the Tri-Clamp after mechanical and thermal stress

Test Results

The gaskets were installed with the Tri-Clamp connections and the clamps screwed to the respective torques (PTFE gaskets with 5 Nm and elastomer gaskets with 3 Nm).

In order to determine the intrusion behavior of the gaskets, the inner diameters of the gaskets were measured at six points each:

1. measurement of the inner diameter before assembly
2. measurement of the inside diameter after installation at room temperature
3. measurement of the inner diameter after exposure to heat in assembled conditions



Standard Tri-Clamp connection

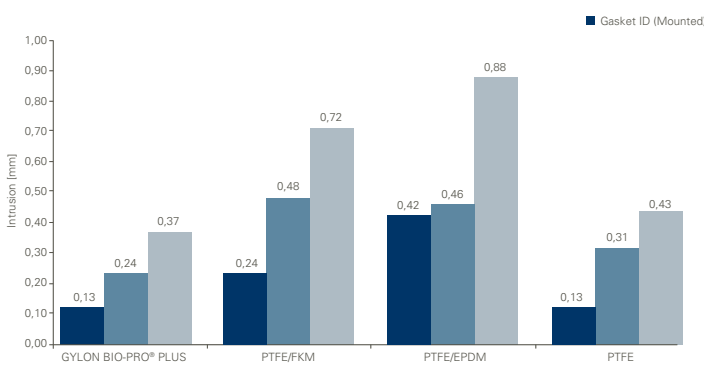
Test Results

The values given in Figure below represent the differences of the measured inner diameters:

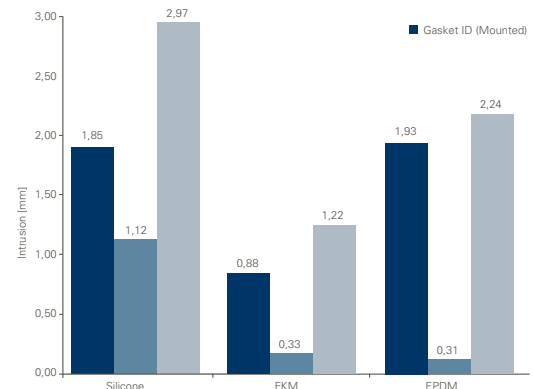
Bar 1 (Color 1): Difference between the original inner diameter of the gasket and the inner diameter of the gasket after assembly.

Bar 2 (Color 2): Difference between the inner diameter of the gasket after assembly and the inner diameter of the gasket after heat exposure in the assembled condition.

Bar 3 (Color 3): Measured total intrusion of gaskets = intrusionassembly + intrusionheat exposure.



PTFE GASKETS: Before-After with 5 Nm Torque



ELASTOMERS (70o Shore A): Before-After with 3 Nm Torque

The results have shown that GYLON BIO-PRO® PLUS has a comparatively very low intrusion behavior. In particular, the elastomer gaskets and the PTFE/elastomer gaskets show relatively high intrusion behavior, both after assembly at room temperature and again after exposure to heat.

GYLON BIO-PRO®

GYLON BIO-PRO® PLUS

Universal sanitary gasket meeting your most critical application requirements



Tri-Clamp connections are the standard connection in the food and pharmaceutical processing industries since many years. Seals of varying quality and materials are often used regardless of their suitability for constantly increasing operating parameters.

GYLON BIO-PRO® and GYLON BIO-PRO® PLUS deliver best in class performance across all critical factors such as compliance, chemical compatibility, sealability, creep and dimensional stability. The seals offer a safe solution with its modified and restructured PTFE material, pre-formed and stress controlled, for all Tri-Clamp standards. It is dimensionally stable and resists intrusion into the pipe bore. It can be safely used with all cleaning, neutralizing and sterilizing media, including steam, and for all standard process temperatures. This next generation sanitary gaskets ensure ease of installation and long term operational integrity in the most challenging and critical applications.

GYLON BIO-PRO®

GYLON BIO-PRO® is Phthalate and softener free, therefore especially in the food industry the preferred choice and is ideal for product-contact applications.

GYLON BIO-PRO® PLUS

Manufactured from our proprietary GYLON® Style 3522 100% PTFE, GYLON BIO-PRO® PLUS is also Phthalate and softener free and ideal for critical product contact applications. Due its smooth surface finish, it benefits a thorough cleaning which requires less energy and chemical detergents for safe and ecological operation.

Engineered gasket design - Decreased dead space

Elastomeric Gasket



- » ID intrusion
- » Product accumulation
- » Bacterial build-up

Traditional PTFE



- » ID recession
- » Product accumulation
- » Bacterial build-up

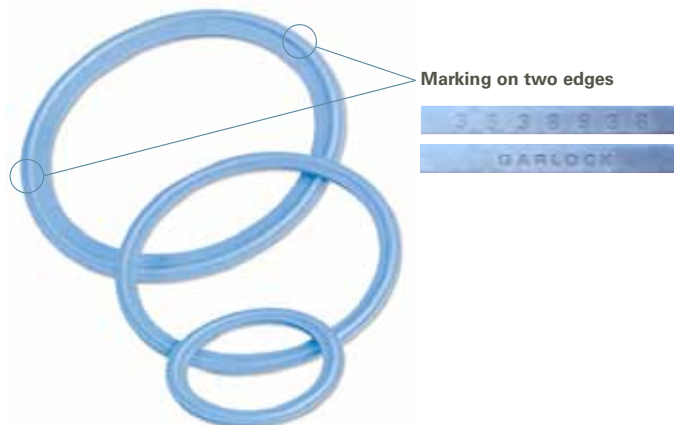
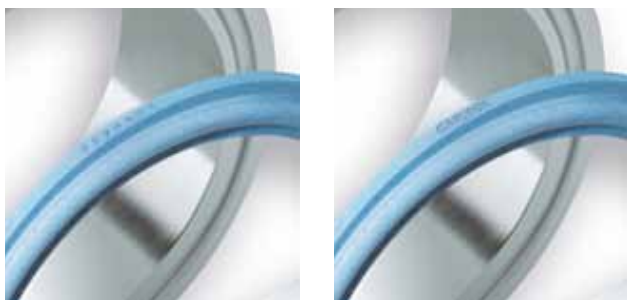
GYLON BIO-PRO® / GYLON BIO-PRO® PLUS



- » Smooth bore
- » Easy cleaning
- » Dimensional stability

GYLON BIO-PRO®

Single Mark on Product



Derivable Data

- » Proof of the date of manufacture
- » Material verification
- » Proof of the batch

Advantages & Benefits

- » Traceability of the product from production to the final customer
- » Unique identification of the batch
- » Reliable monitoring
- » Improvement of quality control
- » Inspection certificate 3.1 for the articles available at any time
- » Permanent durability of direct marking, marking cannot be removed
- » The mark remains readable at all times, even under maximum compression of the seal

How to order?

- » If you would like to order single marked GYLON BIO-PRO® PLUS, please make sure that you indicate the usual FAB number followed by a -CM.

GYLON BIO-ASEPT®

GYLON BIO-ASEPT® PLUS

Seals offer high stability and a specific elasticity



The ideal seal for aseptic flange connection in accordance with DIN 11853 and DIN 11864.

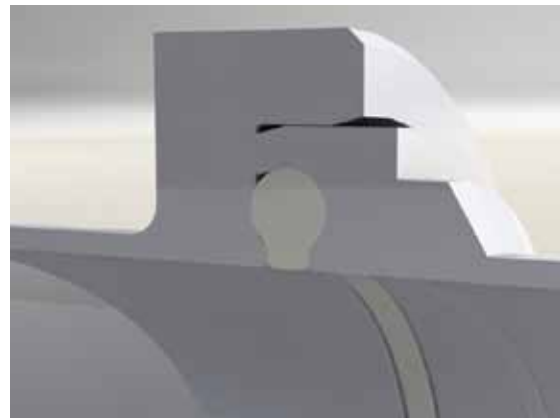
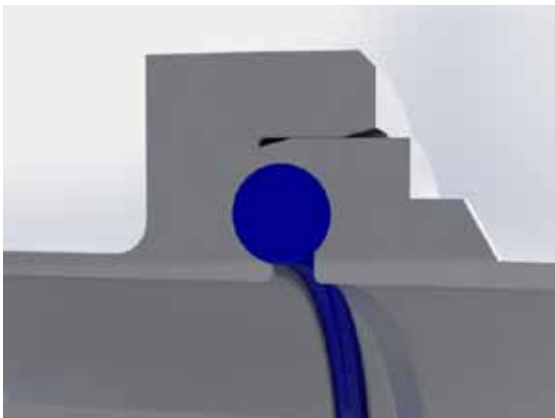
GYLON BIO-ASEPT® and GYLON BIO-ASEPT® PLUS seals offer high stability and a specific elasticity. The seals are pre-formed and stress controlled to provide a solid seal when assembled in the piping systems. Hence to advanced materials and well adjusted seal geometries, which adapt to the flange design, a save operation on production site is ensured.

GYLON BIO-ASEPT®

GYLON BIO-ASEPT® seals are designed to substitute conventional elastomeric O-Rings in hygienic and aseptic connections and to outperform them through superior material properties. Chemical degradation or brittleness will not occur under normal or even increasing process and sterilization conditions, due to specific, high performing modified PTFE GYLON® Style 3504 sealing material. GYLON BIO-ASEPT® meets EN 1935 / 2004, USP Class VI and is FDA-compliant, which approves its food contact suitability.

GYLON BIO-ASEPT® PLUS

GYLON BIO-ASEPT® PLUS provides the highest industrial safety regarding resilience in operation. Due to its unique gasket shape, which is designed to adapt to the flange geometry, it seals perfectly even under drastic conditions. Its smooth surface constitution prevents germs from attaching and increasing. Additionally to all GYLON BIO-LINE® approvals and certificates GYLON BIO-ASEPT® PLUS is also compliant with the 3A Sanitary Standard 20-27.



GYLON BIO-ECO®

GYLON BIO-ECO® PLUS

Quality PTFE seals for the pharmaceutical and food processing industry



The ideal seal for dairy screw couplings in accordance with DIN 11851 and SMS 1149. Couplings were originally manufactured for fluid foods, and have now established themselves as the most common fastener in the entire fluid foods industry.

GYLON BIO-ECO® and GYLON BIO-ECO® PLUS are preformed gaskets manufactured to seal flange connections according to DIN 11851 and SMS 1149. The necessity for adequate sealing stress and simultaneous recovery makes GYLON BIO-ECO® and GYLON BIO-ECO® PLUS the ideal solution for couplings in accordance with DIN 11851 and SMS 1149. All of the disadvantages associated with current elastomeric seals regarding temperature, chemical resistance and re-usability are eliminated by the modified and restructured PTFE materials. GYLON BIO-ECO® and GYLON BIO-ECO® PLUS seals are available in all dimensions without inner collar (M1) or with inner collar (M2).

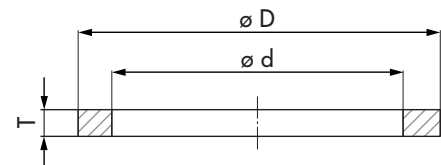
GYLON BIO-ECO®

GYLON BIO-ECO® is a high performance gasketing product which shows an excellent chemical resistance and is therefore suited to handle all CIP- and SIP-cleaning processes. With a broad temperature range and its unique ability to compress and recover during operation, tightness is provided through out highly varying process parameters. These advantages in sealing integrity lead GYLON BIO-ECO® to be applied - and approved - in critical food production sites since its launch in 2004.

GYLON BIO-ECO® PLUS

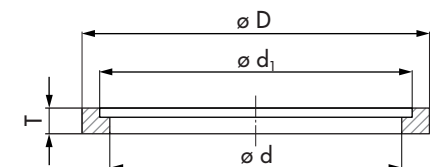
Due to a restructured 100% PTFE in conjunction with ultra smooth surface constitution GYLON BIO-ECO® PLUS provides unrivaled sealing and cleaning characteristics for the most critical process applications. Inhibited cold flow as well as almost universal chemical resistance provide a reliable solution for the most demanding production lines in the pharmaceutical industry.

GYLON BIO-ECO® M1



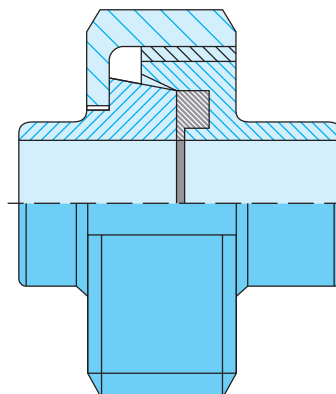
Without inner collar

GYLON BIO-ECO® M2



With inner collar

Application



Standard flange connection

GYLON BIO-LOK®

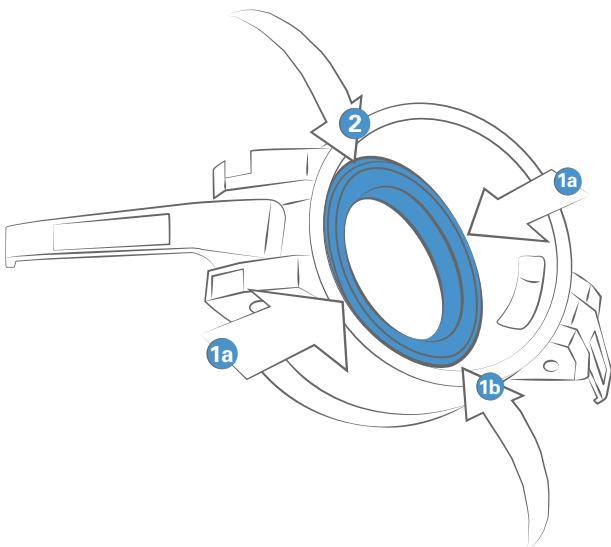
Standard connection for quick coupling in the food and chemical industry



Gaskets for Camlock couplings according to DIN EN 14420-7 and US-MIL-norm (MIL-C-27487) for the food and chemical industry.

Camlock connections are the standard connection for quick coupling in the food industry as well as the chemical industry. GYLON BIO-LOK® is made of highly compressible and flexible material GYLON® Style 3504. The seals offer a high stability and provides a solid seal when assembled.

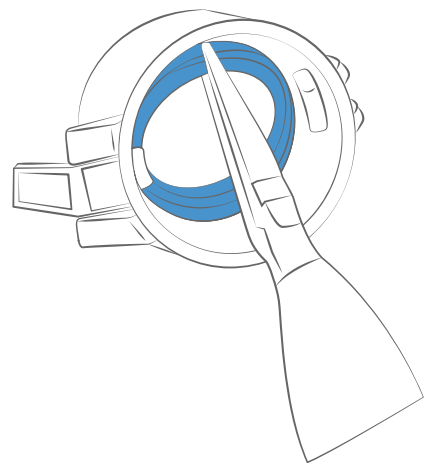
Installation



Step 1: To install the gasket slightly press (1a) and fit with one side into groove (1b).

Step 2: The gasket is completely fitted into the groove through slightly pushing at the other end (2).

Deinstallation



The gasket is removed with a commercially available needle-nosed pliers by lifting at one end and a slight bending over the center.

GYLON BIO-PRO®

Seals for Tri-Clamp connections
Material: GYLON® Style 3504



Gasket dimensions, item numbers and packaging units ¹⁾

DIN 11850 (DIN 32676: Row A) (DIN 11866 Row A)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-10144	6 _{T1}	6,2	21,8
FAB08-11044	8 _{T1}	8,2	21,8
FAB08-11016	10	10,2	34
FAB08-11024	15	16,2	34
FAB08-11029	20	20,2	34
FAB08-11033	25	26,2	50,5
FAB08-11037	32	32,2	50,5
FAB08-11038	40	38,2	50,5
FAB08-11041	50	50,2	64
FAB08-11043	65	66,2	91
FAB08-11045	80	81,2	106
FAB08-11019	100	100,2	119
FAB08-11023	125	125,2	155
FAB08-11026	150	150,2	183
FAB08-11032	200	200,2	233,5
FAB08-11015**	300	300,0	319,0

ISO 1127 (DIN 32676: Row B) (DIN 11866 Row B)			
Artikel-Nr.	DN	ID [mm]	OD [mm]
FAB08-12011	10,2 _{T1}	7,2	21,8
FAB08-11063	13,5 _{T1}	10,5	21,8
FAB08-11050	17,2 _{T1}	14,2	21,8
FAB08-11072	21,3	18,3	50,5
FAB08-11054	26,9	23,9	50,5
FAB08-11056	33,7	29,9	50,5
FAB08-11057	42,4	38,6	64
FAB08-11058	48,3	44,5	64
FAB08-11059	60,3	56,5	77,5
FAB08-11060	76,1	72,3	91
FAB08-11062	88,9	84,5	106
FAB08-11022	114,3	109,9	130
FAB08-11206	139,7	134,7	155
FAB08-11156	168,3	163,3	183
FAB08-11055	219,1	214,1	233,5

ASME BPE - 2014 (DIN 32676: Row C) (DIN 11866 Row C)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11154	1/4" _{T1}	4,8	21,8
FAB08-11146	3/8" _{T1}	8	21,8
FAB08-11001*	1/2" _{T1}	9,6	21,8
FAB08-11002*	3/4" _{T1}	16	21,8
FAB08-11003*	1"	22,3	50,5
FAB08-11006*	1-1/2"	35	50,5
FAB08-11008*	2"	47,7	64
FAB08-11010*	2-1/2"	60,4	77,5
FAB08-11011*	3"	73,1	91
FAB08-11012*	4"	97,6	119
FAB08-11099*	6"	147,1	167
FAB08-12009**	8"	197,6	217,7
FAB08-11015**	12"	300	319

* Equal to BS 4825-3 (British Standard)

** not included within corresponding standard

ISO 2852			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11061	12	10,2	34
FAB08-11071	12,7	10,9	34
FAB08-11028	17,2	15,4	34
FAB08-11202	21,3	19,5	34
FAB08-11064	25	22,8	50,5
FAB08-11204	33,7	31,5	50,5
FAB08-11149	38	35,8	50,5
FAB08-11074	40	37,8	64
FAB08-11150	51	48,8	64
FAB08-11067	63,5	60,5	77,5
FAB08-11094	70	67	91
FAB08-11068	76,1	73,1	91
FAB08-11203	88,9	85,1	106
FAB08-11069	101,6	97,8	119
FAB08-11049	114,3	110,5	130
FAB08-11051	139,7	135,9	155
FAB08-10134	168,3	163,3	183
FAB08-11073	219,1	214,1	233,5

SMS 3019			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11147	12	10	34
FAB08-11148	18	16,2	34
FAB08-11084	25	22,8	50,5
FAB08-11199	33,7	31,5	50,5
FAB0811087	38	35,8	50,5
FAB08-11131	42	39,2	50,5
FAB08-11132	48,3	45,1	64
FAB08-11090	51	48,8	64
FAB08-11093	63,5	60,5	77,5
FAB08-11151	76,1	73,1	91
FAB08-11200	88,9	85,1	106
FAB08-11077	101,6	97,8	119
FAB08-11013	114,3	110,5	130
FAB08-11152	139,7	135,9	155
FAB08-11157	168,3	163,3	183
FAB08-11153	219,1	214,1	233,5

Packaging Unit (PU)	
DN	Pieces per PU
1/4" _{T1} bis 3/4" _{T1}	50
6 _{T1} bis 8 _{T1}	50
13,5 _{T1}	50
1" bis 2-1/2"	25
10 bis 63,5	25
3" bis 4"	10
65 bis 101,6	10
114,3 bis 139,7	5
6"	1
150 bis 219,1	1

T1 = Mini-Clamp

T2 = Standard-Clamp

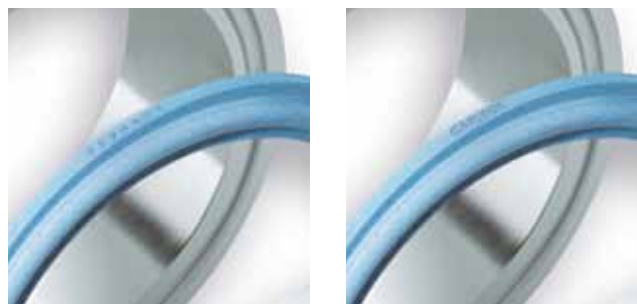
1) For further information on gasket dimensions without a listed item number please contact Garlock.

Please note: The dimensions shown in the table are according to norm sizes. Due to the sealing characteristics of GYLON® gasketing material, the exact dimensions of the gasket are amended to get an optimized sealing performance.

GYLON BIO-PRO®

Single Mark on Product

GYLON BIO-PRO® is available both with a batch number on the packaging and with a single mark on the product. The article numbers for GYLON BIO-PRO® with a single mark on the product have a **-CM** attached.



Gasket dimensions, item numbers and packaging units**

DIN 11850 (DIN 32676: Row A) (DIN 11866 Row A)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-10144-CM	6 _{T1}	6,2	21,8
FAB08-11044-CM	8 _{T1}	8,2	21,8
FAB08-11016-CM	10	10,2	34
FAB08-11024-CM	15	16,2	34
FAB08-11029-CM	20	20,2	34
FAB08-11033-CM	25	26,2	50,5
FAB08-11037-CM	32	32,2	50,5
FAB08-11038-CM	40	38,2	50,5
FAB08-11041-CM	50	50,2	64
FAB08-11043-CM	65	66,2	91
FAB08-11045-CM	80	81,2	106
FAB08-11019-CM	100	100,2	119
FAB08-11023-CM	125	125,2	155
FAB08-11026-CM	150	150,2	183
FAB08-11032-CM	200	200,2	233,5

ISO 1127 (DIN 32676: Row B) (DIN 11866 Row B)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12011-CM	10,2 _{T1}	7,2	21,8
FAB08-11063-CM	13,5 _{T1}	10,5	21,8
FAB08-11050-CM	17,2 _{T1}	14,2	21,8
FAB08-11072-CM	21,3	18,3	50,5
FAB08-11054-CM	26,9	23,9	50,5
FAB08-11056-CM	33,7	29,9	50,5
FAB08-11057-CM	42,4	38,6	64
FAB08-11058-CM	48,3	44,5	64
FAB08-11059-CM	60,3	56,5	77,5
FAB08-11060-CM	76,1	72,3	91
FAB08-11062-CM	88,9	84,5	106
FAB08-11022-CM	114,3	109,9	130
FAB08-11206-CM	139,7	134,7	155
FAB08-11156-CM	168,3	163,3	183
FAB08-11055-CM	219,1	214,1	233,5

ASME BPE - 2014 (DIN 32676: Row C) (DIN 11866 Row C)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11154-CM	1/4" _{T1}	4,8	21,8
FAB08-11146-CM	3/8" _{T1}	8	21,8
FAB08-11001-CM*	1/2" _{T1}	9,6	21,8
FAB08-11002-CM*	3/4" _{T1}	16	21,8
FAB08-11003-CM*	1"	22,3	50,5
FAB08-11006-CM*	1-1/2"	35	50,5
FAB08-11008-CM*	2"	47,7	64
FAB08-11010-CM*	2-1/2"	60,4	77,5
FAB08-11011-CM*	3"	73,1	91
FAB08-11012-CM*	4"	97,6	119
FAB08-11099-CM*	6"	147,1	167

* Equal to BS 4825-3 (British Standard)

ISO 2852			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11061-CM	12	10,2	34
FAB08-11071-CM	12,7	10,9	34
FAB08-11028-CM	17,2	15,4	34
FAB08-11202-CM	21,3	19,5	34
FAB08-11064-CM	25	22,8	50,5
FAB08-11204-CM	33,7	31,5	50,5
FAB08-11149-CM	38	35,8	50,5
FAB08-11074-CM	40	37,8	64
FAB08-11150-CM	51	48,8	64
FAB08-11067-CM	63,5	60,5	77,5
FAB08-11094-CM	70	67	91
FAB08-11068-CM	76,1	73,1	91
FAB08-11203-CM	88,9	85,1	106
FAB08-11069-CM	101,6	97,8	119
FAB08-11049-CM	114,3	110,5	130
FAB08-11051-CM	139,7	135,9	155
FAB08-10134-CM	168,3	163,3	183
FAB08-11073-CM	219,1	214,1	233,5

SMS 3019			
Item no.	DN	ID [mm]	OD [mm]
FAB08-11147-CM	12	10	34
FAB08-11148-CM	18	16,2	34
FAB08-11084-CM	25	22,8	50,5
FAB08-11199-CM	33,7	31,5	50,5
FAB08-11087-CM	38	35,8	50,5
FAB08-11131-CM	42	39,2	50,5
FAB08-11132-CM	48,3	45,1	64
FAB08-11090-CM	51	48,8	64
FAB08-11093-CM	63,5	60,5	77,5
FAB08-11151-CM	76,1	73,1	91
FAB08-11200-CM	88,9	85,1	106
FAB08-11077-CM	101,6	97,8	119
FAB08-11013-CM	114,3	110,5	130
FAB08-11152-CM	139,7	135,9	155
FAB08-11157-CM	168,3	163,3	183
FAB08-11153-CM	219,1	214,1	233,5

Packaging Unit (PU)	
DN	Pieces per PU
1/4" _{T1} bis 3/4" _{T1}	50
6 _{T1} bis 8 _{T1}	50
13,5 _{T1}	50
1" bis 2-1/2"	25
10 bis 63,5	25
3" bis 4"	10
65 bis 101,6	10
114,3 bis 139,7	5
6"	1
150 bis 219,1	1

T1 = Mini-Clamp
T2 = Standard-Clamp

** For further information on gasket dimensions without a listed item number please contact Garlock's Static Seal department.

GYLON BIO-PRO® PLUS

Seals for Tri-Clamp connections
Material: GYLON® Style 3522



Gasket dimensions, item numbers and packaging units ¹⁾

DIN 11850 (DIN 32676: Reihe A) (DIN 11866 Reihe A)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12033	6 _{T1}	6,2	21,8
FAB08-12029	8 _{T1}	8,2	21,8
FAB08-12034	10	10,2	34
FAB08-12035	15	16,2	34
FAB08-12036	20	20,2	34
FAB08-12037	25	26,2	50,5
FAB08-12038	32	32,2	50,5
FAB08-12039	40	38,2	50,5
FAB08-12040	50	50,2	64
FAB08-12041	65	66,2	91
FAB08-12042	80	81,2	106
FAB08-12043	100	100,2	119
FAB08-12044	125	125,2	155
FAB08-12045	150	150,2	183
FAB08-12046	200	200,2	233,5

ISO 1127 (DIN 32676: Reihe B) (DIN 11866 Reihe B)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12047	10,2 _{T1}	7,2	21,8
FAB08-12012	13,5 _{T1}	10,5	21,8
FAB08-12013	17,2 _{T1}	14,2	21,8
FAB08-12014	21,3	18,3	50,5
FAB08-12015	26,9	23,9	50,5
FAB08-12016	33,7	29,9	50,5
FAB08-12017	42,4	38,6	64
FAB08-12018	48,3	44,5	64
FAB08-12019	60,3	56,5	77,5
FAB08-12020	76,1	72,3	91
FAB08-12021	88,9	84,5	106
FAB08-12048	114,3	109,9	130
FAB08-12049	139,7	134,7	155
FAB08-12050	168,3	163,3	183
FAB08-12051	219,1	214,1	233,5

ASME BPE - 2014 (DIN 32676: Reihe C) (DIN 11866 Reihe C)			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12022	1/4" _{T1}	4,8	21,8
FAB08-12024	3/8" _{T1}	8	21,8
FAB08-12001*	1/2" _{T1}	9,6	21,8
FAB08-12002*	3/4" _{T1}	16	21,8
FAB08-12003*	1"	22,3	50,5
FAB08-12004*	1-1/2"	35	50,5
FAB08-12005*	2"	47,7	64
FAB08-12006*	2-1/2"	60,4	77,5
FAB08-12007*	3"	73,1	91
FAB08-12008*	4"	97,6	119
FAB08-12023*	6"	147,1	167
-	8"	197,6	217,7

* Equal to BS 4825-3 (British Standard)

ISO 2852			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12055	12	10,2	34
FAB08-12072	12,7	10,9	34
FAB08-12073	17,2	15,4	34
FAB08-12054	21,3	19,5	34
FAB08-12030	25	22,8	50,5
-	33,7	31,5	50,5
-	38	35,8	50,5
FAB08-12075	40	37,8	64
-	51	48,8	64
FAB08-12031	63,5	60,5	77,5
-	70	67	91
FAB08-12032	76,1	73,1	91
-	88,9	85,1	106
FAB08-12061	101,6	97,8	119
FAB08-12063	114,3	110,5	130
-	139,7	135,9	155
FAB08-12065	168,3	163,3	183
FAB08-12067	219,1	214,1	233,5

SMS 3019			
Item no.	DN	ID [mm]	OD [mm]
FAB08-12056	12	10	34
FAB08-12057	18	16,2	34
FAB08-12058	25	22,8	50,5
-	33,7	31,5	50,5
-	38	35,8	50,5
-	51	48,8	64
FAB08-12059	63,5	60,5	77,5
FAB08-12060	76,1	73,1	91
-	88,9	85,1	106
FAB08-12062	101,6	97,8	119
FAB08-12064	114,3	110,5	130
-	139,7	135,9	155
FAB08-12066	168,3	163,3	183
FAB08-12068	219,1	214,1	233,5
FAB08-11157	168,3	163,3	183
FAB08-11153	219,1	214,1	233,5

Packaging Unit (PU)	
DN	Pieces per PU
1/4" _{T1} to 3/4" _{T1}	50
6 _{T1} to 8 _{T1}	50
13,5 _{T1}	50
1" to 2-1/2"	25
10 to 60,3	25
3" to 4"	10
65 to 101,6	10
114,3 to 139,7	5
6"	1
150 to 219,1	1

T1 = Mini-Clamp
T2 = Standard-Clamp

1) For further information on gasket dimensions without a listed item number please contact Garlock.

Please note: The dimensions shown in the table are according to norm sizes. Due to the sealing characteristics of GYLON® gasketing material, the exact dimensions of the gasket are amended to get an optimized sealing performance.

GYLON BIO-ASEPT®

For aseptic flange connections in accordance with
DIN 11853 and DIN 11864 (Form A)
Material: GYLON® Style 3504



Gasket dimensions and item numbers ¹⁾

DIN 11864 and DIN 11853, Row A, Form A				DIN 11864 and DIN 11853, Row B, Form A				DIN 11864 and DIN 11853, Row C, Form A			
DIN 11866 Row A				DIN 11866 Row B				DIN 11866 Row C			
Item no.	DN	ID [mm]	T [mm]	Item no.	DN	ID [mm]	T [mm]	Item no.	DN	ID [mm]	T [mm]
FAB09-10010	10	12	3,5	FAB09-10119	13,5	12	3,5	FAB09-10169	1/2"	12	3,5
FAB09-10011	15	18	3,5	FAB09-10158	17,2	16	3,5	FAB09-10170	3/4"	18	3,5
FAB09-10012	20	22	3,5	FAB09-10020	21,3	20	3,5	FAB09-10162	1"	24	3,5
FAB09-10013	25	28	3,5	FAB09-10021	26,9	26	3,5	FAB09-10171	1,5"	37	5
FAB09-10014	32	34	5	FAB09-10022	33,7	32	5	FAB09-10172	2"	50	5
FAB09-10015	40	40	5	FAB09-10023	42,4	40,5	5	FAB09-10173	2,5"	62	5
FAB09-10016	50	52	5	FAB09-10024	48,3	46,5	5	FAB09-10174	3"	75	5
FAB09-10017	65	68	5	FAB09-10025	60,3	58,5	5	FAB09-10175	4"	100	5
FAB09-10018	80	83	5	FAB09-10026	76,1	73,5	5				
FAB09-10019	100	102	5	FAB09-10027	88,9	86,5	5				
FAB09-10176	125	127	5	FAB09-10190	114,3	111,0	5				
FAB09-10179	150	152	5								

1) For further information on gasket dimensions without a listed item number please contact Garlock.

Please note: The dimensions shown in the table are according to norm sizes. Due to the sealing characteristics of GYLON® gasketing material, the exact dimensions of the gasket are amended to get an optimized sealing performance.

GYLON BIO-ASEPT® PLUS

For aseptic flange connections in accordance with
DIN 11853 and DIN 11864 (Form A)

Material: GYLON® Style 3522



Gasket dimensions and item numbers 1)

DIN 11864 and DIN 11853, Row A, Form A			
DIN 11866 Row A			
Item no.	DN	ID [mm]	T [mm]
FAB09-12032	10	12	3,5
FAB09-12033	15	18	3,5
FAB09-12034	20	22	3,5
FAB09-12035	25	28	3,5
FAB09-12036	32	34	5
FAB09-12037	40	40	5
FAB09-12038	50	52	5
FAB09-12039	65	68	5
FAB09-12040	80	83	5
FAB09-12041	100	102	5

Further sizes on request

1) For further information on gasket dimensions without a listed item number please contact Garlock.

Please note: The dimensions shown in the table are according to norm sizes. Due to the sealing characteristics of GYLON® gasketing material, the exact dimensions of the gasket are amended to get an optimized sealing performance.

GYLON BIO-ECO®

Dimensions for diary screw coupling in accordance with DIN 11851 and SMS 1149
Material: GYLON® Style 3504



Gasket dimensions and item numbers ¹⁾

(DIN 11851, Model M1)				
Item no.	DN	Ø d [mm]	Ø D [mm]	T [mm]
FAB09-10028	10	12	20	3,8
FAB09-10029	15	18	26	3,8
FAB09-10030	20	23	33	3,8
FAB09-10031	25	30	40	4,8
FAB09-10032	32	36	46	4,8
FAB09-10033	40	42	52	4,8
FAB09-10034	50	54	64	4,8
FAB09-10035	65	71	81	4,8
FAB09-10036	80	85	95	4,8
FAB09-10038	100	104	114	6,4
FAB09-10039	125	130	142	6,4
FAB09-10040	150	155	167	6,4

(DIN 11851, Model M2)					
Item no.	DN	Ø d [mm]	Ø d ₁ [mm]	Ø D [mm]	T [mm]
FAB09-10041	10	10,5	12	20	3,8
FAB09-10042	15	16,5	18	26	3,8
FAB09-10043	20	20,5	23	33	3,8
FAB09-10044	25	26,5	30	40	4,8
FAB09-10045	32	32,5	36	46	4,8
FAB09-10046	40	38,5	42	52	4,8
FAB09-10047	50	50,5	54	64	4,8
FAB09-10048	65	66,5	71	81	4,8
FAB09-10049	80	81,5	85	95	4,8
FAB09-10121	100	100,5	104	114	6,4
FAB09-10125	125	125	130	142	6,4
FAB09-10126	150	150	155	167	6,4

SMS 1149, Model M1				
Item no.	DN	Ø d [mm]	Ø D [mm]	T [mm]
FAB09-10090	25	25	32	4,8
FAB09-10128	32	32	40	4,8
FAB09-10091	38	38	48	4,8
FAB09-10092	51	51	61	4,8
FAB09-10093	63,5	63,5	73,5	4,8
FAB09-10094	76	76	86	4,8
FAB09-10129	89	89	101	4,8
FAB09-10130	108	108	120	4,8
FAB09-10095	104 (s)	104	116	4,8
FAB09-10040	150	155	167	167

SMS 1149, Model M2					
Item no.	DN	Ø d [mm]	Ø d ₁ [mm]	Ø D [mm]	T [mm]
FAB09-10054	25	22,5	25	32	4,8
FAB09-10055	38	35,5	38	48	4,8
FAB09-10056	51	48,5	51	61	4,8
FAB09-10057	63,5	60,5	63,5	73,5	4,8
FAB09-10058	76	72,9	76	86	4,8
FAB09-10127	101 (s)	98	104	116	4,8
FAB09-10059	104 (s)	101	104	116	4,8

s (Spezial size)

1) For further information on gasket dimensions without a listed item number please contact Garlock.

GYLON BIO-ECO[®] PLUS

Dimensions for dairy screw coupling in accordance with DIN 11851 and SMS 1149

Material: GYLON[®] Style 3522



Gasket dimensions and item numbers ¹⁾

(DIN 11851, Model M1)					
Item no.	DN	Ø d [mm]	Ø d ₁ [mm]	Ø D [mm]	T [mm]
FAB09-12021	10	10,5	13	20	3,8
FAB09-12022	15	16,5	19	26	3,8
FAB09-12023	20	20,5	24	33	3,8
Ask Garlock	25	26,5	31	40	4,8
FAB09-12024	32	32,5	37	46	4,8
FAB09-12025	40	39,5	43	52	4,8
FAB09-12026	50	50,5	55	64	4,8
FAB09-12027	65	66,5	72	81	4,8
FAB09-12028	80	81,5	86	95	4,8
FAB09-12029	100	100,5	105	114	6,4
FAB09-12030	125	125	131	142	6,4
FAB09-12031	150	150	156	167	6,4

Further sizes on request

1) For further information on gasket dimensions without a listed item number please contact Garlock.

GYLON BIO-LOK[®]

Gaskets for Camlock couplings
Material: GYLON[®] Style 3504



Gasket dimensions and item numbers ¹⁾

DIN 11864 and DIN 11853 , Row A, Form A					
DIN 11866 Row A					
Item no.	DN	Inch	Ø d ₁ [mm]	Ø D [mm]	T [mm]
FAB09-10142	20	¾"	25	35	5,5
FAB09-10143	25	1"	27	40	6,4
FAB09-10144	32	1¼"	35	50	
FAB09-10145	40	1½"	41	56	
FAB09-10146	50	2"	51	67	
FAB09-10147	65	2½"	60	80	
FAB09-10148	80	3"	76	95	
FAB09-10149	100	4"	102	124	

1) For further information on gasket dimensions without a listed item number please contact Garlock.

Please note: The dimensions shown in the table are according to norm sizes. Due to the sealing characteristics of GYLON[®] gasketing material, the exact dimensions of the gasket are amended to get an optimized sealing performance.

Example Cases

Distillation plant - Distillation plant - GYLON BIO-PRO® & GYLON BIO-ASEPT®

Pharmaceutical

The customer is specialized in high-quality contract manufacturing of sterile preparations in glass ampoules and glass vials in Germany.

Operating Conditions

1. Media: Various pharmaceutical liquids
2. Temperature: 130 - 140 °C
3. Pressure: 8 bar

Challenges faced

The customer was looking for a solution for its distillation plant for the production of WFI as per Pharm Eur (European Pharmacopoeia) and USP out of fully deionised water. The distillation plants are economically operating and reliable plants for a capacity up to 50 l/h. The customer is able to construct these plants in various ranges of capacity, e.g. 3 - 8 column plants, electrically or steam heated. The customer wanted to extend the lifetime of the sealing solutions of the plant. The requirements were conformity to FDA, EC1935 and USP.

Solution

In investigations and joint discussions with Garlock, the best solutions were found to be GYLON BIO-PRO® (Style 3504) according to DIN 11850 and DIN EN 10357 and GYLON BIO-ASEPT® (Style 3504) according to DIN 11864 and DIN 11853.



Saturated Steam Autoclaves - GYLON BIO-PRO®

Pharmaceutical OEM – Autoclaves and Sterilizers

The customer is one of the most well-known and qualified manufacturers of sterilization equipment, supplying major customers all over the world from its base in Italy.

Operating Conditions

1. Media: Saturated Steam
2. Size: 12.7 mm to 63.5 mm
3. Temperature: 152 °C
4. Pressure: Full vacuum 0.0 to 4 bar

Challenges faced

As a global supplier it was vital for the customer to ensure that all of their construction materials met the full suite of compliance standards, including FDA and EN1935. Additionally the challenge was to ensure that the gaskets would perform well under the constant and difficult conditions presented by steam and high temperatures, so that the warranty period could be supported to meet customers' expectations.

Solution

Garlock's global credibility was combined with local sales expertise in Italy to enable in-depth discussion and collaboration directly with the customer's engineering team. By understanding the challenging application as well as the critical end-use customers, it was determined that the best solution was to implement GYLON BIO-PRO® sanitary gaskets for Tri-Clamp connections. The GYLON® Style 3504 material of construction delivers the required level of compliance to industry standards, and the modified PTFE structure ensures compatibility to the temperature, pressure and mechanical demands of sterilization and autoclave processes.



Example Cases

Oncology Injectables - GYLON BIO-PRO® PLUS

Pharmaceutical Production - Oncology Injectables

Customer is a manufacturer of cytostatic injections to treat oncological diseases.

Operating Conditions

1. Product: Cytostatic injections
2. Cleaning Media: SIP process (30 Min - Steam at 121 °C) and CIP (WFI-Water for Injection at 75 °C)
3. Size: 34/DN15; 50.5/DN15; 50.5/DN25; 50.5/DN40
4. Temperature: up to 131 °C
5. Pressure: 2 bar SIP and 3 bar CI

Challenges faced

The aseptic production process for cytostatic injectables underlies strict rules concerning the systems hygienic design. Good cleanability and sterilizability of all system components are of decisive importance. The end products are directly injected into the human body. Due to strict compatibility tests only pure PTFE gaskets without any additives, fillers or pigments can be approved for the process-line. Virgin PTFE gaskets and envelope gaskets only had a very short lifetime (approx. 2 weeks) due to their very high creep. All connections had to be retightened after every SIP cycle and exchanged after 3 cycles.

Solution

Since the installation of GYLON BIO-PRO® PLUS the re-torquing of connections is no longer necessary. The lifetime of the gaskets has increased significantly assuring a reliable performance at all times. After more than 100 cycles ran with GYLON BIO-PRO® PLUS the customer extended the gasket replacement period from 3 to 6 months. Even after 6 months in use the gaskets still looked very good so that the gasket replacement period can be extended in the future. Most importantly with GYLON BIO-PRO® PLUS the customer increased the plants productivity gaining 4 additional product-batches per month which they were losing in the past due to gasket replacement and re-torquing efforts.



Progressive cavity pump - GYLON BIO-ECO® PLUS

Pharmaceutical, Food, Beverage, Cosmetic, Chemical

The customer is one of the leading worldwide specialists in the field of pump technology. Progressive cavity pumps, digital solutions, macerators and control systems are used wherever low to highly viscous, aggressive or abrasive media must be conveyed at low pulsation rates.

Operating Conditions

1. Media: Pharmaceuticals, Food, Beverage, Powders, Dairy
2. Cleaning: CIP- and SIP
3. Size: DN65 - DN150
4. Temperature: Up to 121 °C
5. Pressure: Up to 24 bar

Challenges faced

Production processes in the food and pharmaceutical industries underlie strict rules concerning the systems hygienic design. It is equally important for equipment manufacturer as well as the manufacturer of food and pharmaceuticals to clarify and define the hygienic requirements for various production areas. This is the only way to ensure successful cleaning of the equipment used.

Solution

The best solution was GYLON BIO-ECO® PLUS. It is in full compliance with all industry-relevant certificates. Making sure that the sealing solution met all application requirements, Garlock has customized a sealing solution based on the geometry of the actual flanges. The final design parameters were chosen based on the hygienic sealing performance and the perfect fit of the seal. GYLON BIO-ECO® PLUS has passed all testing within the official EHEDG certification process making sure that the customer was able to move forward in receiving the EHEDG certification for their new hygienic pump model.



Application Data Sheet: Gasketing

Contact Information

Company _____
 Name _____
 Address _____
 Phone No. _____
 E-Mail _____

Anfrage

Date _____
 Enquiry No. _____
 Attachment Yes No
 Garlock ID _____

Application

Flange Heat Exchanger Manway Compressor
 Pumps Valve Bonnet Flue Duct Other

Service Conditions

Max. Temperature [°C] _____
 Continuous Temperature [°C] _____
 Internal Pressure [mm] _____
 Thermal Cycling [24 hours] _____
 Pressure continuous intermittent
 Vibration Yes No
 Other specify _____

Chemical Compatibility

Media _____ CAS No. _____
 Concentration _____ Liquid or Gas _____

Bolts

Rating	Size	Number

Details

Dry Lubricated Coated
 Standard Bolts Tension Bolts

Flange

Norm _____ Face (raised, flat) _____
 Material _____ Surface finish _____
 Inner ø x Outer ø _____ Thickness _____

Comments

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Garlock New Zealand

Garlock Singapore

Note:
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