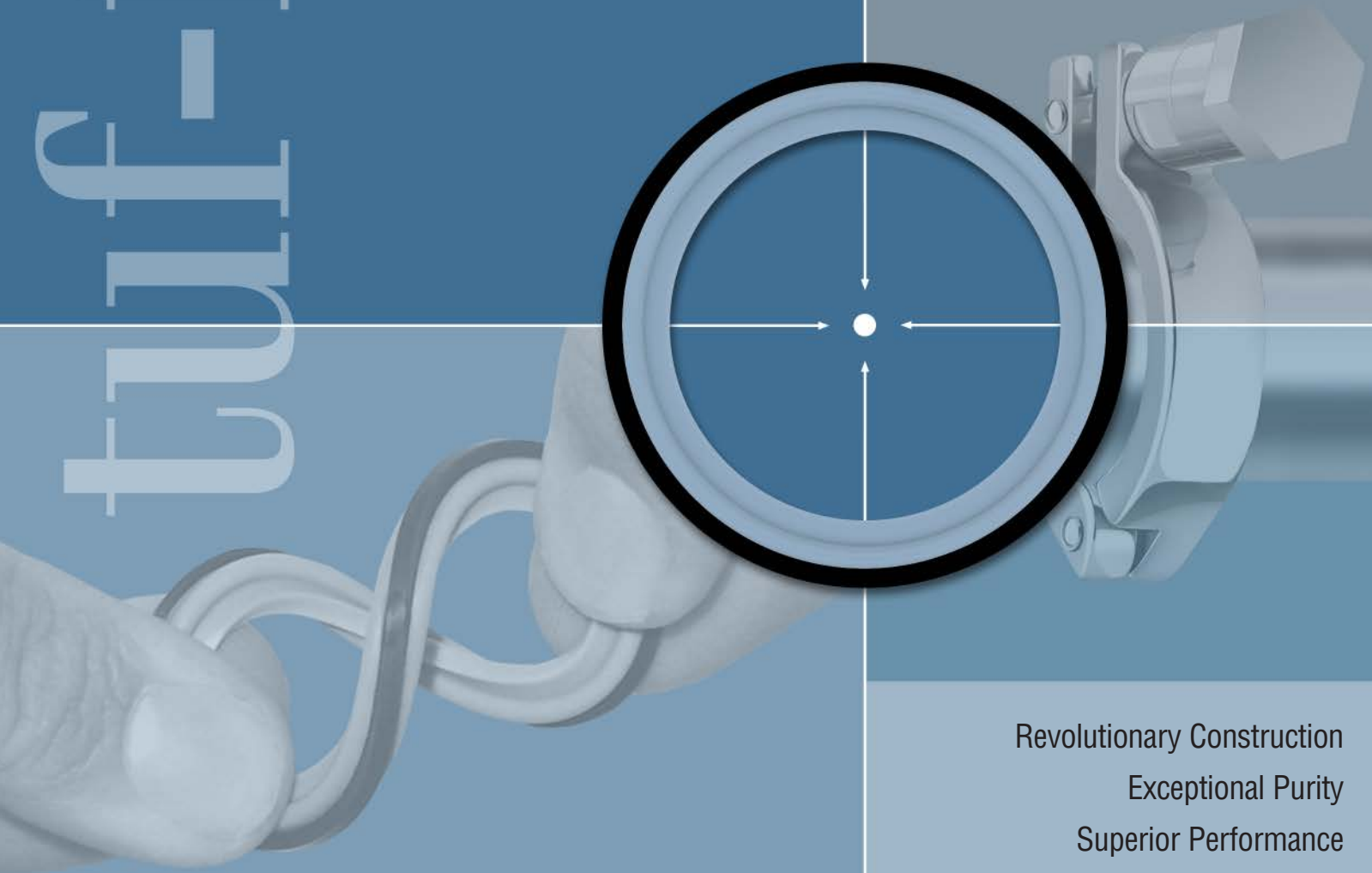


tuf-flex

TUF-FLEX[®]

The World's FIRST
Unitized Gasket

*Will Not Impart Taste or Odor!
No Cross Flavor Contamination.*



Revolutionary Construction

Exceptional Purity

Superior Performance

Extended Up-Time

3A Certified

Available in EPDM or FKM Core

Animal Derived Ingredient Free



Rubber Fab

a Garlock Hygienic Technologies company

TUF-FLEX®

Introducing a Technologically Advanced Sanitary Gasket

Tuf-Flex®, the revolutionary sanitary gasket from Rubber Fab, is the world's FIRST unitized seal setting new standards for purity, performance and flexibility. Designed to meet critical requirements in pharmaceutical, biotechnology, ultra-pure water, WFI (water-for-injection) and difficult food and beverage processing, Tuf-Flex® outperforms other sanitary hygienic seals and increases uptime by helping eliminate costly process interruptions.

Performance Based on a Revolutionary Composition

A Tuf-Flex® sanitary gasket's contact surface is a layer of PTFE grafted to an EPDM or FKM rubber inner core. This totally bonded construction provides an exceptionally pure and incredibly flexible seal.

By grafting the elastomer with a layer of PTFE, Tuf-Flex® will behave like an elastomer but will prevent product contamination, service interruptions and clean-up costs associated with traditional elastomer seals.

Product Purity Without Changeout

With standard CIP cleaning, Tuf-Flex® sanitary gaskets will NOT impart taste or odor. Because there's no cross flavor contamination, Tuf-Flex® increases processing uptime by minimizing need for changeout.

High Performance With Exceptional Purity

Because its elastomer core is protected by a unitized layer of PTFE, a Tuf-Flex® sanitary gasket will not release elastomer extractables or particulates totally eliminating spalling. The result is an exceptionally maintained sanitary tubing I.D. with no I.D. invasiveness or system contamination.

Achieve Higher Results Under SIP/CIP Conditions

- Uniting the flexibility of an elastomer with the chemical resistance of PTFE
- Superior resistance to cold flow and creep
- Excellent chemical resistance
- Minimal thermal expansion
- Exceptional flexibility

Tuf-Flex® Prevents Process Interruptions

- Perfect cleanability
- No re-torquing
- Up to 500 SIP cycles guaranteed
- Outstanding service life
- Leak-proof performance
- Reusable
- Extended uptime
- Maintains seal @ 30 in./lbs.
- Temperature Range:
EPDM: -20°F to 300°F
FKM: -20°F to 400°F

Tuf-Flex® Is Ultra-Pure

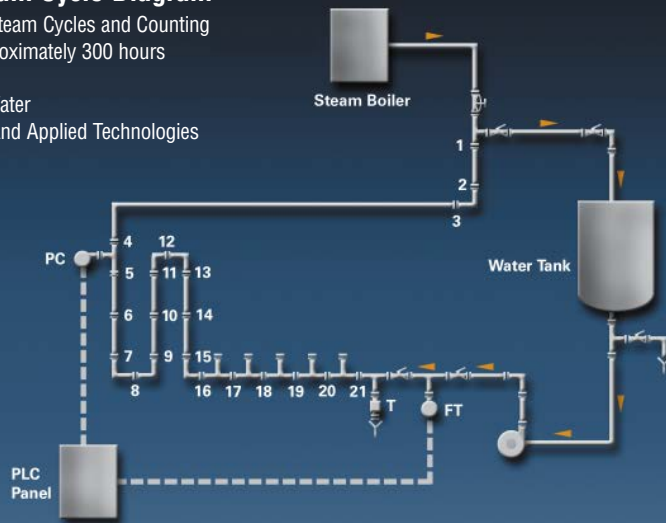
- Will not impart taste or odor – no cross flavor contamination
- No extractables, TOCs or particulates to contaminate product stream
- No pigment
- No gasket I.D. invasion
- Exceptional cleanability response
- Non-stick surfaces

Tuf-Flex® Meets Stringent Standards

- U.S. Pharmacopeia Class VI Certification
- Cytotoxicity Criteria
- Title 21 CFR 177.2600 and 177.1550
- 3-A Certified
- USDA Sanitary Standards
- Current Good Manufacturing Practices (CGMP)
- ASME-BPE Standards
- Animal Derived Ingredient Free

Steam Cycle Diagram

50 Steam Cycles and Counting
Approximately 300 hours
90°C
DI Water
Holland Applied Technologies



TUF-FLEX Sanitary Gasket Life Study

Product	Material	Durometer Before	Durometer After	I.D. Dia. Before	I.D. Dia. After
TUF-FLEX	PTFE	92	94	1.406	1.39
TUF-FLEX	EPDM	92	95	1.406	1.366

TUF-FLEX® EPDM Core Sanitary Gasket

Item	Unit	Spec.	"A" Type	"B" Type
Normal Condition Test				
Hardness	HS (JIS A)	80±5	82	77
Tensile Strength	M Fa	9.8 Min.	18.5	16.7
Elongation	%	150 Min.	160	310

Aging Test

Hardness Change	POINTS	+5 Max.	+1	+2
Tensile Strength Change	%	-15 Max.	-3.2	-7.2
Elongation Change	%	-25 Max.	-11.6	-19.4

Compression Set Test

Compression Set	%	+25 Max.	+7	+13
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Type I and Type III Envelope Gaskets vs TUF-FLEX®



A Solid PTFE Type I gasket is guaranteed to fail in SIP conditions. They will creep, cold flow and leak at ΔT.



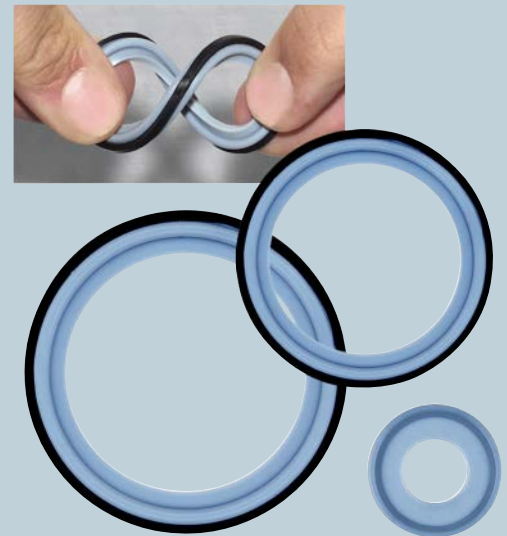
The Envelope gasket construction provides inconsistent results between the two materials. It will also creep, cold flow and leak over time.



The PTFE grafted elastomer in a Tuf-Flex gasket will maintain I.D. without re-torquing or leaking.

TUF-FLEX® EPDM Core Part Numbers

SIZE	PART NUMBER	ITEM
1/2"	A42MPGR-TF-050-E	1/2" Tuf-Flex® with EPDM Core
3/4"	A42MPGR-TF-075-E	3/4" Tuf-Flex® with EPDM Core
1"	A40MPGR-TF-100-E	1" Tuf-Flex® with EPDM Core
1-1/2"	A40MPGR-TF-150-E	1-1/2" Tuf-Flex® with EPDM Core
2"	A40MPGR-TF-200-E	2" Tuf-Flex® with EPDM Core
2-1/2"	A40MPGR-TF-250-E	2-1/2" Tuf-Flex® with EPDM Core
3"	A40MPGR-TF-300-E	3" Tuf-Flex® with EPDM Core
4"	A40MPGR-TF-400-E	4" Tuf-Flex® with EPDM Core
6"	A40MPGR-TF-600-E	6" Tuf-Flex® with EPDM Core
8"	A40MPGR-TF-800-E	8" Tuf-Flex® with EPDM Core
10"	A40MPGR-TF-1000-E	10" Tuf-Flex® with EPDM Core
12"	A40MPGR-TF-1200-E	12" Tuf-Flex® with EPDM Core



TUF-FLEX® FKM Core Part Numbers

SIZE	PART NUMBER	ITEM
1/2"	A42MPGR-TF-050-V	1/2" Tuf-Flex® with FKM Core
3/4"	A42MPGR-TF-075-V	3/4" Tuf-Flex® with FKM Core
1"	A40MPGR-TF-100-V	1" Tuf-Flex® with FKM Core
1-1/2"	A40MPGR-TF-150-V	1-1/2" Tuf-Flex® with FKM Core
2"	A40MPGR-TF-200-V	2" Tuf-Flex® with FKM Core
2-1/2"	A40MPGR-TF-250-V	2-1/2" Tuf-Flex® with FKM Core
3"	A40MPGR-TF-300-V	3" Tuf-Flex® with FKM Core
4"	A40MPGR-TF-400-V	4" Tuf-Flex® with FKM Core
6"	A40MPGR-TF-600-V	6" Tuf-Flex® with FKM Core

Tuf-Flex® FKM core Tri-Clamp® gasket is made to order. Please be sure to keep that in mind when ordering.



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