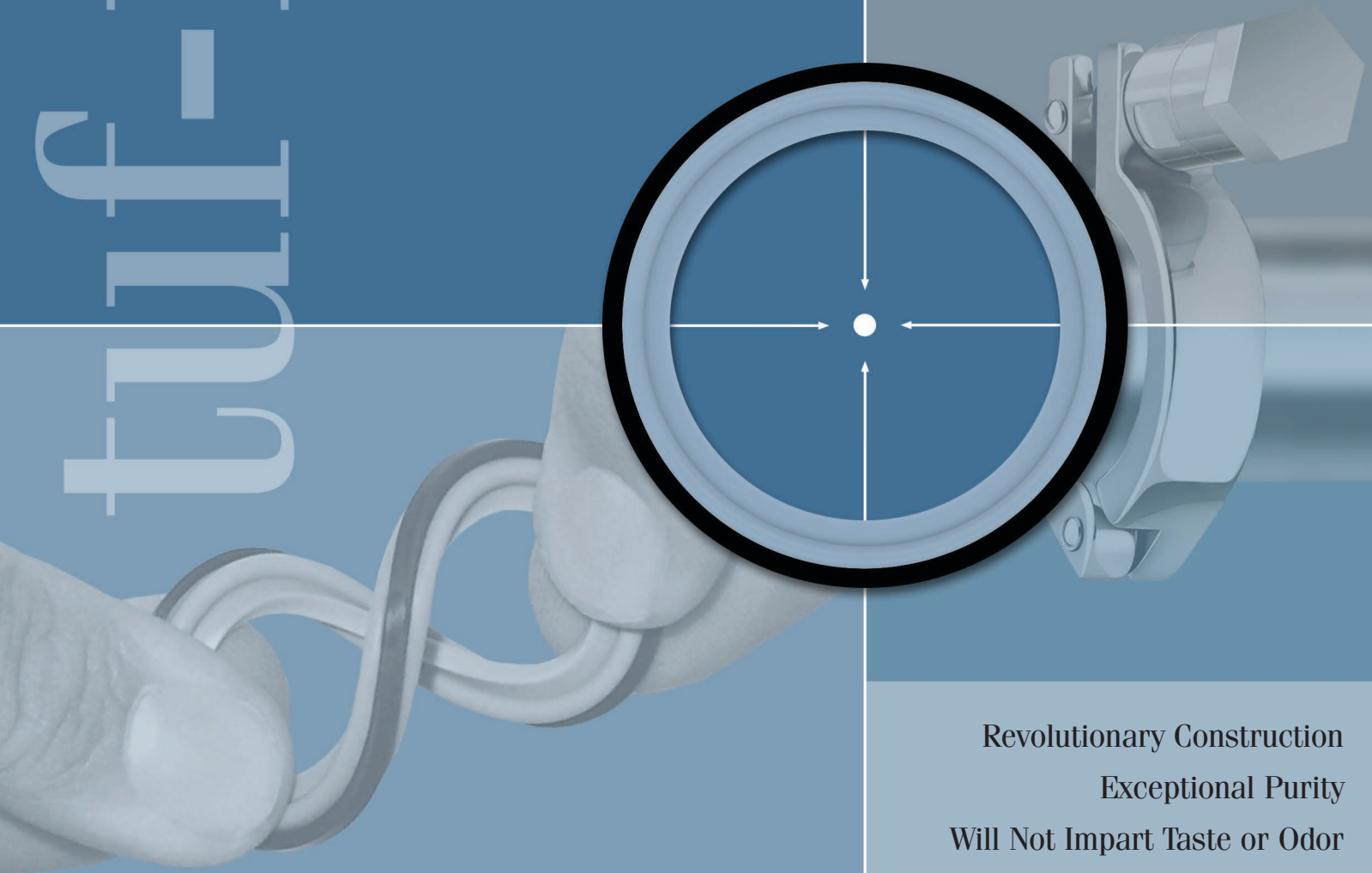


tuf-flex

TUF-FLEX®

The Ultimate in
Gasket Performance

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



Revolutionary Construction

Exceptional Purity

Will Not Impart Taste or Odor

Superior Performance

Extended Up-Time

3A Certified

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 only 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 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 Is Ultra-Pure

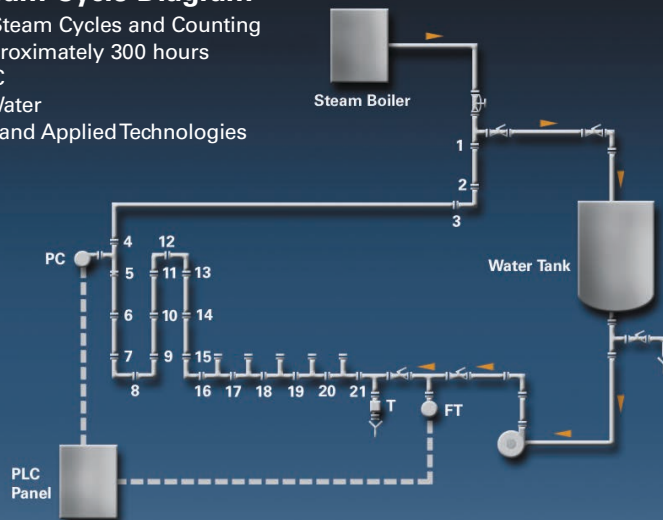
- **Will not impart taste or odor – no cross flavor contamination**
- **No extractables, TOCs or particulates** to contaminate product stream
- **No-pigment**
- **No gasket I.D. invasion**
- **Exceptional cleanability response**
- **Non-stick surfaces**

Tuf-Flex Prevents Process Interruptions

- **Perfect cleanability**
- **No re-torquing**
- **Up to 500 SIP cycles guaranteed**
- **Outstanding service life**
- **Reusable**
- **Extended uptime**
- **Maintains seal @ 30 in./lbs. and 50 in./lbs.**
- **Temperature Range: -20°F to 300°F**

Steam Cycle Diagram

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



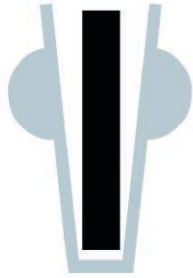
TUF-FLEX Sanitary Gasket Life Study

| 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 |

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 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 |

TUF-FLEX... The World's Only Unitized Sanitary Gasket



| | |
|--------|------------------|
| 1/2" | A42MPGR-TF-050-E |
| 3/4" | A42MPGR-TF-075-E |
| 1" | A40MPGR-TF-100-E |
| 1-1/2" | A40MPGR-TF-150-E |
| 2" | A40MPGR-TF-200-E |
| 2-1/2" | A40MPGR-TF-250-E |
| 3" | A40MPGR-TF-300-E |
| 4" | A40MPGR-TF-400-E |
| 6" | A40MPGR-TF-600-E |



Specify Tuf-Flex® the World's Finest Sanitary Gasket

- Unites the **flexibility** of an elastomer with the **chemical resistance** of PTFE
- Up to 500 steam cycles guaranteed
- **Totally unitized**, perfectly sealed
- **Leak-proof performance**
- Superior **creep resistance**
- Excellent **chemical resistance**
- **Increases uptime**
- Minimal thermal expansion
- No re-torquing necessary
- Outstanding service life
- **Outstanding purity** – no extractables, TOCs or particulates
- No gasket extrusion into the I.D.
- **Non-stick surfaces**
- **No pigments**
- Easy cleanability
- Also available in 150# Ansi-Flex and IDF-Flex

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

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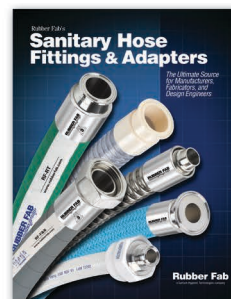
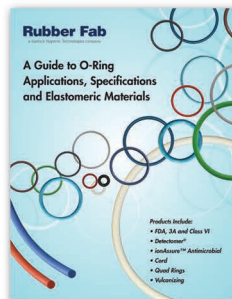
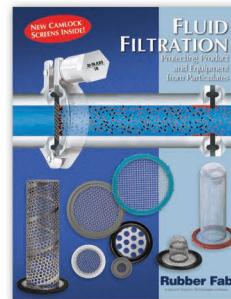
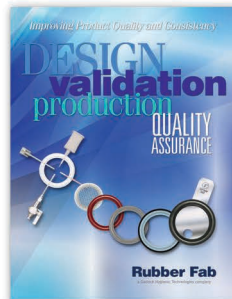
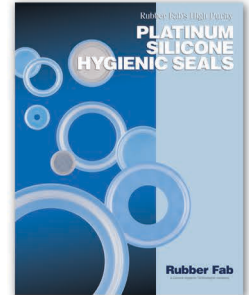
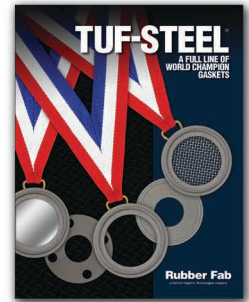
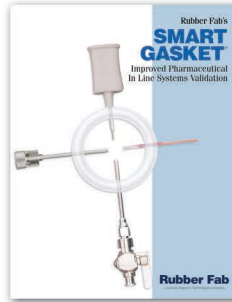
* Buna is not an ADI Free elastomer.



Rubber Fab

a Garlock Hygienic Technologies company

Also Available From Rubber Fab



Rubber Fab is a leading innovator of high quality sanitary gaskets, hose assemblies, valve, pump and filler machine components in a wide range of high purity elastomer materials. For additional information, contact Rubber Fab at 973-579-2959 or visit us at www.rubberfab.com.

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