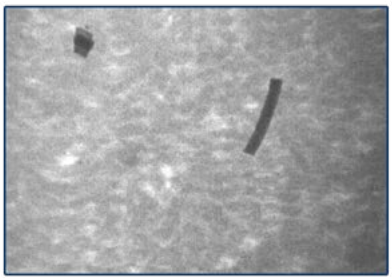
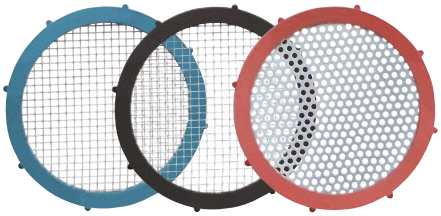
Rubber Fab

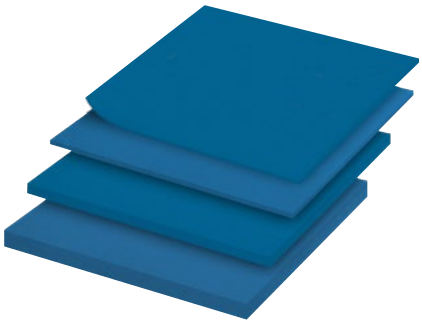
a Garlock Hygienic Technologies company

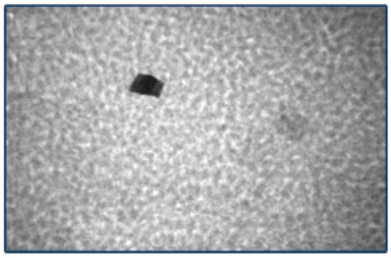
Dynamic Sealing Products for Food & Beverage Applications

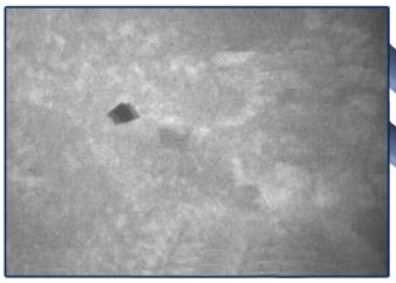
Engineered Products for all of Your Food Processing Requirements

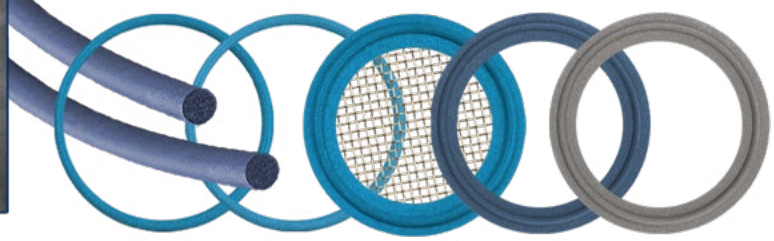


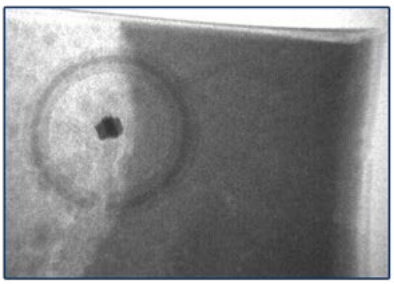












DETECTOMER
METAL DETECTABLE X-RAY INSPECTABLE

FPSA
Food Processing Suppliers Association

3-A

ADI FREE
ANIMAL DERIVED INGREDIENT FREE
CERTIFIED

FDA U.S. FOOD & DRUG ADMINISTRATION

About Rubber Fab

Rubber Fab was founded in 1995 by Robert DuPont, Sr. and Patrick Parisi (former owners of Sani-Tech®) located in Andover, NJ. The business has grown through the market and sale of new, innovative products for the Pharmaceutical, Bio-Pharm, Food, Beverage and Brewing Industries.

In April 2016, Rubber Fab became part of the Garlock family of companies in an acquisition with parent company EnPro Industries. Headquartered in Palmyra, NY, the Garlock family of companies is acknowledged as the global leader in high-performance fluid sealing and pipeline protection products for industry and infrastructure. Garlock products are at work in many critical and highly regulated industries, including Pharmaceutical, Food & Beverage, Chemical, Oil & Gas, and many others.

Rubber Fab is the leading innovator of high quality sanitary gaskets, hose, hose assemblies, tubing, pump, and filler machine components in a wide range of high purity and metal detectable/x-ray inspectable elastomeric materials. Rubber Fab manufactures, markets, and sells specialized trademarked products such as Tuf-Steel®, Tuf-Flex®, Torque-Rite®, Smart Gasket®, Detectomer®, and ADI Free®.

Sanitary Sealing Industry Terms

Abrasion - The process of scraping or wearing away material.

CGMP - Current Good Manufacturing Practices are published by the FDA and are used by pharmaceutical, medical device, and food manufacturers as they produce and test products that people use.

CIP - Clean-in-place, equipment and techniques that allow process equipment to be cleaned without dismantling or manual cleaning.

COP - Clean-out-of-place, a method of cleaning equipment items by removing them from their operational area and taking them to a designated cleaning station for cleaning.

Elastomer - a natural or synthetic polymer having elastic properties, i.e., rubber.

Gasket - a shaped piece or ring of rubber, or other material, sealing the junction between two surfaces in an engine or other device.

I.D. - the inner dimension of a gasket

O.D. - the outer dimension of a gasket

Sanitary Fitting - used to join two or more pipes or tubes together or to some other component.

Seal - a device designed to prevent or control the movement of fluid from one chamber to another.

SIP - Steam-in-place, heating or chemical sterilization of process equipment.

Sterilization - A term referring to any process that removes or kills all forms of life present on a surface, contained in a fluid, in medication, or in a compound.

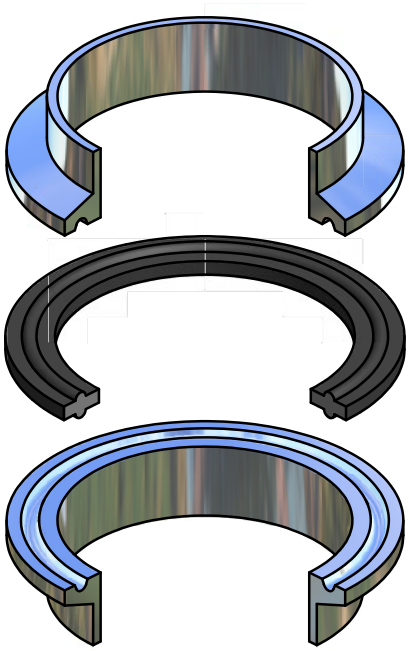
Validation - As it relates to the spray equipment, the process of validation involves the qualification of the manufacturing process to ensure that it is stable and reliable so that the corresponding manufactured drugs meet specifications. Once an equipment or a process is validated, a new validation is required if any change is made.

WFI - Water for injection (RO-reverse osmosis, DI-deionized water).

What is a Tri-Clamp® Gasket?

Sanitary Tri-Clamp® Gaskets are used in the Food, Dairy, Beverage, Biotech, Pharmaceutical, and many other Sanitary Process industries to seal clamp connections in sanitary pipe lines.

The name Tri-Clamp® gasket comes from the Tri-Clover clamp which is used to hold a gasket in place.

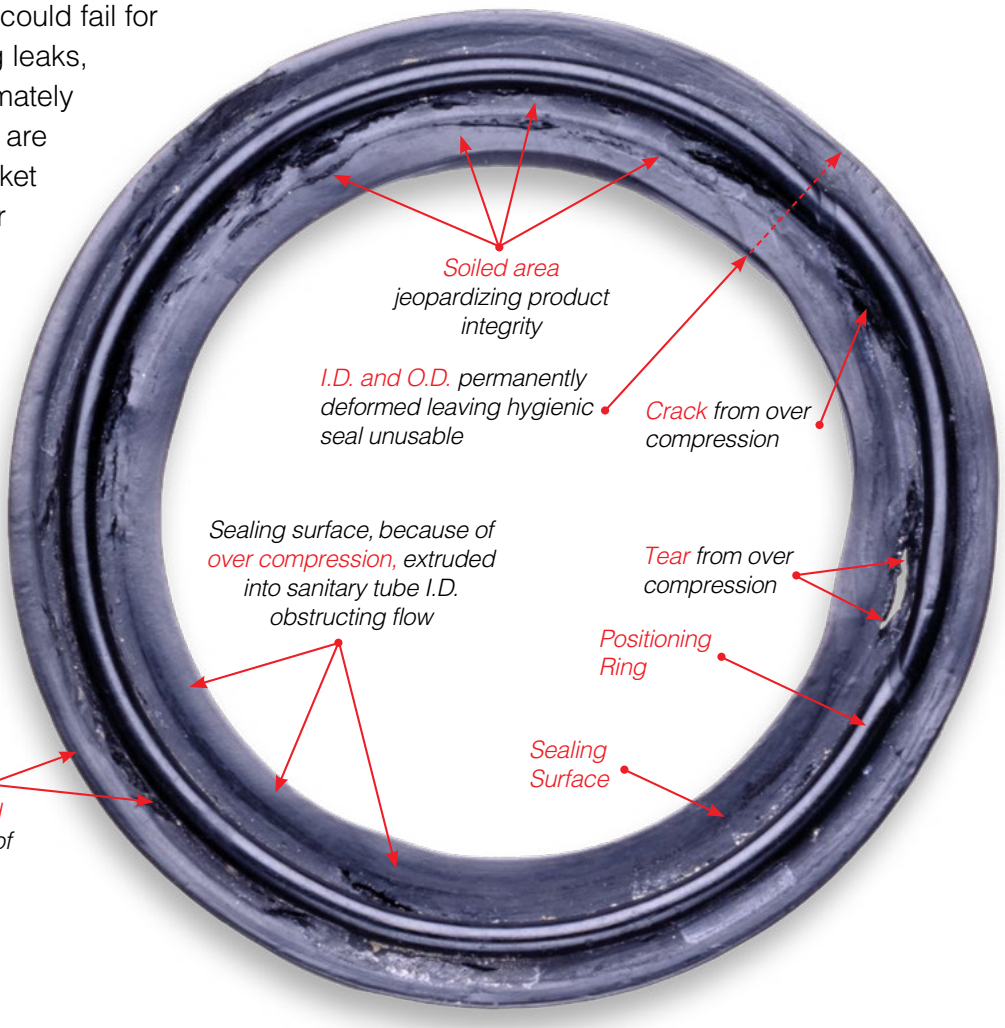


Benefits of A Perfect Hygienic Seal

- Lower bacteria count
- Maintains/enhances product integrity
- Ensures that gasket I.D. matches pipe I.D.
- Conforms to CGMP
- Complies with USDA and 3-A Sanitary Standards

Why do Gaskets Fail?

Sanitary Tri-Clamp® Gaskets could fail for a number of reasons causing leaks, bacteria entrapment and ultimately plant shutdowns. To the right are just a few reasons why a gasket could fail and what to look for when installing gaskets in a process line.



Hygienic Seal Material Guidelines

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 environments exist. The intention is to consider the different uses, applications and conditions to determine the most favorable hygienic seal material for each application.

The following criteria is used in determining correct hygienic seal materials:

- U.S. Pharmacopeia Class VI Certification
- Cytotoxicity Criteria
- CFR Title 21 Section 177.1550
- CFR Title 21 Section 177.2600
- Traceability: Lot and Batch
- Certification: Lot and Batch
- USDA Standards
- 3-A Sanitary Standards
- Current Good Manufacturing Practices (CGMP)
- Manufacturer data and specifications
- Consultation with various pharmaceutical users
- Animal Derived Ingredient Free

The gasket materials considered are Tuf-Steel® (PTFE/Stainless Steel), Tuf-Flex®, PTFE, Silicone (platinum), FKM Fluoroelastomer, EPDM and Buna.

The 3 main goals are:

- To protect products from contamination, spalling, particulates and TOCs resulting from the use of improper hygienic seal material.
- To protect facilities from unnecessary downtime associated with hygienic seal failure and replacement from use of improper hygienic seal material.
- To provide a standard of consistency for hygienic seal selection between multiple facilities.

Most decisions driving seal type selection are based on chemistry, temperature, exposure limits, USP, FDA qualifications, and curing methods. The following briefly addresses each of these issues.

Exposure Limits

It is important to define the operating parameters of a new or existing processing sanitary system. The user specifications for exposure limits and reactivity to process fluids are compared with process operating parameters. All materials are acceptable for steam excluding Buna. All materials should meet process fluid reactivity parameters. Even though all compound exposure limits fall within operating parameters, the service life of some compounds will be different under certain conditions. This must be considered when selecting a compound.

FDA and USP Qualifications

CFR's define the criteria for extractables and for compounds used in the manufacture of rubber and plastic articles. The two applicable categories are; rubber articles (Buna, EPDM, FKM Fluoroelastomer, Silicone) and perfluorocarbon resins (PTFE).

USP defines the criteria for testing biological reactivity and the amount/type of extractables. The hygienic seals in service must meet USP Class VI specifications, and be manufactured using the proper compounds as stated in the CFR, Title 21, Sections 177.1550 and 177.2600 respectively. Certificates are available from Rubber Fab verifying compliance with regulatory requirements, traceability lot and batch and certification lot and batch. Note: Not all hygienic seals meet these requirements.

Curing Methods

Curing agents have an affect on the amount and type of extractables a material will emit. Typically, the hygienic seal group in service uses three methods; sulfur cured, peroxide cured and platinum cured. When dealing with elastomers, peroxide cured is the most favorable method. When dealing with silicone, platinum cured is the most favorable. All gaskets shall be post cured. Using these methods minimize potential reactions with the respective process fluid applications and can uphold pure water and process fluid standards. Sulfur cured elastomers can significantly alter a process

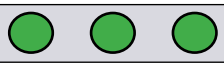
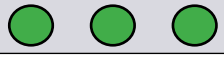
fluids integrity and negatively affect mammalian cell yields. Rubber Fab EPDM hygienic seals are all peroxide cured.

What Material(s) Can Be Used

By reviewing manufacturer data and compiling information regarding regulatory requirements, it appears that any of the aforementioned compounds are suitable for both utility and process equipment use. However, you must ensure that all hygienic seals and compounds meet the CFR and USP requirements, and have a certificate to verify compliance.

What Material(s) Should Be Used

- Tuf-Flex®, the world's first unitized gasket, has a contact surface that is PTFE unitized to an EPDM rubber inner core. This totally bonded 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-Steel® is composed of a unique 50/50 blend of non-pigmented PTFE and 316L passivated & atomized stainless steel. Testing and documented application usage has demonstrated that Tuf-Steel® is the choice for perfect surface performance, outstanding durability and extended service life in both SIP (steam in place) and WFI (water for injection) applications. Tuf-Steel® is ideal for sanitary steam pipe connections in extreme temperatures ranging from -320°F to 550°F. The superior strength of Tuf-Steel® eliminates creep and cold flow providing a leak-free seal.
- PTFE is the material of choice whenever low temperature flexibility or gasket memory is not required and can remain in service for longer periods of time in both water and steam applications. PTFE is not recommended with large temperature variations due to creep and cold flow. PTFE has minimal extractables, has a low absorption rate and excellent resistance to process fluids.
- Platinum Cured Silicone is the material of choice in sanitary water systems when PTFE is not feasible due to severely misaligned fittings, or if the cost of high pressure clamps does not outweigh the benefits of PTFE (extended service life).
- FKM Fluoroelastomer and EPDM compounds are specified by many of our process equipment manufacturers. They are generally suitable for these applications, however, service life must be considered and a preventative maintenance program be implemented to mitigate degradation.
- Buna is the last choice in most applications due to temperature limitations and does not pass U.S. Pharmacopeia Class VI Certification and Cytotoxicity.

Material	Dot Description	Color Code
Tuf-Steel®	no dot	
Tuf-Flex®	no dot	
PTFE	no dot	
PTFE Envelope with FKM Fluoroelastomer Filler	one white & one yellow dot	
PTFE Envelope Style with EPDM Filler	three green dots	
FKM Fluoroelastomer	one white & one yellow dot	
EPDM - peroxide cured	three green dots	
Silicone - platinum cured	no dot	
Buna	one red dot	

Gasket Certifications

It is Rubber Fab's policy to provide the highest quality products, which consistently meet the product specifications developed by Rubber Fab and their customers, both internal and external. We are committed to the continuous improvement of our quality system. We will meet and exceed the expectations of our customers. It is the responsibility of each of us to monitor and ensure the highest quality within our efforts in our organization. It is the responsibility of leadership to ensure that our policy and objectives are relevant to the business strategies and are executed throughout our organization. Rubber Fab certifies their gaskets based on the following certifications.

- 3-A Sanitary Standards - an independent, not-for-profit corporation dedicated to advancing hygienic equipment design for food, beverage and pharmaceutical industries. Prerequisite for 3-A approval is that the seal material already fulfills the FDA requirements.
- FDA - Government agency within the US Department of Health and Human Services responsible for enforcing the Federal Food, Drug and Cosmetic Act to ensure consumers' health and safety. Although the jurisdiction of the FDA is restricted to the United States, FDA regulations are commonly adopted as international control standards.
  - Title 21 is the portion of the Code of Federal Regulations that governs food and drugs within the United States for the Food and Drug Administration.
  - 21CFR177.2600 Rubber articles intended for repeated use
  - 21CFR177.1550 Perfluorocarbons (PTFE products and compounds, FEP, etc.)

ISSUE DATE: November 05, 2013 CERTIFICATE AUTHORIZATION NUMBER: 1727

THIS IS TO CERTIFY THAT

Rubber Fab, a Garlock Hygienic Technologies Company

26 Brookfield Dr., Sparta, NJ 07871

is hereby authorized to continue to apply the
3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Number 18-03
18-03 (Multiple Use Rubber and Rubber-Like Materials)

set forth below

Both CIP and COP material compounds: CPO-196 Class IV; CPO-196XR Class III; CPO-296 Class III; CPO-3003/80 Class I; CPO-325 Class III; CPO-7D16 Class III; CPO-7F81 Class III; CPO-7N35 Class III; CPO-7S76 Class III; CPO-N7015FDA Class III; CPO-N7015FDAXR Class III; CPO-S70FDAXR Class IV; CPO-VT80FDAXR Class I.

VALID THROUGH: **December 31, 2018**

Timothy R. Rugh
Executive Director
3-A Sanitary Standards, Inc.

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standard(s) designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in such cases in which evidence of nonconformance has been established.

NEXT TPV INSPECTION/REPORT DUE: **October 2018**

ISSUE DATE: April 01, 2014 CERTIFICATE AUTHORIZATION NUMBER: 1746

THIS IS TO CERTIFY THAT

Rubber Fab, a Garlock Hygienic Technologies Company

26 Brookfield Dr., Sparta, NJ 07871

is hereby authorized to continue to apply the
3-A Symbol to the models of equipment, conforming to 3-A Sanitary Standards for:

Number 20-27
20-27 (Multiple Use Plastic Materials)

set forth below

Both CIP and COP material compounds: Tuf-Steel, Tuf-Flex, and CPO-8A.

VALID THROUGH: **December 31, 2018**

Timothy R. Rugh
Executive Director
3-A Sanitary Standards, Inc.

The issuance of this authorization for the use of the 3-A Symbol is based upon the voluntary certification, by the applicant for it, that the equipment listed above complies fully with the 3-A Sanitary Standard(s) designated. Legal responsibility for compliance is solely that of the holder of this Certificate of Authorization, and 3-A Sanitary Standards, Inc. does not warrant that the holder of an authorization at all times complies with the provisions of the said 3-A Sanitary Standards. This in no way affects the responsibility of 3-A Sanitary Standards, Inc. to take appropriate action in such cases in which evidence of nonconformance has been established.

NEXT TPV INSPECTION/REPORT DUE: **March 2019**

Rubber Fab

a Garlock Hygienic Technologies company

CERTIFICATE OF COMPLIANCE

U.S.P. CLASS VI

Rubber Fab Technologies Group certifies that the material from which we manufacture the below mentioned parts has passed U.S.P. Class VI Cytotoxicity Testing and meets 3A and USDA Standards and are BSE/TSE compliant. Elastomer parts are FDA CFR 21, 177.2600 compliant, and PTFE, FEP, PFA and Tuf-Steel® parts are FDA CFR 21, 177.1550 compliant.

CUSTOMER NAME: Rubber Fab
CUSTOMER PO: Sample
PART NO.: Sample
DESCRIPTION: Sample
MATERIAL: Sample
LOT NUMBER: Sample
CURE DATE: Sample

Sean Mayer
Quality Assurance Manager

CERTIFIED

CERTIFIED

The material used to manufacture our EPDM, FKM Fluoroelastomer, Silicone, PTFE, and Tuf-Steel® parts is Animal-Derived Ingredient-Free.

●Gaskets ●Hose ●Hose Assemblies ●Tubing ●Fittings ●Pump and Replacement Parts
26 Brookfield Drive, Sparta, NJ 07871 • Phone: 973-579-2959 • Fax: 973-579-7275
www.rubberfab.com

- USP Class VI - Some Rubber Fab products meet the USP Class VI certification which means a plastic resin material is expected to be more likely to produce favorable biocompatibility results. Compounds must be made from ingredients with clear histories of biocompatibility that meet tight requirements for leachates. USP's drug standards are enforceable in the US by the Food and Drug Administration, and are also used in more than 140 countries. USP defines six plastics classes from I to VI with VI remaining the strictest.
- ADI® Free - Product compound that is manufactured with animal derived ingredients is Buna. All other elastomers are animal derived ingredient free. This was put into place as a sure way to remove any risk from the finished product, whether medication, food, or a component of another substance, to completely eliminate the potential for animal ingredient contact.

Storage Procedures and Shelf Life of Elastomeric Gaskets

The shelf life of elastomeric, PTFE and FEP gaskets and O-Rings is dependent on many factors pertaining to their storage conditions. Products stored in their original packaging in a dry, cool environment away from direct sun light and artificial light should remain in optimal condition for 10 years. We do, however, recommend visual inspection of gaskets for discoloration, hardening and deformation after three years.

Temperature: In order to avoid certain forms of deterioration that may occur at higher temperatures, storage temperatures should be below 77°F (25°C). The effects of low temperatures are not permanently damaging, but articles may stiffen more than usual. Humidity Store in a dry environment to avoid condensation.

Light: Gaskets should be protected from light, especially direct sunlight and strong artificial light with high ultraviolet content.

Oxygen and Ozone: Whenever possible, gaskets should be protected from circulating air, ozone is very abrasive toward rubber, storage rooms should not contain any equipment capable of generating ozone such as mercury lamps, electric motors and any other equipment that produces electrical sparks and discharge.

Deformation: Whenever possible, gaskets should be stored in a relaxed condition free from tension, compression or other deformation.

Contact with Liquid or Semi-Solid Materials: Rubber should not come in contact with liquids or semi-solid materials, especially solvents, oils and greases at any time during storage.

Rotation of Stocks: Gaskets should remain in stores for as short of a period as possible. Therefore, articles should be issued from stores in strict rotation.

Detectomer® Products

Detectomer® Products are Patented!

X-ray inspection and metal detection systems provide confidence to food, dairy and pharmaceutical manufacturers by insuring product safety and integrity as outlined by the Food Safety Modernization Act. Developing an effective inspection program to detect contaminants and monitor the consistency and quality of product helps avoid product waste, recalls, costly down time and customer complaints. Due to it's low conductivity, elastomeric material is often missed by even the strongest detection systems. Because of this ongoing issue, Rubber Fab created a full line of metal detectable/x-ray inspectable sealing products.

Detectomer®: a simple step in providing processing security against elastomeric contamination. Detectomer® is a *PATENTED* line of metal detectable/x-ray inspectable elastomeric products designed to work with any existing conveyor, pipe line or free fall detection system. Detectomer® products are available in Tuf-Steel®, Buna, Silicone, FKM Fluoroelastomer and EPDM.

Detecting Elastomeric Contamination During Food and Beverage Processing

Over time and repeated clean-in-place, sterilization, and handling during equipment cleaning, component parts used in food, beverage and pharmaceutical processing equipment and pipework can degrade. As the elastomer degrades, there is a high risk of rubber fragments breaking off, resulting in product contamination, product recall, lost product and down time.

Rubber Fab's line of Detectomer® can be spotted by in-line x-ray inspection and metal detection systems as well as magnetic separators. Detectomer® fragments can easily be detected allowing your system to quickly reject contaminated product. This also allows worn parts to be replaced without great expense or costly down-time. Tri-Clamp® gaskets are available in 1/2" - 12". Please visit www.rubberfab.com for a complete list of products and part numbers.

Typical Applications for Detectomer® Products

- Products in aluminum pans and tins
- Products in metalized film packaging
- Products in metal or aluminum cans
- Products in flow-wrapping lines
- Products in hermetically sealed bags

Detectomer® Benefits

- Increase effectiveness of existing detection systems
- Reduce product loss
- Minimize product recall
- Decrease operating and labor costs
- Increase customer satisfaction

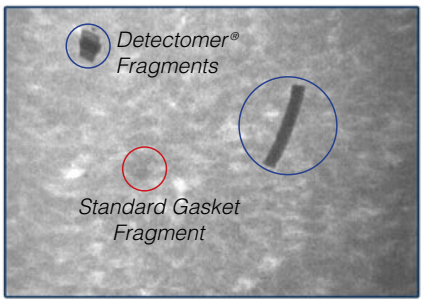
Materials Available

- Tuf-Steel®
- Buna
- Silicone
- FKM Fluoroelastomer
- EPDM

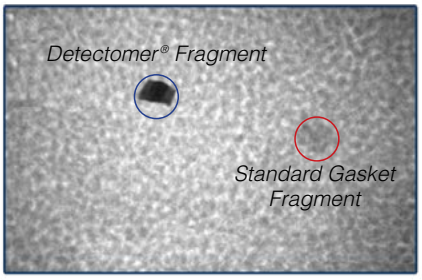
Expanding Product Line

Rubber Fab offers a growing range of FDA and 3-A certified products, enabling manufacturers and end users to select the appropriate product to meet the temperature, chemical and specific performance needs.

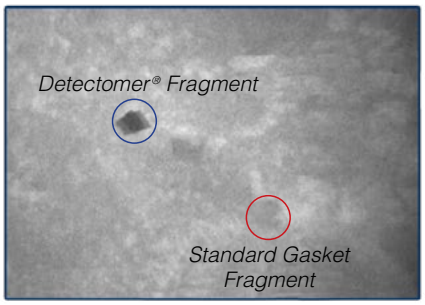
- Sanitary Gaskets
- Sanitary Screens
- Orifice Plates
- O-Rings
- Cam & Groove Gaskets
- Cam & Groove Screens
- Rod
- Sheet
- Extrusions
- Scraper Blades
- Please visit www.rubberfab.com for a complete list of part numbers



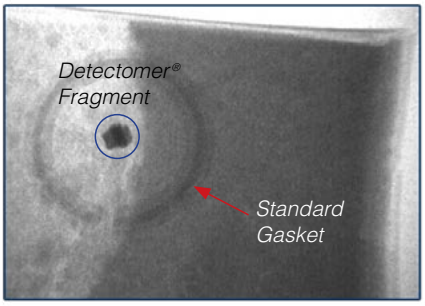
Bulk Hamburger X-ray



Dry Rice X-ray



Sauerkraut X-ray



Box of Corn Muffin Mix X-ray

Part Number	Description
40MPU-BUZ-XR-XXX	Buna Detectomer® Tri-Clamp® Gasket
40MPE-BUZ-XR-XXX	EPDM Detectomer® Tri-Clamp® Gasket
40MPSFY-BUZ-XR-XXX	FKM Detectomer® Tri-Clamp® Gasket
40MPX-BUZ-XR-XXX	Silicone Detectomer® Tri-Clamp® Gasket
40MPG-TS-XR-XXX	Tuf-Steel® Detectomer® Tri-Clamp® Gasket

XXX = Size, 42 is the Part Designation Number for 1/2" and 3/4"

Metal Detectable Patent # 7,390,580
X-Ray Inspectable Patent # 9,701,827

sales@rubberfab.com

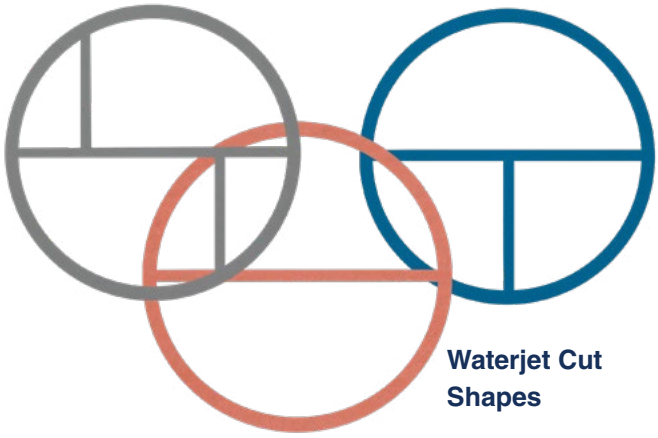
Detectomer® Products

Just because your application demands custom products doesn't mean it can't be metal detectable/x-ray inspectable. Not only can a Detectomer® product be molded to meet your specific requirements, it can also be fabricated, machined, lathed or waterjet cut.

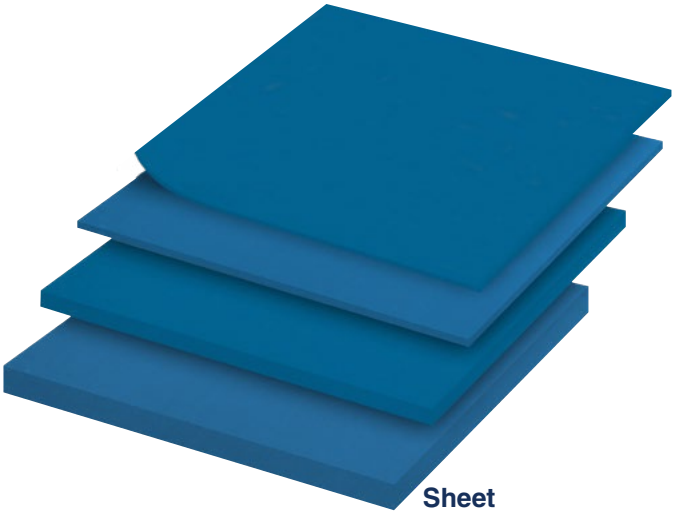
Rubber Fab's Detectomer® Metal Detectable/X-ray Inspectable sheeting can be used as a barrier for protection on conveyor belts or fabricated into gaskets, strips, custom profiles and rubber sleeves to meet your specifications. A self adhesive backing is also available.

Detectomer® sheets are flexible and will hold that flexibility in temperatures as low as -10°F. They can be molded to meet your specific requirements.

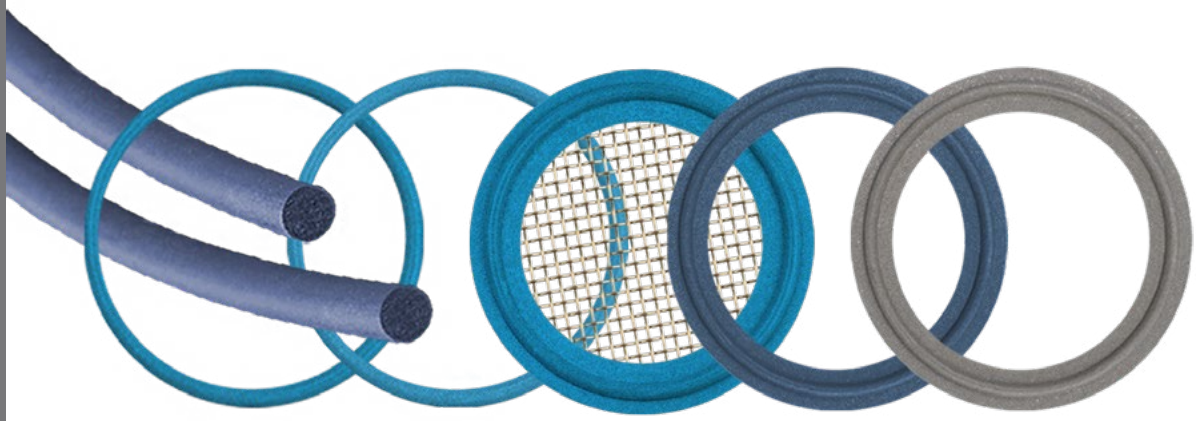
With a sheet size of 36" x 36", available in standard stock thicknesses, Detectomer® sheets are great for custom shapes and applications.



Waterjet Cut Shapes



Sheet



Metal Detectable Patent # 7,390,580 • X-Ray Inspectable Patent # 9,701,827

Case Study: Peanut Butter Processing Plant
Detectomer® Tuf-Steel® Gaskets

INDUSTRY
Food Processing - Peanut Butter

CUSTOMER
A leading food processor and market leader for peanut butter products, with multiple facilities located in the USA.

BACKGROUND
This large manufacturer had failed to detect contamination events within their process, and as a result had encountered two product recalls in recent years – both caused by rubber particles and fragments getting into the process. In order to protect their well-known brand name, and avoid further significant recall costs, they began using elastomeric Detectomer® gaskets to help detect and any contamination. These new gaskets were specified by the customer themselves and were installed on all hygienic tri-clamp connections, with metal detectors installed at critical control points throughout the process.

CHALLENGES FACED
For a number of reasons, peanut butter is difficult to process efficiently on an industrial scale. High viscosity demands higher process pressures; the abrasiveness of the nuts causes significant wear and tear on process equipment and soft parts; added to which is the aggressive nature of peanut and vegetable oils – both of which can attack some natural rubbers and cause gaskets to degrade. Finally, due to the high density and wet nature of the peanut butter, contamination (even from metallic particles) is not always easy to identify using metal detection alone. As a result the customer failed to observe any significant changes in process reliability and quality control, and decided to consult Rubber Fab directly for advice on further improvements.

OPERATING CONDITIONS
1. Size: 1" to 2" Tri-Clamp (ASME-BPE)
2. Temperature: Max Temp. Approx. 170°F (77°C)
3. Application: All hygienic process pipe/vessel connections
4. Media (process): Peanut Butter
5. Media (cleaning): Hot oil (194°F/90°C), then IPA (ambient)
6. Pressure: 130PSI (9 bar)

SOLUTION AND BENEFITS
Following a detailed review with the customers' Engineering team, it became clear that the main issues related to incorrect gasket material selection and process detection techniques. The first recommendation was to install X-ray detection equipment, which would improve their ability to detect all contaminants (including those within the packaged product). Secondly, Rubber Fab suggested the use of Detectomer® Tuf-Steel® gaskets, which are made using a blend of PTFE and 316L Stainless Steel. These gaskets are fully compatible with all process ingredients and cleaning agents; are physically robust and resilient to abrasive media; provide strong signals in both metal detection and X-ray inspection systems; and remain fully compliant to all industry regulations and standards.

Since the new X-ray inspection equipment was installed and Detectomer® Tuf-Steel® gaskets were adopted throughout the process, the customer has not found any further gasket degradation and has avoided any further product recalls.

Tuf-Steel® Family of Products

The original Tuf-Steel® gasket, a Rubber Fab product innovation, is the strongest gasket in the food, beverage, pharmaceutical and biotech industries. Whatever your application, there's a gasket in the Tuf-Steel® family ready to do the job.

Composed of a unique proprietary blend of non-pigmented PTFE and 316L passivated and atomized Stainless Steel, you can bet on any Tuf-Steel® seal for leak-proof performance and outstanding durability. There is no beating the Tuf-Steel® family in SIP, WFI and hot oil applications because Tuf-Steel® maintains seal integrity in applications with large temperature variations. With a 500 steam cycle guarantee, this metal detectable gasket will easily out perform any elastomeric or perfluoroelastomer gasket and will remain in service for extended periods of time. It is the material of choice when chemical and heat resistance are required. With minimum creep and cold flow, non-stick, ultra-low absorption, and no pigmentation, Tuf-Steel® will not revert, eliminating creep and cold flow, resulting in a leak free seal. This gasket is tough!

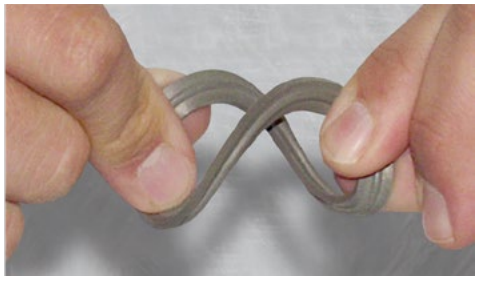
Testing and a decade of documented application usage has demonstrated that Tuf-Steel® is the choice for perfect surface performance and extended service life. Tuf-Steel® is ideal for extreme temperature applications, such as steam, hot oil and friers, where temperatures range from -325°F to 550°F. Because of the superior strength and chemical resistance of Tuf-Steel®, it can go the distance, significantly reducing maintenance and system downtime by staying in place when cleaning and validating a system. Tuf-Steel® is the choice for perfect surface performance, outstanding durability and extended service life in both SIP (steam in place) and WFI (water for injection) applications.

Tuf-Steel® Stands Up to Rigorous Conditions and Delivers Leak-Proof Performance

- 500 CIP/SIP cycles guaranteed
- Excellent expansion/contraction stability with minimal thermal expansion
- Excellent chemical resistance
- Stops leaks when correctly torqued (50 in./lbs. with Torque-Rite® Model TR-50)
- Tuf-Steel® is a compression control gasket
- No gasket intrusion into the sanitary tube I.D.
- No obstruction of flow
- Maintains sealing stability in ΔT processes

Tuf-Steel® Offers Rugged Composition for Demanding Challenges

- Proprietary PTFE and Stainless Steel blend
- Metal detectable
- Rouging eliminated
- Non-pigmented
- Non-stick surfaces
- I.D. Pharmaceutical finish



Tuf-Steel® is a registered trademark of Rubber Fab

Tuf-Steel® Meets Stringent Standards

- U.S. Pharmacopeia Class VI Certification
- Cytotoxicity Criteria
- FDA CFR 21 177.1550
- 3-A Certified
- USDA
- Current Good Manufacturing Practices (CGMP)
- Animal Derived Ingredient (ADI) Free

Tuf-Steel® is available in:

- Type I Standard Tri-Clamp® Gasket
- Type II Flanged
- O-rings
- Tri-Clamp® Screen Gasket
- Tri-Clamp® Orifice Plate Gasket
- Steam Trap Orifice Plate Gasket
- Sheet
- Solid Rod
- Ansi Flange
- Custom Gaskets
- Please visit www.rubberfab.com for a complete list of part numbers

Orifice Plates

Tuf-Steel® sheet material can be waterjet cut into custom patterns.
Available Sheet Size: 36" x 36"
Available Thickness: 1/16" & 1/8"

Tuf-Steel® Solid Rod can be machined into custom parts and adapters

AVAILABLE ROD DIAMETER: 1/8" – 2"

Screen Gaskets

Tuf-Steel® Family of Products

Tuf-Steel® Type I Tri-Clamp® Gasket

The original Tuf-Steel® Type I Tri-Clamp® style sanitary gasket is widely used in sanitary processing pipeline systems for Pharmaceutical, Biopharmaceutical, Food, Beverage and Dairy industries. Specifically designed for demanding steam applications, high temperatures and hot oil applications.

Available Sizes: 1/2" – 12"

Part Number	Description
40MPG-TS-XXX	Tuf-Steel® Tri-Clamp® Gasket

XXX = Size, 42 is the Part Designation Number for 1/2" and 3/4"

Tuf-Steel® Orifice Plate

Rubber Fab's innovative Tuf-Steel® Orifice Plate line includes a complete selection of Tuf-Steel® 316 Stainless Steel Orifice Plate gaskets in standard or tabbed style that can be custom drilled with an eccentric or concentric bore. Orifice Plate Tabs help to acknowledge that an orifice plate is "in line" and can be laser engraved to indicate the hole diameter, gasket size or user specified information. Orifice plates can advance your system's performance, adjust flow rates, balance backflow and equalize back pressure during SIP procedures.

Available Sizes: 1/2" – 6"

Part Number	Description
A80MPG-TS-XXX	Tuf-Steel® Orifice Plate Gasket

XXX = Size, 42 is the Part Designation Number for 1/2" and 3/4"

Tuf-Steel® Tri-Clamp® Screen Gaskets

Rubber Fab's fluid filtration screen gaskets provide the most comprehensive range of stainless steel mesh and filter cloth which provide for particulate elimination to protect fill and finish sterile products.

Available Sizes: 1/2" – 6"

Part Number	Description
40MPGTSSXX-XXSS	Tuf-Steel® Screen Gasket

XXX = Size, XXSS = Mesh Size, 42 is the Part Designation Number for 1/2" and 3/4"

Bevel Seat Gaskets

Tuf-Steel® Full Face Flange and Ring Gaskets

Rubber Fab offers a complete size range of standard Full Face 150# and 300# Ansi Flange gaskets, as well as, Ring Gaskets specifically designed for demanding steam applications.

Available Sizes: 1" – 8"

Part Number	Description
XX-TS-XXX-150#-.125	Tuf-Steel® Full Faced & Ring

XX = FF for flanged face & RG for ring gasket, XXX = Size

Tuf-Steel® I-Line Gaskets

Available Sizes: 1" – 8"

Part Number	Description
40IT-TS-XXX	Tuf-Steel® I-Line Gasket

XXX = Size

Tuf-Steel® John Perry Gaskets

Available Sizes: 1" – 4"

Part Number	Description
40JPG-TS-XXX	Tuf-Steel® John Perry Gasket

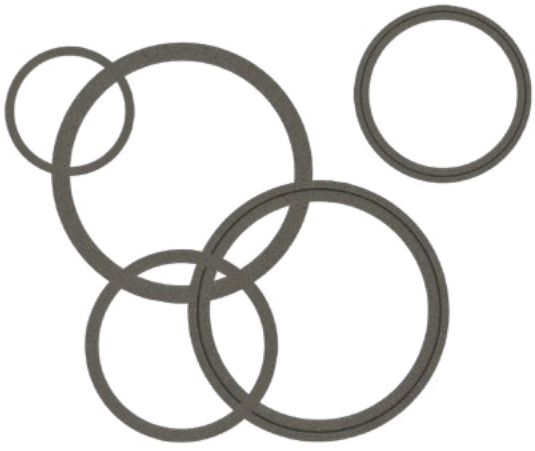
XXX = Size

Tuf-Steel® Bevel Seat Gaskets

Available Sizes: 1" – 4"

Part Number	Description
40BSS-TS-XXX	Tuf-Steel® Bevel Seat Gasket

XXX = Size



I-Line Gaskets

Case Study: Aloe Vera Juice Processing Tuf-Steel® Gaskets

INDUSTRY

Beverage Manufacturing - Aloe Vera Juice

CUSTOMER

A large US beverage manufacturer, producing natural juices at their production plant in Texas.

BACKGROUND

This customer was using standard PTFE tri-clamp gaskets on their hygienic pipe connections, but was facing ongoing problems with gasket failure. In order to avoid severe leaks throughout their process, they were replacing gaskets on a weekly basis which was not only expensive but also time-consuming for the maintenance crews.

CHALLENGES FACED

Production of aloe vera juice is challenging, and requires careful process control – not only to preserve the biological integrity of the active ingredient, but also to maintain the delicate flavour of the finished product. Mechanical extraction processes (crushing, grinding or pressing of the leaf) create debris, which can damage soft process components and requires frequent cleaning and sterilization cycles between each batch. Additionally, various stages of filtration and stabilization introduce rapid temperature fluctuations from near-boiling point down to flash-cooling, which create physical stresses on hygienic connections as they expand and contract.

OPERATING CONDITIONS

1. Size: 1" to 4" Tri-Clamp (ASME-BPE)
2. Temperature: -5°C (23°F) to 95°C (203°F)
3. Application: All hygienic process pipe/vessel connections
4. Media : Raw extract and purified aloe vera juice
5. Pressure: 120 PSI (8.3 bar)

SOLUTION AND BENEFITS

The customer provided full access to the plant and their processing conditions so that Rubber Fab could carry out detailed trouble-shooting and recommend the best possible improvements. Taking into account the need for mechanical strength, chemical compatibility, and resilience in temperature cycling conditions, it was recommended that the standard PTFE gaskets were replaced with Tuf-Steel® sanitary gaskets which would not exhibit the creep and cold-flow (and hence leakages) normally associated with PTFE. The unique blend of virgin PTFE and passivated 316L stainless steel provides possibly the most robust gasket material for hygienic applications, which would have no problem to provide a long-lasting and effective seal in these process conditions. Additionally, Rubber Fab's experience in other sensitive food & beverage applications re-assured the customer that these gaskets would not impart any flavour into the juice.

Following a successful trial in one part of the process, Tuf-Steel® was quickly adopted across the whole plant and eliminated all of the leaks that previously caused so many problems. Instead of urgently replacing gaskets on a weekly basis, the customer is now replacing Tuf-Steel® gaskets every 2-3 months as part of scheduled maintenance.

Tri-Clamp® Screen Gaskets

If the complete elimination of particulates is critical to the CGMP in your injectable filled product, chromatography, columns, upstream particulate removal, or downstream filtration, consider Rubber Fab's full range of Fluid Filtration technology.

Rubber Fab's sanitary fluid filtration gaskets are designed to be interchangeable with standard sanitary clamp gaskets. You can choose a screen gasket in a USP Class VI elastomer or fluoroelastomer in a variety of mesh sizes.

Fluid filtration gaskets provide the most comprehensive range of stainless steel mesh and filter cloth which provide for particulate elimination to protect fill and finish sterile products. As illustrated here, you can see a progressive large to fine particulate elimination system utilizing 10, 20, 40, 60, and 100 mesh screens. Our filter cloth screen construction is Dutch Twill weave which provides for maximum strength and minimum pressure drop.

Our fluid filtration gaskets are also available in our patented metal detectable/x-ray inspectable Detectomer® products. Metal detection and x-ray inspection systems provide confidence to food and dairy manufacturers by insuring product safety outlined in the Food Modernization Act. Detectomer® fluid filtration gaskets provide the security needed to avoid recalls, waste, and costly downtime.

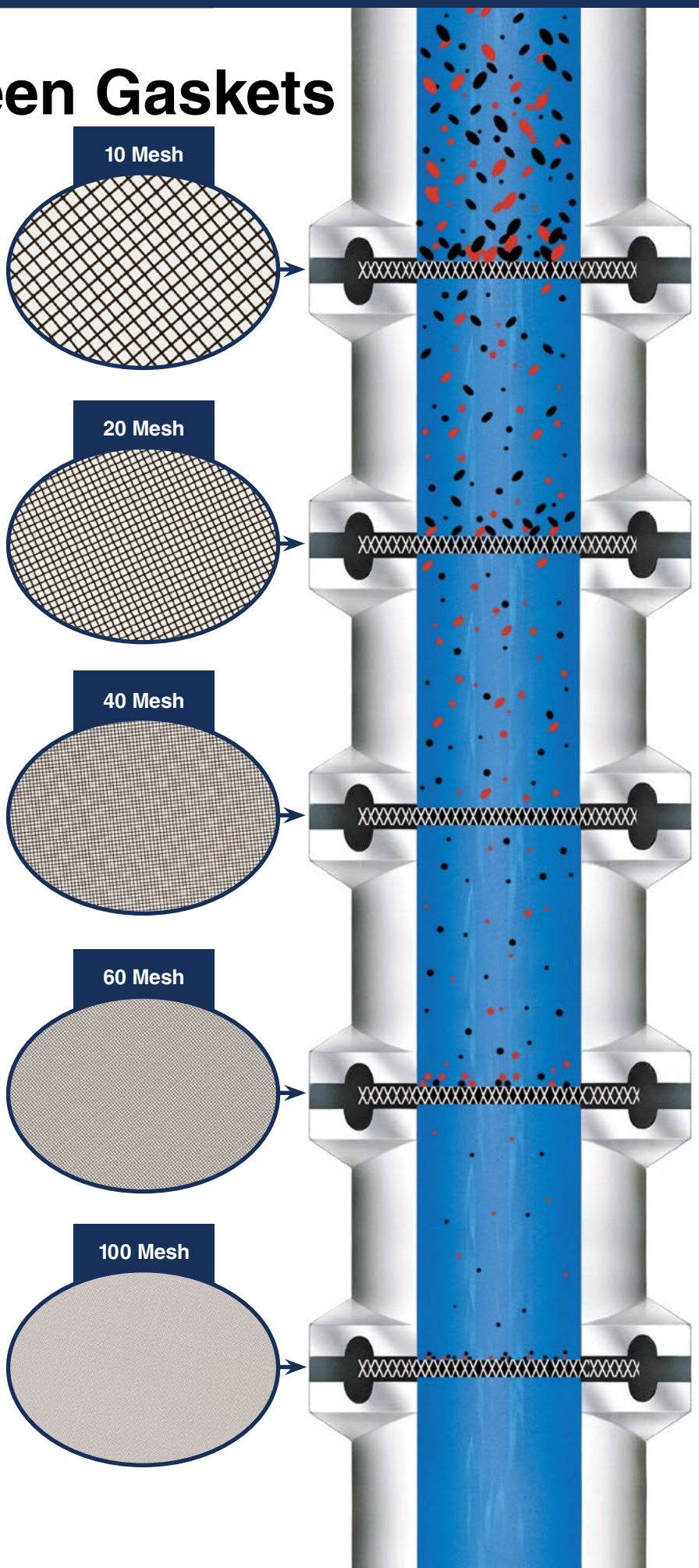
Materials Available

- FKM Fluoroelastomer
- EPDM
- Platinum Silicone
- Buna*
- PTFE (fluoropolymer)
- Detectomer®
- Tuf-Steel®

* *Buna does not pass U.S. Pharmacopeia Class VI Certification and Cytotoxicity.*

Available Sizes

- 1/2 - 6"
- Please visit www.rubberfab.com for a complete list of part numbers



Sock Screen Gaskets

Rubber Fab's Sock Screens are fluid filtration gaskets designed for greater soil capacity. The extended sock shaped mesh gasket offers up to 5 times more open area for 5 times more soil collection capability than conventional screens. They provide greater flow for situations where a large amount of particulates are involved. Due to the large capacity and open screen area, sock screens require less service therefore reducing down time and costly change outs, a major consideration with in-line processing.

While protecting expensive processing pumps and equipment from foreign matter, sock screens are especially effective in decreasing pump wear and burnout while increasing energy conservation. Regularly used in the transfer of liquids from a bulk tank to a tank truck and/or in the opposite direction, sanitary sock screens are specifically designed for high volume applications with low pressure drop.

Superior Quality

- Rubber Fab sock design ensures a tight fit while allowing continuous fluid flow and filtration
- Available in 10 mesh to 325 mesh with standard 16 mesh and 10 mesh in stock
- Electropolishing available
- Durable 316 Stainless Steel sock and a base that is impulse welded in the following elastomers:
  - EPDM
  - Silicone
  - FKM
  - Buna
- Available configurations:
  - Tri-Clamp®
  - Bevel Seat
  - Camlock
- Please visit www.rubberfab.com for a complete list of part numbers

Superior Performance

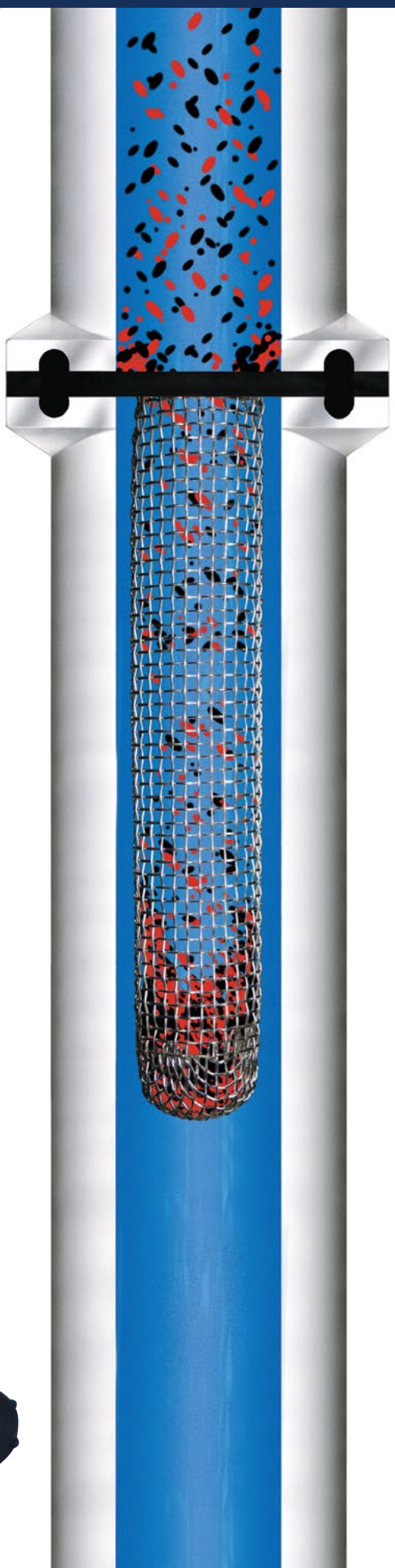
- Fully reusable
- Eliminates leaks and breakage in your lines

Superior Economy

- Dramatically increases unloading pressures for smoother operation

Applications

- In-line fluid conditioning
- Pump protection



sales@rubberfab.com

Camlock Screen Gaskets

Rubber Fab offers a complete line of Camlock Screen Gaskets specifically designed to protect your pump during transfer of materials from tanker to silo. The extended sock screen mesh gasket offers up to 5 times more open area for 5 times more soil collection capability than conventional screens.

Available Mesh

- 10 - 100 screen mesh

Available Sizes

- 1 1/2" - 4"
- Please visit www.rubberfab.com for a complete list of part numbers

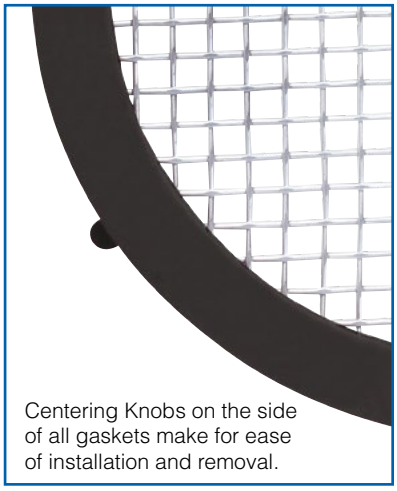
Materials Available

- FKM Fluoroelastomer
- EPDM
- Platinum Silicone
- Buna*
- Detectomer® Buna and Silicone

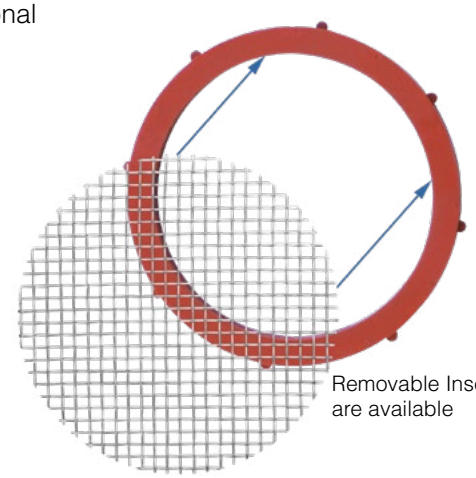
* *Buna does not pass U.S. Pharmacopeia Class VI Certification and Cytotoxicity.*

Also Available

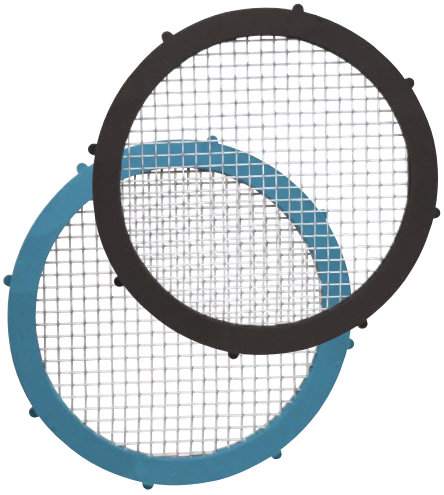
- Sock Screens are available in 6" lengths as a standard stock. Consult factory for other lengths.

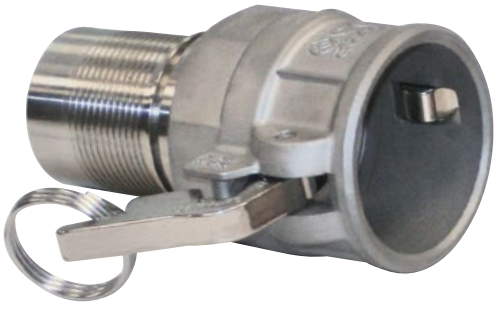


Centering Knobs on the side of all gaskets make for ease of installation and removal.



Removable Inserts are available





Female Camlock Fitting, a Camlock Screen Gasket and a Male Camlock shown above

Fluid Filtration Screen Reference Chart

Approx. Retention MICRONS	Opening (inches)	Mesh (Wires/Inch)	Open Area %	Filter Cloth Mesh	Filter Cloth Thickness
5156	0.203	4 x 4	65.9	–	–
3340	0.110	6 x 6	62.4	–	–
2464	0.097	8 x 8	60.2	–	–
1905	0.075	10 x 10	56.3	–	–
1532	0.060	12 x 12	52.4	–	–
1306	0.051	14 x 14	51.8	–	–
1130	0.045	16 x 16	50.7	–	–
979	0.039	18 x 18	48.2	–	–
864	0.034	20 x 20*	46.2	–	–
703	0.028	24 x 24	44.1	–	–
516	0.020	30 x 30	37.2	–	–
381	0.015	40 x 40*	36.0	–	–
318	0.013	50 x 50*	30.3	–	–
233	0.009	60 x 60	30.3	–	–
160	0.007	80 x 80*	31.4	–	–
140	0.006	100 x 100*	30.3	–	–
118	0.005	120 x 120	30.9	–	–
103	0.004	150 x 150	37.2	–	–
96	–	–	–	20 x 200	0.033
80	0.003	180 x 180	34.3	–	–
74	0.002	200 x 200	33.6	–	–
70	–	–	–	120 x 180	0.010
65	–	–	–	120 x 200	0.009
61	0.002	250 x 250	36.0	–	–
50	–	–	–	120 x 330	0.010
43	0.001	325 x 325	29.7	–	–
40	–	–	–	120 x 400	0.009
35	–	–	–	120 x 500	0.009
30	–	–	–	120 x 600	0.009
25	–	–	–	200 x 600	0.006
21	–	–	–	200 x 830	0.006
10	–	–	–	200 x 1150	0.006

*Stock Items in Stainless Steel 316. Also available: Hastelloy or PTFE Screen (limited mesh for removable gasket holders only).

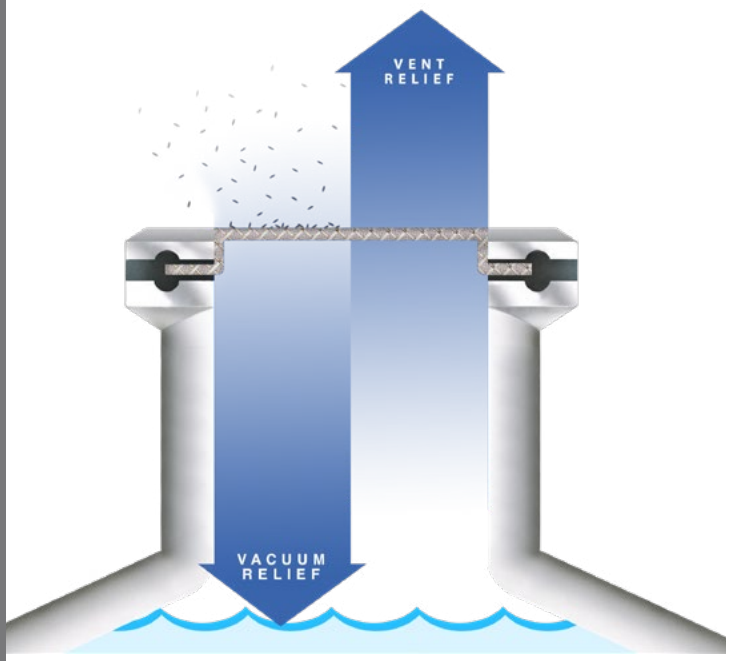
V²B Gaskets

When the need to eliminate particulates are critical to the CGMP in sterile fill products, upstream or downstream particulate removal, or filtration, you can find additional benefits with the V²B Gasket.

As an in-line pipe gasket, the V²B Gasket offers the benefits of both a sock gasket and a fine mesh screen gasket. V²B Gasket's sintered screen system provides the additional strength a fine mesh or micron screen can sometimes lack with the additional capacity for high quantity particulate removal.

The Rubber Fab V²B Gasket offers an additional answer for vacuum and pressure relief for food, beverage, pharmaceutical and processing tank venting when airborne particulate removal is required. Using a 200 mesh screen combined with a 14 mesh screen of scintered construction, Rubber Fab has created a cost effective alternative to expensive vacuum breakers and venting systems.

The V²B System is attached/connected using a standard sanitary clamp to a sanitary tank port, the same way a standard vacuum breaker is installed. Installation can be horizontal, vertical or in single or multiple port configurations (i.e. manifolds) without special fabrication or expensive tooling. The V²B screen will fit perfectly into the I.D. of a sanitary pipe and can be used for inflow fluid conditioning filtration.



Create Greater Air Flow with the V²B Gasket

The Rubber Fab V²B Gasket creates the opportunity to increase the flow of air (or decrease if necessary). By using a concentric reducer, you can provide a 2 inch pipe flange 4 inches of air flow area. And by utilizing one or multiple 2-way and/or 4-way sanitary pipe adapters, you can exponentially increase the air flow in and out of your tank system while still protecting the system from atmospheric debris; providing air flow without contamination.

A key benefit of the V²B Gasket is it's prevention from most atmospheric and environmental contamination customarily found with other venting systems. Because the V²B Gasket can provide unrestricted air flow with ultra fine filtration, you can feel secure in knowing the hygienic condition of the tank contents remain protected. With regular cleaning and maintenance, the V²B Gasket is a cost effective and incredibly simple way to provide contaminate free air flow to any tank system.

Features

- Sizes Available: 1" – 6"
- Removes atmospheric and environmental particulates
- Easy to maintain
- Easy to install
- Meets 3-A design
- 316L stainless steel construction
- V²B works as both a vacuum breaker and venting system
- Materials of construction are both lot and batch certifiable
- Elastomers available: Platinum Silicone, FKM fluoroelastomers, and EPDM
- All V²B gaskets are removable and replaceable
- Minimizes need for pre-air filters
- Available as a complete system or as individual components
  - V²B Screen
  - V²B Gasket
  - V²B Vent Cap
  - Sanitary Clamp
  - Optional Torque-Rite™

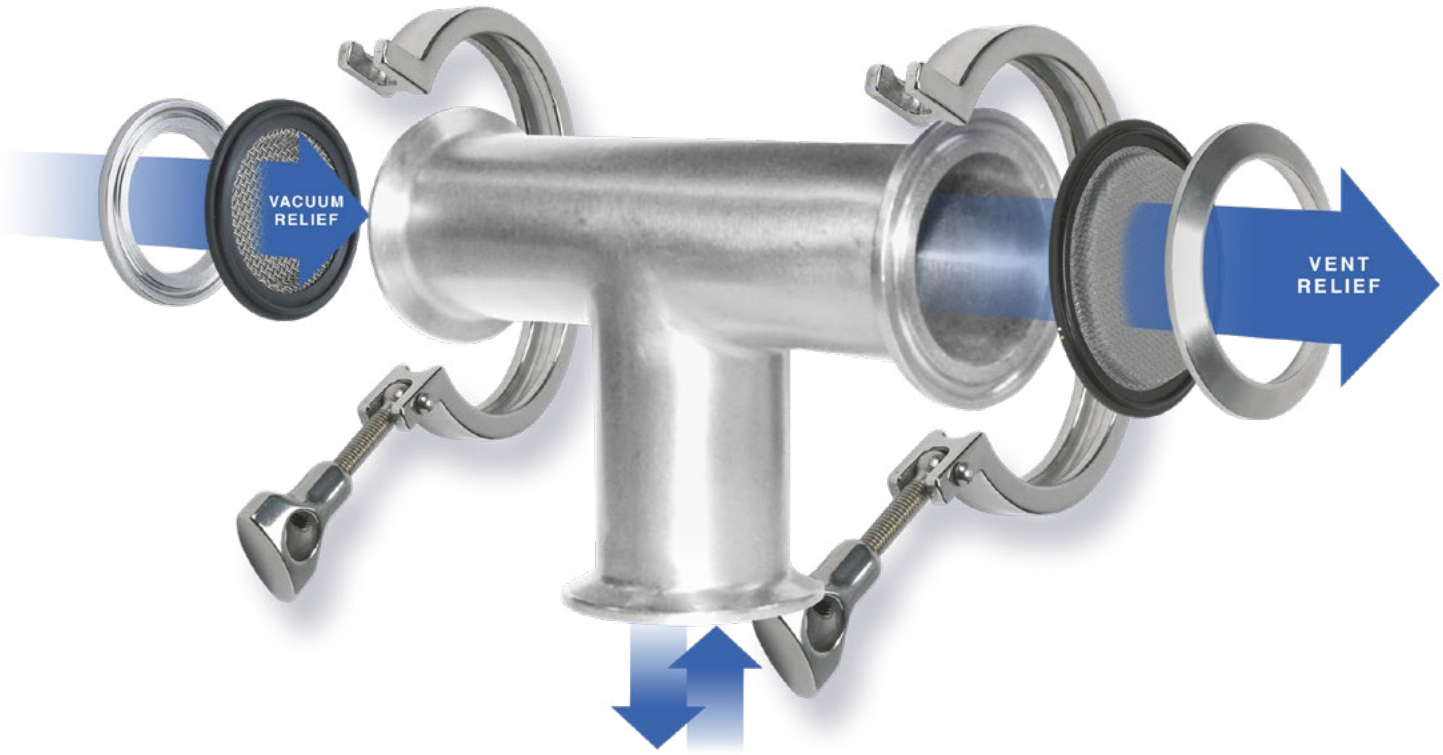
- Please visit www.rubberfab.com for a complete list of part numbers

- Use the V²B Gasket for:
  - air flow and venting
  - vacuum relief
  - particulate removal
  - in-line fluid conditioning
- Used in:
  - pharmaceutical tanks
  - food and beverage processing
  - environmental incubation
  - clean room applications
- Components available in electro polished finish
- Other mesh and micron sizes are available. Consult Rubber Fab with special needs and requirements.

Meets High Pharmaceutical Standards

- U.S. Pharmacopoeia Class VI Certification
- Cytotoxicity Criteria
- Title 21 CFR 177.2600
- USDA Sanitary Standards
- Good Manufacturing Practices (GMP)

NOTE: The V²B Gasket is not intended for use in every existing vacuum breaker and venting situation. Rubber Fab recommends testing to determine the individual system's needs and requirements and its compatibility with the V²B Gasket. Rubber Fab suggests a regular cleaning cycle in order to maintain consistent water and air flow through the V²B Gasket. Due to the inherent risks in vertical silo and tank venting, Rubber Fab does not recommend the V²B Gasket without the use of traditional vacuum breakers.



Part Number	Description
V2B-E-XXX-14&200SS	EPDM V2B Vent Gasket
V2B-SFY-XXX-14&200	FKM V2B Vent Gasket
V2B-RXPX-XXX-14&200	Platinum Silicone V2B Vent Gasket
V2B-RET-XXX-SS	V2B Stainless Steel Retaining Ring

XXX = Size, 14 & 200 is the standard mesh

Tri-Clamp® Perforated Plate Gaskets

Rubber Fab is pleased to offer a full line of perforated plate gaskets.

Perforations Available

- .033" standard. Also available in .045", .062", .094", .125", .187" .250", .375" and .500"
- Consult factory for custom hole configurations

Available Sizes

- 1/2" - 6"
- Please visit www.rubberfab.com for a complete list of part numbers

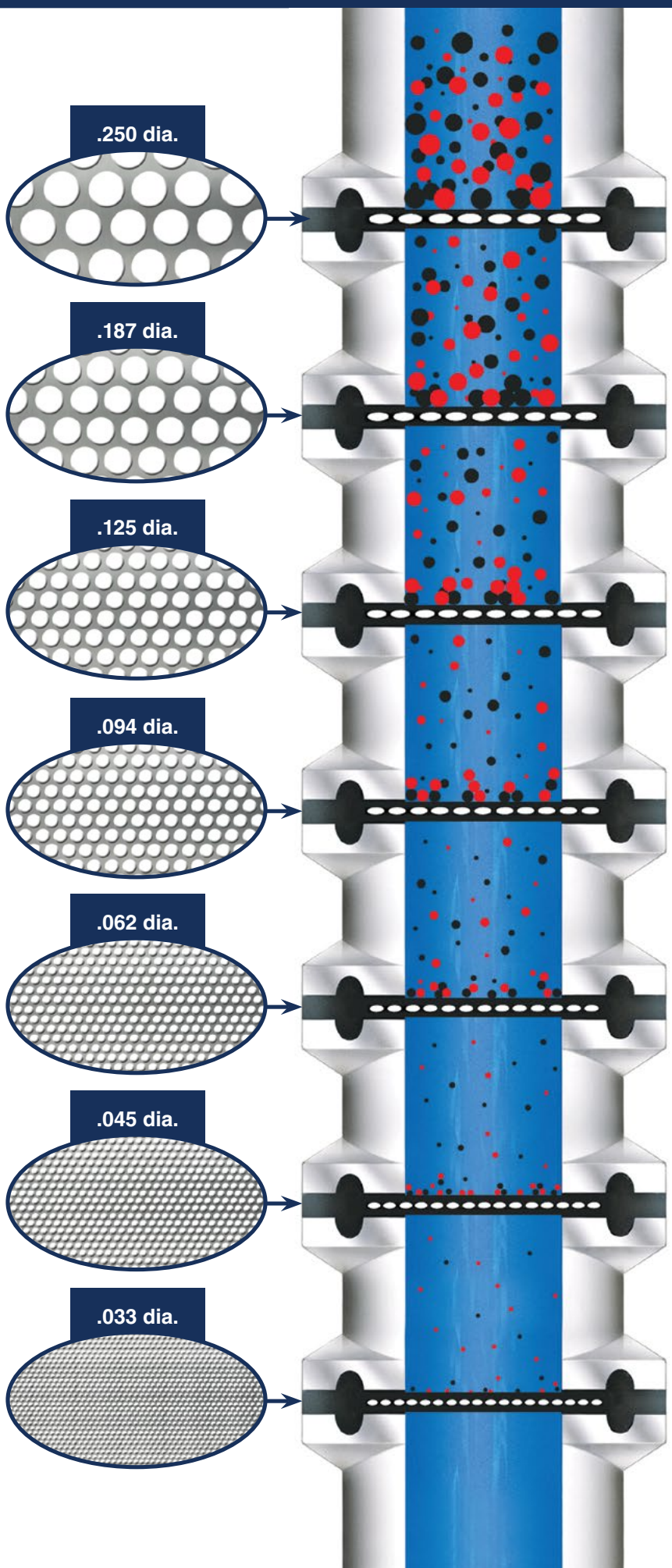
Materials Available

- FKM Fluoroelastomer
- EPDM
- Platinum Silicone
- Buna*
- PTFE (fluoropolymer)
- Tuf-Steel®

* *Buna does not pass U.S. Pharmacopeia Class VI Certification and Cytotoxicity.*

Also Available

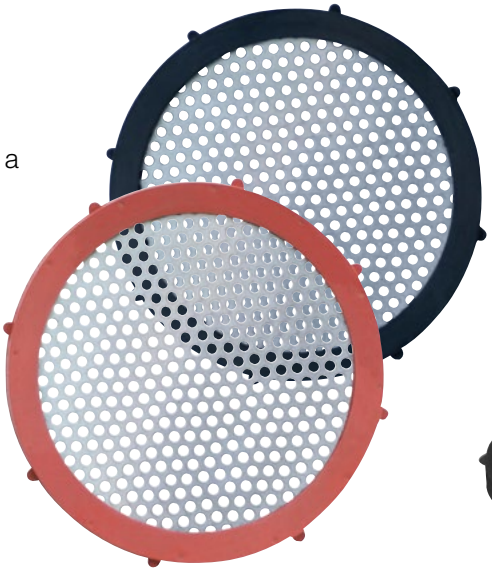
- Removable gasket holders
- Screen disc inserts
- Perforated disc inserts
- Orifice plate inserts



Camlock Perforated Plate Gaskets and Perforated Socks

New to the Rubber Fab perforated plate line of products is the Camlock perforated plate gaskets. These gaskets are ideal for large particulate filtration.

Reusable Screens, Socks and Plates



Perforations Available

- Available in .033", .045", .062", .094", .125", .187" .250", .375" and .500" perforations (minimums apply)
- Consult factory for custom hole configurations

Available Sizes

- 1-1/2" - 4"
- Please visit www.rubberfab.com for a complete list of part numbers

Materials Available

- FKM Fluoroelastomer
- EPDM
- Platinum Silicone
- Buna*

* *Buna does not pass U.S. Pharmacopeia Class VI Certification and Cytotoxicity.*

Also Available

- 6" lengths as a standard stock
- Electropolished
- Orifice Plate style

Perforated Plate Reference Chart

Diameter Decimals	Diameter Fraction inches	Center Type	Holes per sq. inch	Open Area %
.033"		.055" STRAIGHT LINE CENTERS	330	28%
.045"		.066" STRAIGHT LINE CENTERS	225	36%
.062"	1/16"	.094" STAGGERED LINE CENTERS	132	41%
.094"	3/32"	.156" STAGGERED LINE CENTERS	46	33%
.125"	1/8"	.187" STAGGERED LINE CENTERS	33	40%
.187"	3/16"	.250" STAGGERED LINE CENTERS	18	50%
.250"	1/4"	.375" STAGGERED LINE CENTERS	330	58%

Orifice Plates

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

Rubber Fab's Orifice Plates can advance your system's performance, adjust flow rates, balance backflow and equalize back pressure during SIP procedures. All are achievable benefits while maintaining sanitary conditions. Vertical styles, which are funnel shaped for optimal vertical drainage, are also available.

Our innovative Orifice Plate line includes a complete selection from 1/2" through 6" size range in both concentric and eccentric drilled plates as well as a solid plate design. All Orifice Plates are manufactured from 316L Stainless Steel and are available in electropolish construction.

Tabbed Orifice Plates and clamps are available in 1/2" – 6". Tabs help to acknowledge that an orifice plate is "in the line" and are engraved to indicate the hole diameter. This is a major safety consideration.

Features

- Sizes available: Mini to 6"
- Most standard drilled bore sizes available
- Self draining
- Flow reducer
- Balance backpressure
- Blank plates are standard
- All Buna stocked with 1/8" hole
- Available with or without tab
- Engraved tabs
- Standard 20RA or better
- Electropolish finish available 15RA or better
- Custom cut pattern also available

Materials Available

Rubber Fab manufactures all models of our Orifice Plates in the following elastomers:

- FKM Fluoroelastomer
- Platinum Silicone
- EPDM
- Buna
- PTFE (fluoropolymer)
- Tuf-Steel®
- Please visit www.rubberfab.com for a complete list of part numbers

Meets High Pharmaceutical Standards

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

Manway Gaskets and Profiles

Manway gaskets are an industry standard when it comes to large tanks for filling and storing liquids. Manway gaskets can be used in a wide array of applications for the food, beverage, dairy and pharmaceutical industries. Manway gaskets can be vulcanized to any dimension, consult factory for more information.

Materials Available

- Silicone
- Detectomer® Silicone

Profiles Available

- Stocking all profiles shown
- Custom profiles available, consult factory

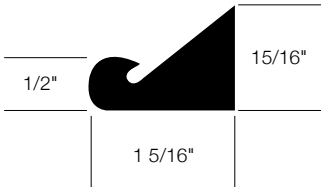
Certifications

- FDA 21 CFR 177.2600
- USP Class VI
- Animal Derived Ingredient (ADI) Free

Crepaco
17" ID x 18 1/2" OD

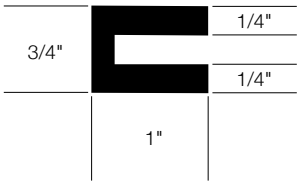
Crepaco
18" ID x 19 1/2" OD

Pfaudler 3200650
16" ID x 18 5/8" OD

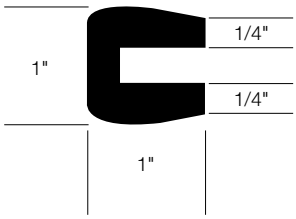


Crepaco
18" ID x 20 1/4" OD

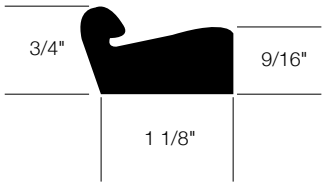
Heil 22-B-945
15 3/4" ID x 17 3/4" OD



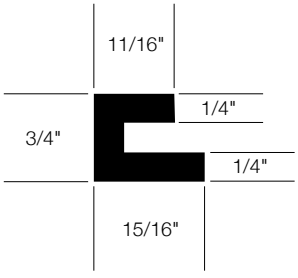
Cherry-Burrell 41185-B
16 1/2" ID x 18 1/2" OD



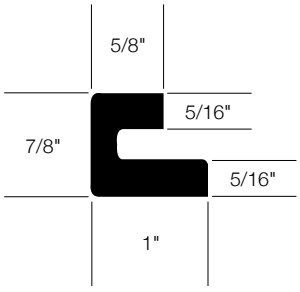
Cherry-Burrell BB-18015-A
16 1/2" ID x 18 3/4" OD



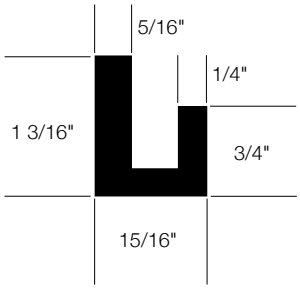
Arnold ST454
16 1/2" ID x 18" OD



Walker HT-3C
17" ID x 19" OD



Damrow T-564-J-2
18 3/8" ID x 20 1/4" OD



Case Study: Meat Processing Plant Detectomer® Manway Gasket

Industry
Food Processing – Meat Massaging

Customer
A global company providing equipment and service to the largest Food Processors in the world.

Background
The food processing plant had 11 types of Meat Massager Machines which had been designed using clear silicone manway gaskets. For spare parts and service they were partnering with the OEM who, as a major supplier of food processing equipment to the world's largest meat processors, considered performance and reliability to be fundamental to their value proposition. Therefore, any modification required careful and open 3-way collaboration between Rubber Fab, the OEM and the End-User.

Challenges Faced
Meat massaging is an important but challenging process step for optimum curing, water binding and ingredient distribution in meat and poultry products. The plant was finding that after multiple cycles, the manway seals on the massage units were breaking down due to the physical stresses and strains placed on them during the process (friction, abrasion, and impact from meat chunks) and also repeated cycles (opening and closing of manways). Pieces of manway seals were clearly missing during maintenance checks, but the clear silicone could not be seen during any visual inspection and process quality checks. The conclusion was that particles of the gasket were falling into the process, thus creating contamination events and a high risk of product recalls.

OPERATING CONDITIONS
1. Max Temperature During Process = 80°F / 27°C
2. Max Temperature During COP = 160°F / 71°C
3. Pressure: Partial Vacuum = 0.07 PSI / 5 mbar

Solution and Benefits
Through in-depth discussion and collaboration with both the OEM Engineering Team and the End-User Quality Management Team it was determined that the best solution was to design a customized silicone manway gasket using Detectomer® technology. Detectomer® materials are not only metal detectable and X-ray inspectable, but they also meet all necessary industry standards to ensure full compliance. A full metal detection system was already in place as part of the End-User's HACCP programme, but X-ray Inspection equipment was also installed along the processing line to ensure that any fragments could be detected before product going out to the consumer.

The outcome is that the seal reliability has been extended, and the end-user response has been so positive that they have implemented the Detectomer® gasket technology across their facility to enjoy the benefits of more effective and safer process sealing. The OEM is extremely satisfied that Rubber Fab was willing and able to modify a standard gasket profile to create a much needed sealing solution which keeps the End-Use customer efficient, safe and compliant.

Tri-Clamp® Type I Gaskets Best for Food Applications

Buna Tri-Clamp® Gaskets

- The most versatile elastomer due to its resistance to many chemicals
- Has good physical properties
- Material of choice for food applications
- Operating temperature of -30°F to 200°F (-34°C to 93°C)
- Only elastomer that is not ADI® Free
- Also available in Detectomer® Tri-Clamp® gaskets
- Please visit www.rubberfab.com for a complete list of part numbers

Buna

EPDM Tri-Clamp® Gaskets

- Works well in both low and high temperatures
- Good resistance to chemicals
- Is peroxide cured
- Operating temperature of -30°F to 300°F (-34°C to 149°C)
- Also available in Detectomer® Tri-Clamp® gaskets
- Please visit www.rubberfab.com for a complete list of part numbers

EPDM

FKM Tri-Clamp® Gaskets

- Well suited for prolonged exposure to high operating temperatures
- Good for steam applications
- Operating temperature of -30°F to 400°F (-34°C to 204°C)
- Also available in Detectomer® Tri-Clamp® gaskets
- Please visit www.rubberfab.com for a complete list of part numbers

All gaskets are shipped with Certificates of Compliance based on the elastomeric material ordered.

FKM

Rubber Fab Value Added Services

What really sets Rubber Fab apart from other manufacturers are our value added services.

Coding & Labeling

Time is money. Don't waste valuable time searching for sanitary components in your process line. “Identify” your system components using one of Rubber Fab’s System Identification products.

Laser Engraved Products

Gaskets can be engraved to insure process line identification and provide complete cradle to grave lot and batch traceability. Tabbed orifice plate tabs can be laser etched for easy line identification.

NOTE: Consult factory for spacing and size limitations on all etched products.

Inline Strainers

Today's processing pipe lines require strainers with an increased capacity to meet production needs of state-of-the-art Food, Beverage and Pharmaceutical manufacturing facilities.

Rubber Fab's sanitary strainers protect valuable processing equipment (pumps, spray nozzles, needle valves, heat exchangers and homogenizers) and have been specifically designed to meet the most stringent process requirements. Our sanitary strainer products are manufactured using 316L stainless steel and are designed for maximum installation flexibility, sanitary construction, and unrestricted flow.

Rubber Fab's Hi Capacity sanitary strainers feature a machined neck line, instead of a spun neckline; a design improvement that allows higher operating pressures and greater product out. Our Hi Capacity strainers also provide triple the effective filter area as standard Inline and Side Inlet units; increasing run time, and reducing costly down-time.

Rubber Fab's Inline and Side Inlet sanitary strainers are available in single length and double length models, both providing cost effective filtration. Rubber Fab's strainer housing accepts a wide range of re-usable strainer elements, wire mesh overscreens, sks overscreens, wedge wire and disposable filter socks. Rubber Fab's Side Inlet sanitary strainers use the same wire mesh overscreens and filter socks as the Inline units. The Side Inlet, however, is specially designed to accommodate piping configurations using a side inlet.

Rubber Fab's wire Mesh basket liners are continuously resistance spot welded inside the perforated support basket, providing a snag free seam. When in use the mesh lined perforated basket strainer seats on a machined neckline inside the housing and the strainer bucket's handle rests against the underside of the top cover. This design ensures that product cannot bypass the mesh lined strainer basket.

Side Inlet Strainer

Inline Strainer

Inline Strainer Cutaway

Inline Strainer Components

Complete Strainer Assemblies	Item # 1" TC Size	Item # 1 1/2" TC Size	Item # 2" TC Size	Item # 2 1/2" TC Size	Item # 3" TC Size
Single Length (15 3/4") 1/8" Holes	RFILS-100-S-.125-316	RFILS-150-S-.125-316	RFILS-200-S-.125-316	RFILS-250-S-.125-316	RFILS-300-S-.125-316
Double Length (35 3/8") 1/8" Holes	RFILS-100-D-.125-316	RFILS-150-D-.125-316	RFILS-200-D-.125-316	RFILS-250-D-.125-316	RFILS-300-D-.125-316
Single Length (15 3/4") 1/4" Holes	RFILS-100-S-.250-316	RFILS-150-S-.250-316	RFILS-200-S-.250-316	RFILS-250-S-.250-316	RFILS-300-S-.250-316
Double Length (15 3/4") 1/4" Holes	RFILS-100-S-.250-316	RFILS-150-S-.250-316	RFILS-200-S-.250-316	RFILS-250-S-.250-316	RFILS-300-S-.250-316

Strainer Individual Components*	Item # 1" TC Size	Item # 1 1/2" TC Size	Item # 2" TC Size	Item # 2 1/2" TC Size	Item # 3" TC Size
A - Outlet Assembly	RFILS-100-OCAP-316L	RFILS-150-OCAP-316L	RFILS-200-OCAP-316L	RFILS-250-OCAP-316L	RFILS-300-OCAP-316L
B - Sanitary TC Gasket (Buna)	40MPU-400	40MPU-400	40MPU-400	40MVFU-400	40MVFU-400
B - Sanitary TC Gasket (FKM)	40MPSFY-400	40MPSFY-400	40MPSFY-400	40MVFSFY-400	40MVFSFY-400
B - Sanitary TC Gasket (EPDM)	40MPE-400	40MPE-400	40MPE-400	40MPFE-400	40MPFE-400
C - Clamp	13MHHM-304-400	13MHHM-304-400	13MHHM-304-400	13MHHM-V-304-400	13MHHM-V-304-400

Strainer Individual Components** D - Perforated Core	Item # 1" TC Size	Item # 1 1/2" TC Size	Item # 2" TC Size
3" Dia (Single Length 15 3/4") 1/8" Dia Holes	RFILS-100-PC-S-.125-316L	RFILS-150-PC-S-.125-316L	RFILS-200-PC-S-.125-316L
3" Dia (Single Length 15 3/4") 1/4" Dia Holes	RFILS-100-PC-S-.250-316L	RFILS-150-PC-S-.250-316L	RFILS-200-PC-S-.250-316L
3" Dia (Double Length 35 3/8") 1/8" Dia Holes	N/A	RFILS-150-PC-D-.125-316L	RFILS-200-PC-D-.125-316L
3" Dia (Double Length 35 3/8") 1/4" Dia Holes	N/A	RFILS-150-PC-D-.250-316L	RFILS-200-PC-D-.250-316L

Strainer Individual Components** D - Perforated Core	Item # 2 1/2" TC Size	Item # 3" TC Size
3.5" Dia (Single Length 15 3/4") 1/8" Dia Holes	RFILS-250-PC-S-.125-316L	RFILS-3000-PC-S-.125-316L
3.5" Dia (Single Length 15 3/4") 1/4" Dia Holes	RFILS-250-PC-S-.250-316L	RFILS-300-PC-S-.250-316L
3.5" Dia (Double Length 35 3/8") 1/8" Dia Holes	RFILS-250-PC-D-.125-316L	RFILS-300-PC-D-.125-316L
3.5" Dia (Double Length 35 3/8") 1/4" Dia Holes	RFILS-250-PC-D-.250-316L	RFILS-300-PC-D-.250-316L

Strainer Individual Components*	Item # 1" TC Size	Item # 1 1/2" TC Size	Item # 2" TC Size	Item # 2 1/2" TC Size	Item # 3" TC Size
E - Distributor Cap	RFILS-100-DCAP-316L	RFILS-150-DCAP-316L	RFILS-200-DCAP-316L	RFILS-250-DCAP-316L	RFILS-300-DCAP-316L
F - Spring	RFICS-100-SPR-316L	RFICS-100-SPR-316L	RFICS-100-SPR-316L	RFICS-100-SPR-316L	RFICS-100-SPR-316L
G - Filter Body (Single Length 15 3/4")	RFILS-100-FBDY-S-316L	RFILS-150-FBDY-S-316L	RFILS-200-FBDY-S-316L	RFILS-250-FBDY-S-316L	RFILS-300-FBDY-S-316L
G - Filter Body (Double Length 35 3/8")	RFILS-100-FBDY-D-316L	RFILS-150-FBDY-D-316L	RFILS-200-FBDY-D-316L	RFILS-250-FBDY-D-316L	RFILS-300-FBDY-D-316L

* See labeled strainer components on page 28. For Side Inlet Strainer Part Numbers, please consult factory.

Inline Strainer Wire Mesh Over Screens

1", 1 1/2" and 2" Sanitary Tri-Clamp® Gasket Line Sizes
Nominal Dimensions: Single Length 3" dia x 10 7/8" long • Double Length: 3" dia x 30 3/4" long

Material: 316L SS Total Over Screen Surface Area					(102.49 SQ. IN.)	(289.81 SQ. IN.)
Mesh	Wire Dia (Inches)	Opening Size (Inches)	Opening Size (Microns)	Open Area %	Single Length	Double Length
10 x 10	0.025	0.075	1905	56.30	RFILS-1/1.5/2-OS-S-10SS	RFILS-1/1.5/2-OS-D-10SS
12 x 12	0.023	0.060	1524	51.80	RFILS-1/1.5/2-OS-S-12SS	RFILS-1/1.5/2-OS-D-12SS
14 x 14	0.020	0.051	1295	51.00	RFILS-1/1.5/2-OS-S-14SS	RFILS-1/1.5/2-OS-D-14SS
16 x 16	0.018	0.045	1130	50.70	RFILS-1/1.5/2-OS-S-16SS	RFILS-1/1.5/2-OS-D-16SS
18 x 18	0.017	0.039	980	48.30	RFILS-1/1.5/2-OS-S-18SS	RFILS-1/1.5/2-OS-D-18SS
20 x 20	0.016	0.034	864	46.20	RFILS-1/1.5/2-OS-S-20SS	RFILS-1/1.5/2-OS-D-20SS
24 x 24	0.014	0.028	704	44.20	RFILS-1/1.5/2-OS-S-24SS	RFILS-1/1.5/2-OS-D-24SS
30 x 30	0.013	0.020	516	37.10	RFILS-1/1.5/2-OS-S-30SS	RFILS-1/1.5/2-OS-D-30SS
40 x 40	0.010	0.015	381	36.00	RFILS-1/1.5/2-OS-S-40SS	RFILS-1/1.5/2-OS-D-40SS
50 x 50	0.009	0.011	280	30.30	RFILS-1/1.5/2-OS-S-50SS	RFILS-1/1.5/2-OS-D-50SS
60 x 60	0.008	0.009	234	30.50	RFILS-1/1.5/2-OS-S-60SS	RFILS-1/1.5/2-OS-D-60SS
80 x 80	0.006	0.007	178	31.40	RFILS-1/1.5/2-OS-S-80SS	RFILS-1/1.5/2-OS-D-80SS
100 x 100	0.005	0.006	140	30.30	RFILS-1/1.5/2-OS-S-100SS	RFILS-1/1.5/2-OS-D-100SS
120 x 120	0.004	0.005	117	30.70	RFILS-1/1.5/2-OS-S-120SS	RFILS-1/1.5/2-OS-D-120SS
150 x 150	0.003	0.004	104	37.40	RFILS-1/1.5/2-OS-S-150SS	RFILS-1/1.5/2-OS-D-150SS
200 x 200	0.002	0.003	74	33.60	RFILS-1/1.5/2-OS-S-200SS	RFILS-1/1.5/2-OS-D-200SS

2 1/2" and 3" Sanitary Tri-Clamp® Gasket Line Sizes
Nominal Dimensions: Single Length 3" dia x 10 7/8" long • Double Length: 3" dia x 30 3/4" long

Material: 316L SS Total Over Screen Surface Area					(119.57 SQ. IN.)	(388.00 SQ. IN.)
Mesh	Wire Dia (Inches)	Opening Size (Inches)	Opening Size (Microns)	Open Area %	Single Length	Double Length
10 x 10	0.025	0.075	1905	56.30	RFILS-2.5/3-OS-S-10SS	RFILS-2.5/3-OS-D-10SS
12 x 12	0.023	0.060	1524	51.80	RFILS-2.5/3-OS-S-12SS	RFILS-2.5/3-OS-D-12SS
14 x 14	0.020	0.051	1295	51.00	RFILS-2.5/3-OS-S-14SS	RFILS-2.5/3-OS-D-14SS
16 x 16	0.018	0.045	1130	50.70	RFILS-2.5/3-OS-S-16SS	RFILS-2.5/3-OS-D-16SS
18 x 18	0.017	0.039	980	48.30	RFILS-2.5/3-OS-S-18SS	RFILS-2.5/3-OS-D-18SS
20 x 20	0.016	0.034	864	46.20	RFILS-2.5/3-OS-S-20SS	RFILS-2.5/3-OS-D-20SS
24 x 24	0.014	0.028	704	44.20	RFILS-2.5/3-OS-S-24SS	RFILS-2.5/3-OS-D-24SS
30 x 30	0.013	0.020	516	37.10	RFILS-2.5/3-OS-S-30SS	RFILS-2.5/3-OS-D-30SS
40 x 40	0.010	0.015	381	36.00	RFILS-2.5/3-OS-S-40SS	RFILS-2.5/3-OS-D-40SS
50 x 50	0.009	0.011	280	30.30	RFILS-2.5/3-OS-S-50SS	RFILS-2.5/3-OS-D-50SS
60 x 60	0.008	0.009	234	30.50	RFILS-2.5/3-OS-S-60SS	RFILS-2.5/3-OS-D-60SS
80 x 80	0.006	0.007	178	31.40	RFILS-2.5/3-OS-S-80SS	RFILS-2.5/3-OS-D-80SS
100 x 100	0.005	0.006	140	30.30	RFILS-2.5/3-OS-S-100SS	RFILS-2.5/3-OS-D-100SS
120 x 120	0.004	0.005	117	30.70	RFILS-2.5/3-OS-S-120SS	RFILS-2.5/3-OS-D-120SS
150 x 150	0.003	0.004	104	37.40	RFILS-2.5/3-OS-S-150SS	RFILS-2.5/3-OS-D-150SS
200 x 200	0.002	0.003	74	33.60	RFILS-2.5/3-OS-S-200SS	RFILS-2.5/3-OS-D-200SS

Rubber Fab Hygienic (HYG) Over Screens are comparable to traditional Wire Mesh Screens. The Hygienic Over Screens have similar opening sizes and open area percentages as wire mesh only Hygienic Over Screens are punched from stainless steel sheeting instead of stainless steel woven wire. Wire Mesh Screens have wire intersections, the wires touch each other where they intersect. The Hygienic Over Screen has no wire intersections.

Hygienic (HYG) Wire Mesh Over Screens

1", 1 1/2" and 2" Sanitary Tri-Clamp® Gasket Line Sizes
Nominal Dimensions: Single Length 3" dia x 10 7/8" long • Double Length: 3" dia x 30 3/4" long

Material: 316L SS Total Over Screen Surface Area										(102.49 SQ. IN.)	(289.81 SQ. IN.)
Mesh	Wire Dia (Inches)	Opening Size (Inches)	Opening Size (Microns)	Open Area %	HYG Product	Opening Size (Inches)	Opening Size (Microns)	Material Thick-ness	Open Area %	Single Length	Double Length
12 x 12	0.023	0.060	1524	51.80	HYG-12	0.060	1499	0.020	52.00	RFILS-1/1.5/2-OSHYG-S-12SS	RFILS-1/1.5/2-OSHYG-D-12SS
14 x 14	0.020	0.051	1295	51.00	HYG-14	0.518	1316	0.020	50.00	RFILS-1/1.5/2-OSHYG-S-14SS	RFILS-1/1.5/2-OSHYG-D-14SS
16 x 16	0.018	0.045	1130	50.70	HYG-16	0.045	1148	0.024	48.00	RFILS-1/1.5/2-OSHYG-S-16SS	RFILS-1/1.5/2-OSHYG-D-16SS
18 x 18	0.017	0.039	980	48.30	HYG-18	0.039	998	0.016	46.00	RFILS-1/1.5/2-OSHYG-S-18SS	RFILS-1/1.5/2-OSHYG-D-18SS
20 x 20	0.016	0.034	864	46.20	HYG-20	0.033	848	0.016	47.00	RFILS-1/1.5/2-OSHYG-S-20SS	RFILS-1/1.5/2-OSHYG-D-20SS
24 x 24	0.014	0.028	704	44.20	HYG-24	0.030	749	0.016	45.00	RFILS-1/1.5/2-OSHYG-S-24SS	RFILS-1/1.5/2-OSHYG-D-24SS
30 x 30	0.013	0.020	516	37.10	HYG-30	0.022	549	0.012	40.00	RFILS-1/1.5/2-OSHYG-S-30SS	RFILS-1/1.5/2-OSHYG-D-30SS
40 x 40	0.010	0.015	381	36.00	HYG-40	0.016	399	0.012	38.00	RFILS-1/1.5/2-OSHYG-S-40SS	RFILS-1/1.5/2-OSHYG-D-40SS
70 x 70	0.007	0.008	198	29.80	HYG-70	0.008	198	0.005	28.00	RFILS-1/1.5/2-OSHYG-S-70SS	RFILS-1/1.5/2-OSHYG-D-70SS
80 x 80	0.006	0.007	178	31.40	HYG-80	0.007	178	0.005	26.00	RFILS-1/1.5/2-OSHYG-S-80SS	RFILS-1/1.5/2-OSHYG-D-80SS
100 x 100	0.005	0.006	140	30.30	HYG-100	0.005	132	0.004	24.00	RFILS-1/1.5/2-OSHYG-S-100SS	RFILS-1/1.5/2-OSHYG-D-100SS

2 1/2" and 3" Sanitary Tri-Clamp® Gasket Line Sizes
Nominal Dimensions: Single Length 3" dia x 10 7/8" long • Double Length: 3" dia x 30 3/4" long

Material: 316L SS Total Over Screen Surface Area										(102.49 SQ. IN.)	(289.81 SQ. IN.)
Mesh	Wire Dia (Inches)	Opening Size (Inches)	Opening Size (Microns)	Open Area %	HYG Product	Opening Size (Inches)	Opening Size (Microns)	Material Thick-ness	Open Area %	Single Length	Double Length
12 x 12	0.023	0.060	1524	51.80	HYG-12	0.059	1499	0.020	52.00	RFILS-2.5/3-OSHYG-S-12SS	RFILS-2.5/3-OSHYG-D-12SS
14 x 14	0.020	0.051	1295	51.00	HYG-14	0.052	1316	0.020	50.00	RFILS-2.5/3-OSHYG-S-14SS	RFILS-2.5/3-OSHYG-D-14SS
16 x 16	0.018	0.045	1130	50.70	HYG-16	0.045	1148	0.024	48.00	RFILS-2.5/3-OSHYG-S-16SS	RFILS-2.5/3-OSHYG-D-16SS
18 x 18	0.017	0.039	980	48.30	HYG-18	0.039	998	0.016	46.00	RFILS-2.5/3-OSHYG-S-18SS	RFILS-2.5/3-OSHYG-D-18SS
20 x 20	0.016	0.034	864	46.20	HYG-20	0.033	848	0.016	47.00	RFILS-2.5/3-OSHYG-S-20SS	RFILS-2.5/3-OSHYG-D-20SS
24 x 24	0.014	0.028	704	44.20	HYG-24	0.030	749	0.016	45.00	RFILS-2.5/3-OSHYG-S-24SS	RFILS-2.5/3-OSHYG-D-24SS
30 x 30	0.013	0.020	516	37.10	HYG-30	0.022	549	0.012	40.00	RFILS-2.5/3-OSHYG-S-30SS	RFILS-2.5/3-OSHYG-D-30SS
40 x 40	0.010	0.015	381	36.00	HYG-40	0.016	399	0.012	38.00	RFILS-2.5/3-OSHYG-S-40SS	RFILS-2.5/3-OSHYG-D-40SS
70 x 70	0.007	0.008	198	29.80	HYG-70	0.008	198	0.005	28.00	RFILS-2.5/3-OSHYG-S-70SS	RFILS-2.5/3-OSHYG-D-70SS
80 x 80	0.006	0.007	178	31.40	HYG-80	0.007	178	0.005	26.00	RFILS-2.5/3-OSHYG-S-80SS	RFILS-2.5/3-OSHYG-D-80SS
100 x 100	0.005	0.006	140	30.30	HYG-100	0.005	132	0.004	24.00	RFILS-2.5/3-OSHYG-S-100SS	RFILS-2.5/3-OSHYG-D-100SS