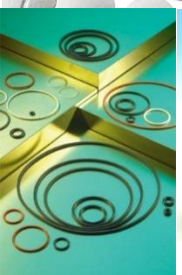
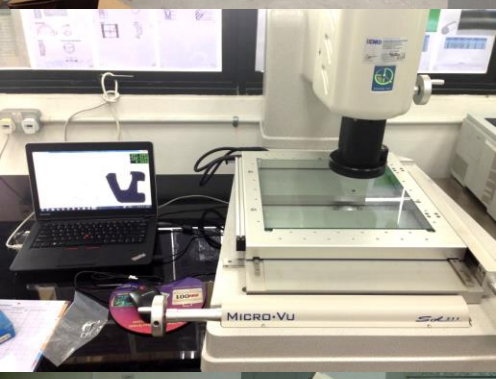
Material Integrated Solutions

Sanitary Performance Sealing





Introduction

Material Integrated Solutions today provides a comprehensive range of seals and hoses to serve these specialized industries:

- Pharmaceutical
- Food & Beverages
- Life Sciences

Seals and hoses are used in process equipment, pumps, valves, pipe work, couplings, reaction vessels and bulk containers must be able to cope with a wide range of process media, potent active pharmaceutical ingredients (APIs) and aggressive cleaning and sterilising processes. Our products overcome these challenges for optimum performance and reliability. Our materials are certified to **3-A Standard 18-03, FDA CFR 21.177 and USP Cl VI.**

Quality is at the core of everything we do. Production breakdowns due to seal and hose problems can cause huge losses. Therefore, we make every effort to deliver high quality products that meet your needs.

We take pride in our competitive pricing and on-time delivery anywhere in the world. When our customers work with us, they also enjoy top notch value-added services:

- Design and Technical Support
- Special Packaging
- Seal Kitting
- Custom Labeling
- Managed and Consigned Inventory
- Lab Testing

We strive to create the best value for you because we know you can tell the difference.

Material Integrated Solutions - Your Partner in Sanitary Performance Sealing.

Production

Applications of seals and hoses & fittings can be found in:

• Extreme pressure more than 90,000psi – such as High Pressure Processing (HPP) for Pasteuriseration

• High Sliding Speed – such as Meat Cutting Unit

• High Temperature and High Pressure dough injection – such as Waffles Production Unit

• High Abrasion – such as Filling Lines for Toothpaste

• Very Low or No Lubrication – such as Tablet Pressing Process

• Others include uses in flow mater, valve, pumps autoclave, mixer, disperser, dryer, etc that require strict compliance to 3-A, FDA and USP regulations.

With such wide range of applications, other than working with our principals, we have a complete range of production facilities to serve especially the high-mix, low-volume production with the fastest turn around time.

Our facilities are equipped with the latest technology to produce high quality seals quickly, efficiently and flexibly. Our capabilities include:-

• Over 100 general and high performance elastomeric and plastic grades

• Compression Molding up to 50” diameter in a single operation

• Elastomer impregnation of fabrics and fibers for the production of specialized composite materials

• Bonding of Metal to PTFE and Elastomer – with etching and chemical coating of metal surfaces to achieve optimal bond strength

• Compound development to meet exacting customer specifications

• Lab Testing of every raw material batch before release for production

• CNC machining of Metal, Engineering Plastic and Elastomer

• CNC cutting of Rubber and PTFE gaskets.

Sanitary Gasket

Clamp Gasket / Bevel Seat / I-Line / Q-Line / Schedule 5 / Orifice Plate / Body / Screen / Casing / DC-40 / Tank / Acrylic Sight Glass / John Perry / Silverback / Tri-Clamp / Envelope / Flanged / APC / ISO / DIN / O-Ring

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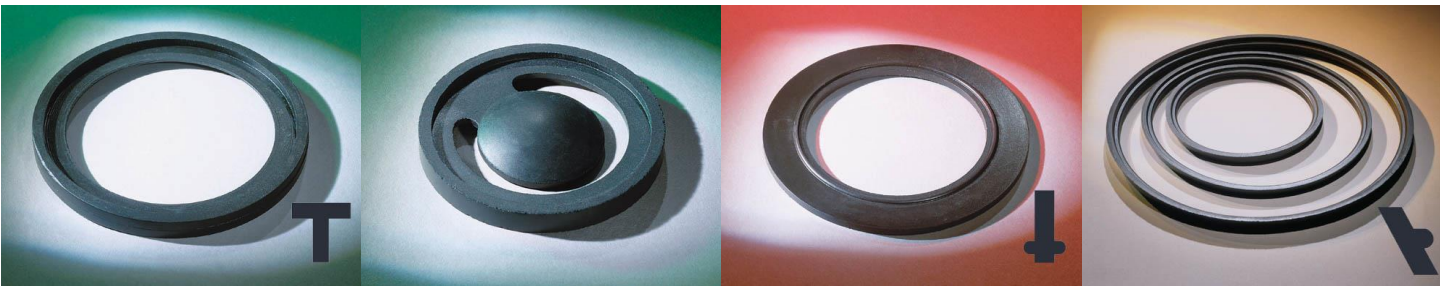


Diaphragm

Our replacement diaphragms are precision fit for ITT, Gemu and Saunders valves. Compliant to FDA and USP VI.

Sanitary Hose

Rubber Hose / PTFE Lined Hose / Silicone Hose / PVC Hose / Food Hose / Specialty Tubing / Molded Hose Compliant to 3-A, FDA and USP VI

Fitting

Sanitary Fitting / Reuseable Sanitary Fitting / Molded Ends

Cord & Sheet

Extruded Cord / Spliced & Vulcanised / Sheet
Compliant to FDA and USP VI.

Clamp

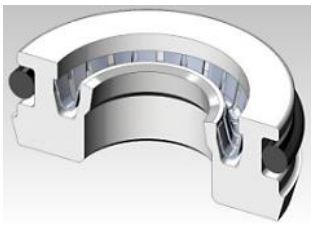
Hinged 1-Pin / Hinged 2-Pin / 2-Bolt High Pressure

Vibration Control

Clip Strip / U-Bolts

Seal

Spring Loaded Seal / Face Seal / Flanged Seal / Rotary Seal / Backup Ring / Seal Kit / Encapsulated O-Ring



Materials

FKM (Viton)

18°F to +450°F

Featuring excellent resistance to heat, aliphatic and aromatic hydrocarbons and chlorinated solvents, with good high temperature and low compression set characteristics. It can show poor resistance to ethers, ketones, esters and amines. Special compounds are required to provide suitable resistance to hot water, steam and wet chlorine.

FFKM

-4°F to +500°F

This elastomer has the broadest chemical resistance of any elastomeric material. It combines the resilience and sealing force of an elastomer with chemical resistance approaching that of PTFE. It has the ability to work under extremely high temperature steam, and it retains good long term high temperature compression set resistance.

Silicone

-80°F to +450°F

Silicone possess an excellent resistance to temperature extremes. However they have poor gas permeability, tensile strength, low tear and abrasion resistance making them unsuitable for vacuum or dynamic sealing applications. Silicone is tasteless, odourless and completely non-toxic. They are also resistant to bacteria, fungi and a range of chemical media. Platinum-cured silicone offers very enhanced level of purity and low extractables making them ideal for pharmaceutical, biomedical and food & beverage applications.

NBR (Buna-N)

-40°F to +225°F

NBR combines excellent resistance to oils and fuels, silicone grease, hydraulic fluids, water and alcohol. It has a good balance of working properties with low cost.

HNBR

-40°F to +320°F

HNBR is a saturated version of NBR, showing superior heat resistance. General properties include excellent wear resistance, high tensile strength, high hot tear resistance, low compression ste and very good ozone and weathering resistance.

EPDM

-55°F to +275°F

Ethylene propylene has excellent ozone and good chemical resistance. It is excellent for water and steam applications, but not suitable for use with mineral oils.

Silverback

-20°F to +500°F

Comprising 50/50 blend of non-pigmented PTFE and 316SS passivated and atomized stainless steel, this is a choice material for outstanding durability (5 times longer) in SIP and WFI applications. Its superior strength eliminates cold flow and creep to prevent maintenance problems and system downtime.

Certification

- FDA 21 CFR 177.2600 for rubber
- FDA 21 CFR 177.1550 for PTFE
- USP Class VI
- 3-A Sanitary Standard
- ADI Free

Materials

PTFE (Teflon)

-110°F to +450°F

PTFE is an extremely inert thermoplastics, virtually unaffected by all known solvents. It also exhibits this inert characteristics over a wide range of termperatures. Its hardness and lack of elasticity prevent its general use as an elastomeric sealing element, but it is often used together with a rubber energiser.

PEEK

-80°F to +550°F

PEEK has excellent tensile strength and elongation characteristics making it a good choice for high temperature and high-pressure applications. It is also inert to many chemicals such as all common organic and inorganic media, solvents and steam. It does, however, exhibit poor resistance to highly oxidisng acids.

Polyurethane (PU)

-50°C to +105°C

An excellent material with high abrasion resistance characteristics and high tensile strength. Used in high-pressure hydraulic systems where highly stressed parts are subject to wear. It has also found use in drilling jars and shock tools for both seal and wiper applications.

POM (Delrin, Acetal)

-60°C to +150°C

Acetal is a hard thermoplastic material, which exhibits excellent wear, low water absorption, is easy to machine, and has a low coefficient of friction. It is used for valve seats, wear rings, spacer rings and is often used as a bearing material.

PAI (Torlon)

Up to +260°C

Torlon is the highest performing, melting processable plastic. It offers superior resistance to elevated temperatures. It is capable of performing under severe conditions at continuous temperatures to +260°C (+500°F). It has minimal expansion rate, has excellent wear and is able to endure harsh thermal, chemical and stress conditions.

Polyamide (Nylon)

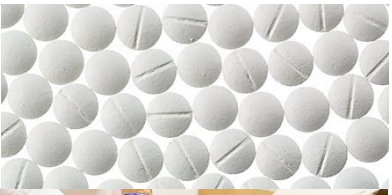
-70°C to +130°C

Nylon is a durable and inexpensive material. Its properties include high impact resistance and tensile strength. Commonly used as wear rings, bushing and anti-extrusion devices. Nylon comes in many different grades and fills depending on the application.

UHMWPE

-270°C to+105°C

UHMWPE offers good impact resistance, excellent abrasion resistance, a low coefficient of friction, very low moisture absorption and excellent chemical and corrosion resistance. Commonly used as wear rings, valve seats and in high speed sealing applications.



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