

Sealing Solutions for Processing Equipment



Meeting Food & Beverage Processor Needs

In an increasingly global market with a complex regulatory environment, working with a supplier who dynamically adapts to changing requirements internationally is essential. That's why Trelleborg Sealing Solutions actively partners with major food and beverage equipment manufacturers, ensuring that products embrace all challenges to accelerate our customers' performance.

Trelleborg Sealing Solutions has been involved in sealing food and beverage applications since the 1960s. Based on unrivalled experience, we have developed an outstanding range of sealing materials and products. Most of these are proprietary and specifically engineered to meet compatibility and cleanliness concerns, or carry global and regional certifications, including FDA, EC 1935/2004, 3-A Sanitary and NSF, USP and ADI guidelines.

Backed by the polymer expertise of Trelleborg Group, material research is focused on meeting the requirements of food and beverage processors, increasing reliability and service life for a range of regulation compliant and approved materials. Our innovative product engineering, complemented by industry-leading manufacturing and support services, leads to designs and custom solutions that optimize application performance for supply through our global logistics and advanced delivery programs.



Our Global Resources

OUTSTANDING SERVICE

Trelleborg is committed to optimizing customer partnerships through value-added services.

LOCAL PRESENCE, GLOBAL REACH

- Manufacturing and engineering resources in over 40 countries
- Unrivalled global footprint

Benefit: Consistent product and support worldwide

ADVANCED DELIVERY

- Global stock holding for rapid delivery
- Special kitting and packaging programs

Benefit: Helps avoid downtime

ENGINEERING EXPERTISE

- Shoulder-to-shoulder engineering; enhancing products with Trelleborg's hygienic design expertise
- Present at all stages, from prototype development to bringing equipment to market

Benefit: Partnerships for the optimum sealing solution

PROVING APPLICATIONS

- Rotary, reciprocating and static testing available
- Utilize customers' test equipment

Benefit: Proves solutions before installation

FINITE ELEMENT ANALYSIS (FEA)

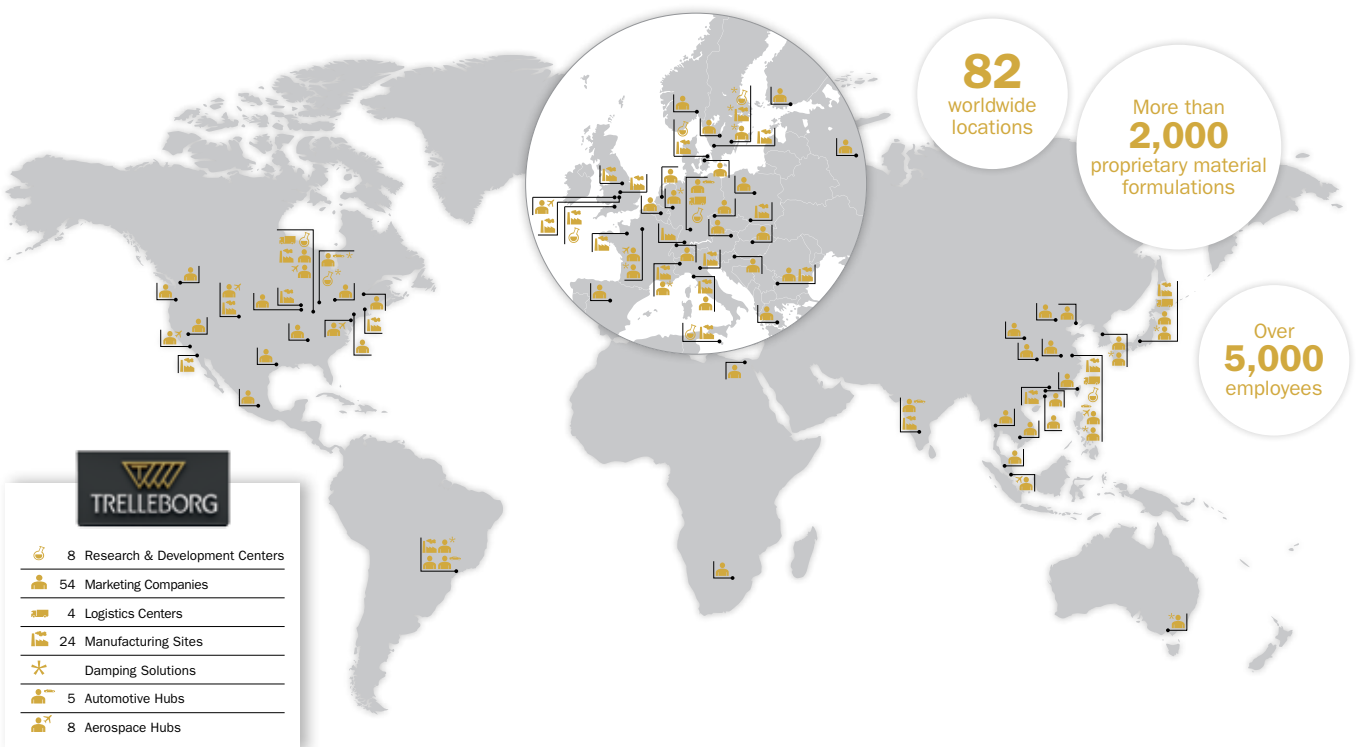
- Market leading non-linear analysis
- Qualifies prototype candidates without testing

Benefit: Accelerates time to market

MANUFACTURING CAPABILITIES

- Seals in elastomers and plastics meeting global regulations
- Custom solution development, including Liquid Silicone Rubber (LSR) capabilities

Benefit: One-stop-shop for all bearing and sealing requirements



Materials Overview and Compliances

Trelleborg Sealing Solutions offers a broad range of industry leading materials to meet the requirements of food and beverage processors.

Our materials meet a wide variety of industry regulations, while providing tried and tested performance under manufacturing conditions and stringent cleaning regimes. Working at the forefront of standard development within a number of regulatory committees enable us to quickly adapt to new developments and provide our customers with a competitive edge.

Material Specifications

Materials	Application Recommendations	Available Shore A Hardness	Compliances
Ethylene Propylene Diene Monomer (EPDM)	O-Rings, Static Seals, Molded Parts, Metal Bonded Parts	50 - 80	● ● ● ● ●
Fluoroelastomer (FKM)	O-Rings, Static Seals, Molded Parts, Metal Bonded Parts	50 - 90	● ● ● ● ●
Nitrile Butadiene Rubber (NBR)	O-Rings, Static Seals, Molded Parts	40 - 90	● ● ●
Hydrogenated Nitrile Butadiene Rubber (HNBR)	O-Rings, Static Seals, Molded Parts	50 - 90	● ● ●
Isolast® Perfluoroelastomer (FFKM)	O-Rings, Static Seals, Molded Parts, Metal Bonded Parts	70 - 80	● ● ● ● ●
Silicone (VMQ/LSR)	Tubing/Hose, Static Seals, Molded Parts, 2K/2-Shot	30 - 80	● ● ● ● ● ●
Turcon® Polytetrafluoroethylene (PTFE)	Dynamic Seals, Slydrings, Scrapers		● ● ● ● ● ●
Zurcon® Polyurethane (PUR)	Dynamic Seals, Scrapers, Machined Parts, Assemblies	93 - 97	● ● ●
HiMod® High Modulus Plastic	Dynamic Seals, Static Seals, Molded Parts, Machined Parts, Assemblies		● ● ● ●
Orkot® Composite Slydrings	Slydrings		●
Zurcon® Ultra-high-molecular-weight Polyethylene (UHMW-PE)	Dynamic Seals, Machined Parts, Assemblies		● ● ●
Perfluoroalkoxy Alkane/Fluorinated Ethylene Polymer (PFA/FEP)	Encapsulated O-Rings, Static O-Rings		● ● ● ●

Compliances

- FDA, 21CFR
- Reg. (EC) 1935/2004
- USP Class VI
- 3A Sanitary
- NSF 51
- ADI

Design and Development

Trelleborg Sealing Solutions provides a wide variety of standard products in materials to meet your requirements. Our dedicated research and development centers work continuously to increase our portfolio with new and updated designs that optimize application performance and follow the industry's evolving needs.

Working Together

When standard solutions don't meet your needs, Trelleborg Sealing Solutions has the engineering resources to develop a customized component that does. We encourage shoulder-to-shoulder engineering, collaborating closely with customers to enable solutions that meet the latest industry demands.

- Close working relationships
- Customized solutions using the latest in non-linear Finite Element Analysis (FEA) techniques
- Cutting-edge manufacturing techniques to optimize performance, including LSR
- Material development to meet upcoming requirements and standards
- Product design capabilities and support

TURCON® VARISEAL® ULTRA-CLEAN™

A specially designed and proprietary spring-energized seal, Turcon® Variseal® Ultra-Clean™ offers the ideal choice for processing equipment that requires an ultra-clean system. An energizing spring is enclosed within a Turcon® PTFE case, which ensures there is no dead space for bacteria to be caught.

- Withstands challenging CIP and SIP procedures
- Operates in extreme temperatures from -253° C to +260° C / -423° F to +500° F
- Withstands pressures in excess of 10 MPa / 1,450 psi
- Manufactured from materials carrying a wide range of approvals
- Compatible with virtually all chemicals



Applications and Solutions

Trelleborg Sealing Solutions products feature in numerous demanding and critical applications.

Trelleborg Sealing Solutions offers one of the broadest material portfolios on the market, offering a variety of regional and country-specific approvals. Our engineers have decades of experience in designing products that meet food and beverage manufacturers' needs, with FEA services and custom-molded solutions.

Our testing, research and development teams undertake CIP/SIP testing in our own laboratories and can analyze media delivered by customers to provide customized recommendations with proven results.

When solutions have been created, our global logistics and advanced delivery services take over to ensure products are where they are needed, when they are needed, with customer support, training and workshops all along the journey.



SMALL APPLIANCES

Products: Liquid Silicone Rubber (LSR) Custom Molded Parts, Customer Specific Solutions

Requirements: The customer required customized fluid management solutions, with food and potable water safe materials in robust designs with high reliability and precision manufactured in a facility to ISO 22000 standards.

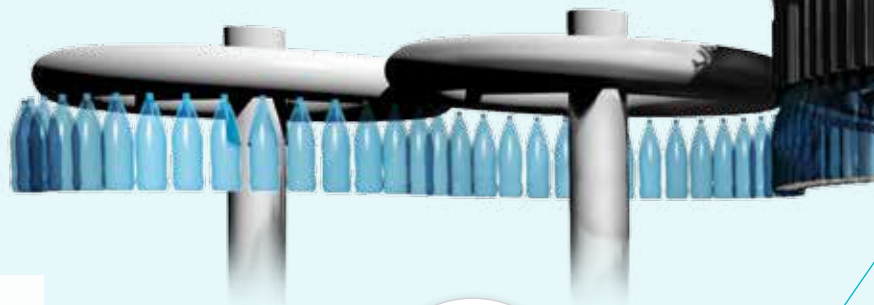
Benefits: LSR technology offered Trelleborg engineers a great deal of design latitude to integrate a number of components into a single solution. This resulted in economical and robust solutions to technically complex challenges.



Filling Head Seals

Ultra-clean seals prevent leakage and ensure there is no contamination at the critical filling stage of production.

Trelleborg solutions: Variseal® Ultra-Clean™, O-Rings



Diaphragms

Custom-engineered diaphragms for food equipment offer fabric reinforcement and custom features for challenging applications.

Trelleborg solutions: Custom diaphragms made of silicone and fabric-reinforced EPDM



Filling Mechanism Valve Seals

Valves control the amount of liquid fed into the bottle. Low-friction seals that withstand aggressive cleaning regimes are required in these dynamic applications.

Trelleborg solutions: Scrapers, Molded Components, Glyd Ring®, Wipers

Hydraulic Scrapers/Wipers

Wipers and Scrapers ensure that foreign particles are not carried by the pistons into the system, preventing contamination and damage to other seals and components.

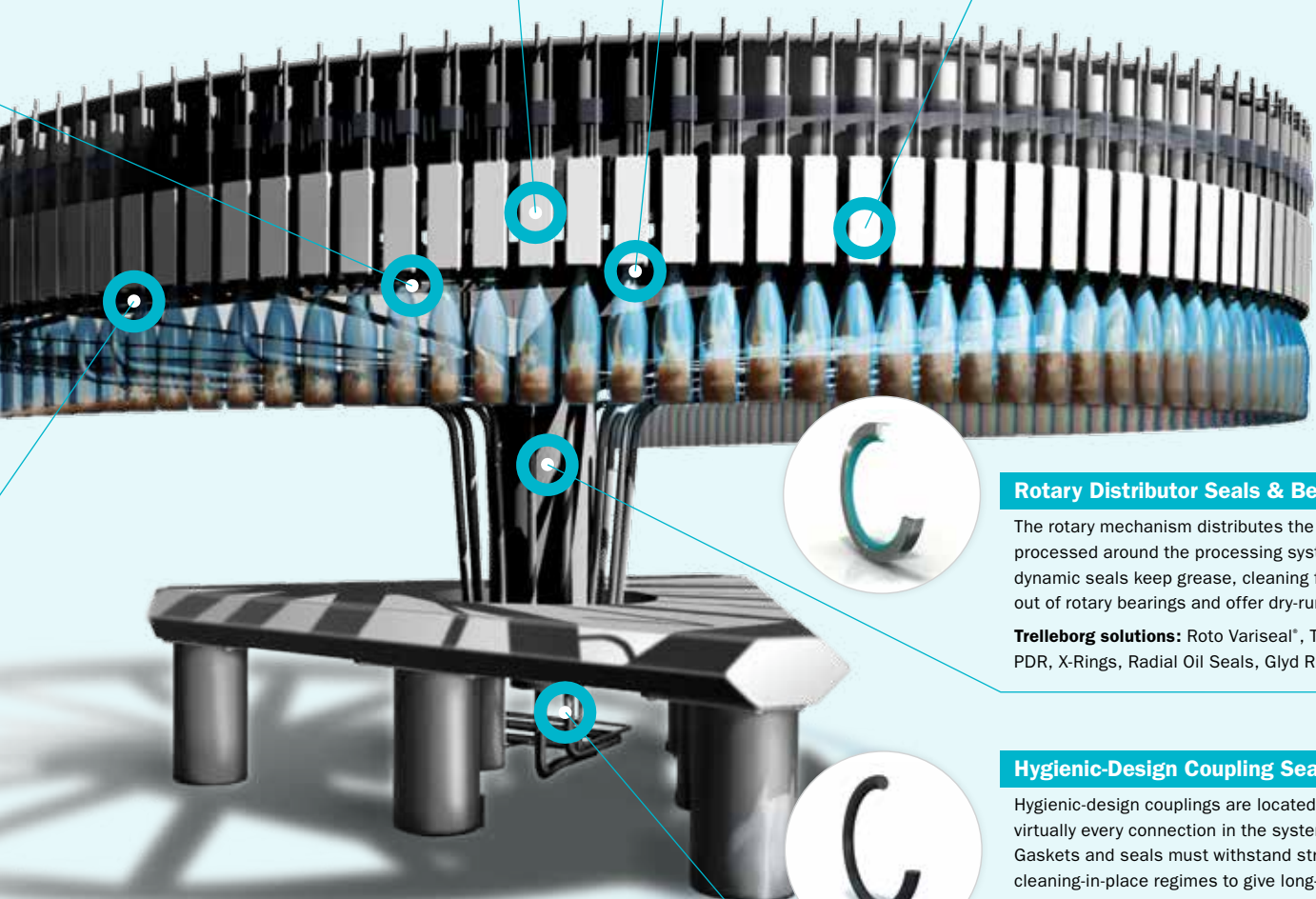
Trelleborg solutions: FDA compliant PUR and PTFE Scraper and Wipers



Piston/Rod Wear Rings

Piston/rod wear bands are required for the pneumatic pistons within the cylinders that lift the bottles for filling. The low-friction and wear resistance of seals are important to maximize productivity.

Trelleborg solutions: Slydring®, Glyd Ring®



Rotary Distributor Seals & Bearings

The rotary mechanism distributes the media being processed around the processing system. Special dynamic seals keep grease, cleaning fluids and water out of rotary bearings and offer dry-running capabilities.

Trelleborg solutions: Roto Variseal®, Turcon® Varilip® PDR, X-Rings, Radial Oil Seals, Glyd Ring®



Hygienic-Design Coupling Seals

Hygienic-design couplings are located at virtually every connection in the system. Gaskets and seals must withstand stringent cleaning-in-place regimes to give long-life and no contamination.

Trelleborg solutions: Sanitary Gaskets, O-Rings





Trelleborg is a world leader in engineered polymer solutions that seal, damp and protect critical applications in demanding environments. Its innovative engineered solutions accelerate performance for customers in a sustainable way. The Trelleborg Group has local presence in over 40 countries around the world.



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