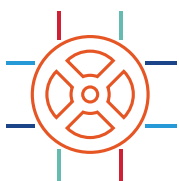




INDUSTRIAL



Railway Precision Sealing & Material Solutions

GOING BEYOND IN MOBILITY

Unmatched Wear Resistance
In Extreme Conditions

Extended Operational Lifespan

BEYOND
the boundaries of possible



GLOBAL HISTORY & LONGEVITY



Omniseal Solutions is a global engineering leader with over 65 years of historical legacy, relentlessly dedicated to the design and manufacture of precision sealing and wear control solutions that protect critical applications in the most demanding environments and passionately driven to push “Beyond the Boundaries of Possible”.

With a material expertise that dates back to the Industrial Revolution, Omniseal Solutions has been at the forefront of polymer technology, providing a wide range of solutions to solve your friction, wear and chemical compatibility needs. Today, we support global customers with advanced customized materials, including PTFE, PEEK, PEI, PAI, PI, PAEK, PET, PA and FP, for specific application requirements and desired functionality.



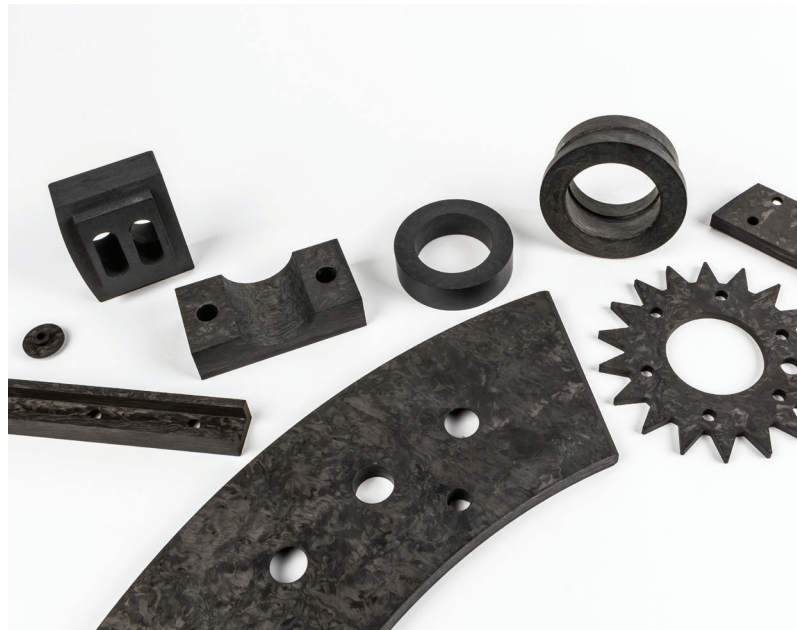
RULON® FLUOROPOLYMERS

Omniseal Solutions, the exclusive provider of genuine Rulon® PTFE-blended materials, offers custom-engineered solutions with hundreds of formulations.

Rulon® materials feature low friction, high wear life, abrasion resistance, chemical inertness, and durability in extreme conditions. They are engineered into critical components, including bearings, piston rings, seals, and wear parts for diverse industries.

Technology Advantages

- Max PV : 0.26 to 0.35 MPa . m/s
- Temperature: -240/288°C
- Tensile Strength: 8.3 to 21.4 MPa (varies with materials)
- Friction: 0.10 to 0.35 (varies with materials)



HYCOMP™ COMPOSITES

Hycomp™ self-lubricating composite materials are crafted from high-temperature thermoset polymers and long carbon or glass fibers, inherently PFAS-Free.*

Available in bearings, wear liners and formed components, key features include superior mechanical strength, exceptional wear resistance, low friction, excellent dimensional stability, and high-temperature capability.

* PFAS-Free here means we do not intentionally add PFAS material in the product, but does not exclude the possibility of traces, as these materials are common in the environment.

Technology Advantages

- Max PV: 80000 to 120000 MPa . m/s
- Temperature: up to 315°C
- Tensile Strength: at 260°C, 55 to 283 MPa (varies with materials)
- Friction: 0.10 to 0.20 (varies with materials)

GOING BEYOND IN TECHNICAL PROPERTIES

Why are proprietary material formulations critical? Our technical team understands the performance and quality of any precision solution greatly depends on the characteristics of its base material. Especially critical in the railway sector – the most commonly used transportation worldwide, our customers and the billions of people they service every day rely on our solutions for stability and protection to keep this industry running smoothly.



MELDIN® HT THERMOPLASTICS

The Meldin® HT Thermoplastics series offers injection-moldable polymers like PPS, PEEK, and PAI, which are ideal for high-performance applications beyond metals.

Key features include excellent tribological properties, low weight, high thermal resistance, and chemical resistance. Finished parts include bearings, bushings, piston rings, thrust washers, and gears.

Technology Advantages

- Temperature: up to 300 °C (varies with materials)
- Tensile Strength (Break RT): 70 to 228 MPa (varies with materials)
- Wear Rate ($\mu\text{m/hr}$): 0.3 to 1.0 (varies with materials)



OMNISEAL® SPRING-ENERGIZED SEALS

Our polymer, spring-energized seals feature a polymer jacket and a corrosion-resistant metal spring. They offer unlimited shelf life and superior performance compared to traditional soft elastomeric seals and metal gaskets, which often fail over time.

As a spring-actuated, pressure-assisted sealing device, this sealing solution is engineered to be leak tight and handle extreme environments such as cryogenic, high temperature and high pressure.

Technology Advantages

- Extreme use temperatures: -268°C to +316°C
- High pressure: 3448 bar [50,000 psi]
- Broad chemical compatibility
- Low friction and wear

GOING BEYOND IN EXTREME CONDITIONS

In the mobility and transportation industries, railway operations are often exposed to extreme weather conditions such as snow, ice, wind, and heat, which may cause performance issues. However, using the right materials that are reliable and continue to function properly can make the difference in safety and downtime.



OMNISEAL® ROTARY LIP SEALS

Introduced in the early 1970s, polymer rotary lip seals bridge the gap between traditional elastomer lip seals and mechanical face seals.

Known as rotary shaft seals, these metal-cased seals are designed with advanced materials and excel in extreme temperatures, aggressive media, high speeds, high pressure, and low lubrication environments.

Technology Advantages

- Temperature range: -54°C to +232°C
- Low friction and wear in dry abrasive media
- High speed rotary applications



OMNISEAL® METALS

Our Omniseal® metal sealing solutions withstand extreme conditions: high temperatures, cryogenic environments, high pressure, and vacuum.

Available in various shapes and alloys, they feature surface treatments for enhanced wear resistance, extended life, and ease of installation.

Technology Advantages

- High vacuum (10^{-11} Torr) to 5515 bar
- Extreme low leak rate (10^{-10} cc/sec He)
- Temperature range: Cryogenic to 1010°C



1 RULON® FLUOROPOLYMER BUSHINGS FOR PANTOGRAPHS

Positioned on the roof, this equipment is essential for collecting the electricity that powers the train. Operating in a dynamic environment, the bushings constantly adapt to the train's speed, varying weather conditions, shock, vibration, and pivotal movement.

- Maintenance free
- Self-lubricating

2 RULON® FLUOROPOLYMER LOW FRICTION PADS FOR AIR SPRINGS

Air springs are used to support and isolate the bogie from the coach.

- Prevents metal-to-metal contact, reducing wear on metal pads

3 HYCOMP™ COMPOSITE BUSHINGS FOR BOGIES

These bushings are designed to withstand heavy loads, resist wear and tear; and minimize maintenance needs.

- Improves safety and passenger comfort
- Reduces maintenance costs
- Extends lifespan

4 HYCOMP™ COMPOSITE BUSHINGS FOR BRAKE LINKAGES

Traditionally, metal bushings have been used in brake linkages for high wear and maintenance. Our composites are much lighter and easier to handle than these metal counterparts.

- Self-lubricating
- Low friction and wear
- Dampens noise to extend life and lower maintenance costs

5 TRANSBAND CREEPAGE BANDS FOR TRACTION MOTORS

A durable PTFE creepage band, this solution is ideal for DC motor applications, developed over 30 years ago. Available in two easy-to-install designs, it outperforms epoxy surfaces and suits both new and rebuilt motors.

- Reduces creepage surface
- Prevents loosening
- Avoids carbon dust buildup

6 OMNISEAL® ROTARY LIP SEALS FOR AIR COMPRESSORS

Compressed air is the power behind major railway functions. Rotary lip seals retain oil in the airend and prevent air, dust, and dirt entry when offloaded.

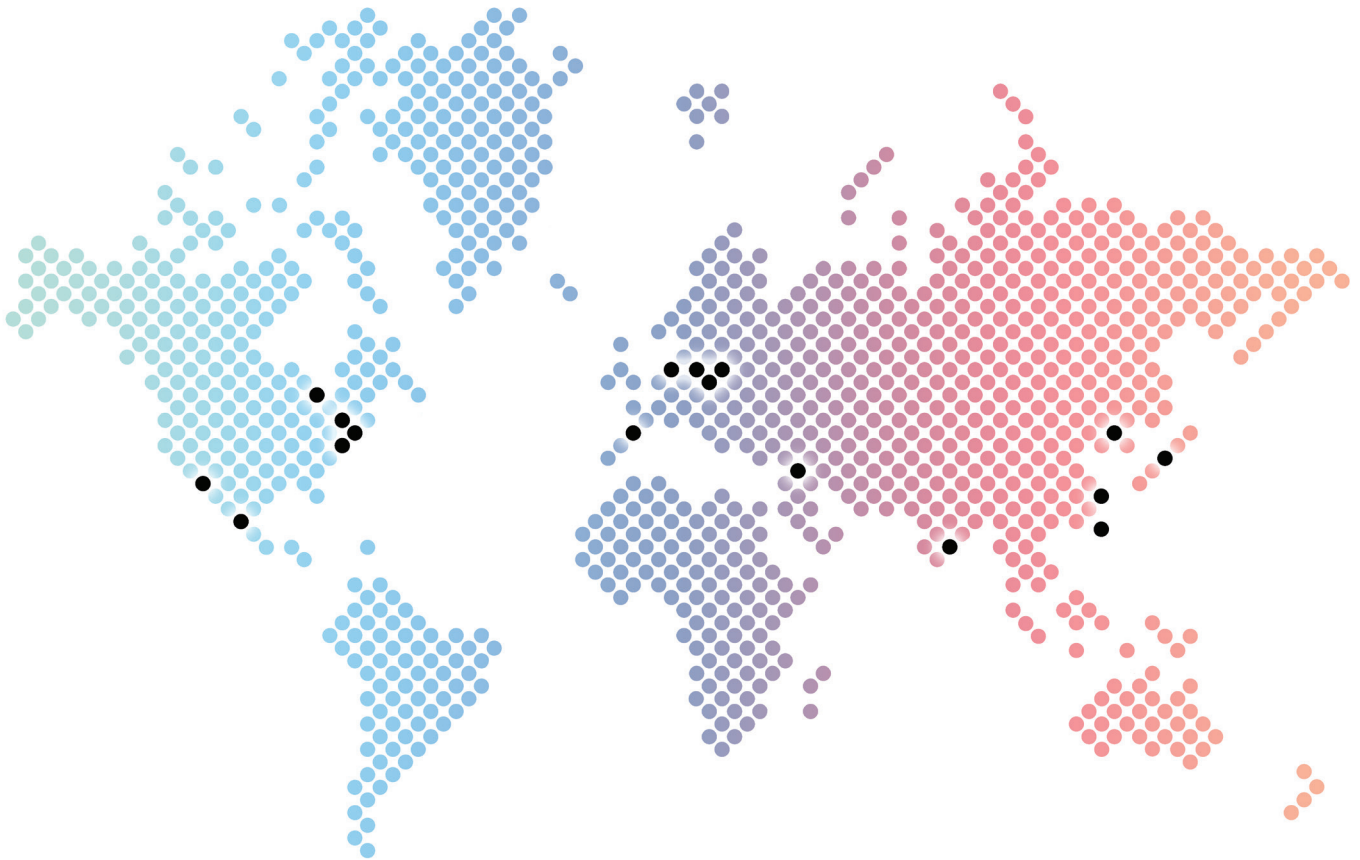
- Extends equipment life
- Reduces warranty claims
- Minimizes downtime

7 MELDIN® HT THERMOPLASTIC TIP SEALS FOR REFRIGERATION SCROLL COMPRESSORS

Our tip seals ensure low friction, high efficiency, and minimal leakage. They resist wear, temperature and pressure.

- Easy assembly
- Precision fit
- Economical production at any volume

ONE GLOBAL TEAM... A DEDICATED CUSTOMER FOCUS



GLOBAL & LOCAL PRESENCE

With 17 manufacturing facilities in 10 different countries, Omniseal Solutions is a diverse group that is committed to being customer centric.

Contact our industrial team of experts for more information. We have local resources to support you!

- **North America:** Rob Richards; robert.d.richards@saint-gobain.com; Mob: +1 330 995 0952
Patrick McSweeney; patrick.mcsweeney@saint-gobain.com; Mob: +1 216 849 3210
- **Northern & Western Europe:** Roland Wagner; roland.wagner@saint-gobain.com; Mob: +49 49 177 3869254
- **Central Europe:** Regina Schaade; regina.schaade@saint-gobain.com; Mob: +49 172 2325371
- **Southern Europe:** Alessio Romiti; alessio.romiti@saint-gobain.com; Mob: +39 334 6981366
- **China:** Andy Li; andy.li@saint-gobain.com; Mob: +86 186 1683 9683
- **Japan:** Nobuo Tsuchiya; nobuo.tsuchiya@saint-gobain.com; Mob: +81 80-9575-6562
- **Taiwan:** Cherry Yang; cherry.yang@saint-gobain.com; Mob: +886 933 903 976
- **South Korea:** Joonho Lee; joonho.lee@saint-gobain.com; Mob: +82 10-2644-6252
- **South East Asia:** George Boey; george.boey@saint-gobain.com; Mob: +65 9630 1351
- **India:** Abhishek Ranjan; abhishek.ranjan@saint-gobain.com; Mob: +91-99234 14046

www.omniseal-solutions.com

Omniseal®, Hycomp™, Rulon®, and Meldin® are registered trademarks of Saint-Gobain Performance Plastics Corporation.

Limited Warranty: For a period of 6 months from the date of first sale, Saint-Gobain Performance Plastics Corporation warrants this product(s) to be free from defects in manufacturing. Our only obligation will be to provide replacement product for any portion proving defective, or at our option, to refund the purchase price thereof. User assumes all other risks, if any, including the risk of injury, loss or damage, whether direct or consequential, arising out of the use, misuse, or inability to use this product(s). SAINT-GOBAIN PERFORMANCE PLASTICS DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

NOTE: Omniseal Solutions and Saint-Gobain Performance Plastics Corporation do not assume any responsibility or liability for any advice furnished by it, or for the performance or results of any installation or use of the product(s) or of any final product into which the product(s) may be incorporated by the purchaser and/or user. The purchaser and/or user should perform its own tests to determine the suitability and fitness of the product(s) for the particular purpose desired in any given situation.