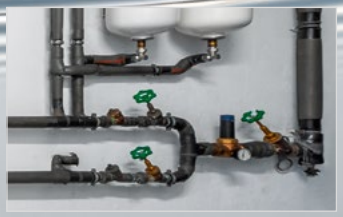
WaterPro® EPDMs

PROTECTING A CRITICAL NATURAL RESOURCE WITH CERTIFIED SAFETY



Protecting What Matters

The water industry has an important global mission: safeguarding human health by delivering reliable and innovative industrial applications on a large scale. With regulatory demands focused on safety and hygiene constantly rising, the industry must meet these heightened expectations.

Faucets, heaters, drinking water filters and other appliances play a critical role in providing safe and reliable water services to society by ensuring access to clean water for drinking, cooking, sanitation and hygiene. In a world where we cannot take for granted that our natural resources will be here forever, the understanding of why water is so important has increased dramatically, as has the demand for innovative and reliable solutions. The market and consumers alike are looking for products that minimize water waste, conserve energy and reduce environmental impact.

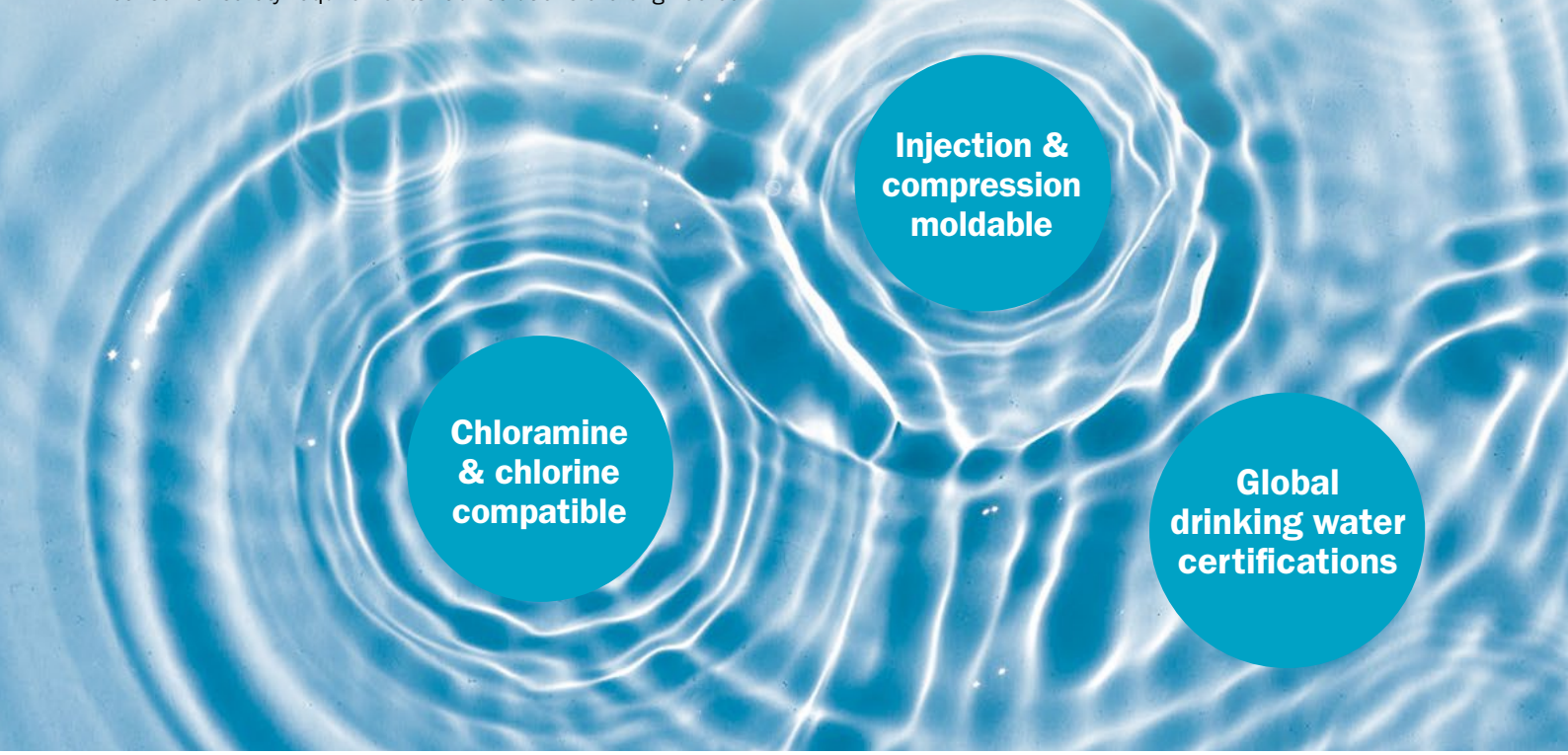
CLOSE COOPERATION TO MEET MULTIPLE CHALLENGES

Trelleborg Sealing Solutions is dedicated to supporting the water industry with globally certified sealing products and materials. Most of our formulations are proprietary and specifically designed to meet the highest product and consumer safety requirements. Our solutions are engineered for high-volume production environments and are available to customers worldwide.

TAILORED TO YOUR REQUIREMENTS

Innovation is at the heart of everything we do, and we understand that each business has unique requirements. We research and develop new products at 15 centers of excellence around the globe. Our robust network strengthens our ability to develop novel solutions for all major markets, in collaboration with our business partners. We offer guidance on hardware design and tailor-made sealing solutions that precisely fit your equipment, optimizing its efficiency and performance, extending lifetime and reducing wear and friction.

Going one step further, our in-house product and material testing facilities ensure that products meet regulatory requirements in a timely, professional and comprehensive manner.



The WaterPro® EPDM Range

Our WaterPro® Ethylene Propylene Diene Monomer (EPDM) Rubber portfolio is a proactive response to market demands. These materials are certified to relevant standards for drinking water materials.

FEATURES

- Compression, transfer and direct injection moldable; suitable for O-Rings, static seals and engineered molded parts
- Excellent compression set resistance
- Proven for use with drinking water disinfectants chlorine and chloramine
- Suitable for multicomponent parts, including rubber-to-metal and rubber-to-plastic, for unique seal geometries combining multiple features into a single component
- Excellent mechanical properties
- Outstanding resistance to tear and wear
- Excellent hardness stability at high temperatures
- Designed to resist swell during immersion in potable water
- Unique application requirements, for example extra abrasion resistance, can be met with these compounds

APPLICATION EXAMPLES

- Water heating systems
- Faucets
- Water treatment
- Drinking water filtration
- Smart meters

STANDARDS & CERTIFICATIONS

WaterPro® EPDM materials are certified to all major drinking water standards globally, including:

- KTW-BWGL – Cold (+23 °C/+73 °F) to hot (+85 °C/+185 °F), which goes into effect on March 1, 2025
- W270 (per DIN EN 16421)
- ACS – Cold, warm and hot applications
- WRAS – Covers use up to +85 °C/+185 °F
- NSF 61 – Cold and hot applications

CONTACT YOUR CUSTOMER SOLUTION CENTER

Does your application have unique requirements? Do you require numerous certifications?

Reach out to your local Trelleborg Sealing Solutions Customer Solution Center for support with material selection to meet your specific requirements.

www.trelleborg.com/seals/worldwide

The WaterPro® EPDM Family

Formulated for compatibility with chlorine and chloramine

The Trelleborg Sealing Solutions WaterPro® EPDM family is a comprehensive range of sealing materials designed to withstand the rigors of everyday use. With the rise of chloraminated water systems in US municipalities and the adoption of this trend in European countries, there is a heightened need for robust sealing solutions. Chloraminated drinking water is highly aggressive and standard elastomers often fail to maintain their shape and elasticity under such conditions.

The WaterPro® EPDM family is specifically engineered for these harsh environments. It has been rigorously tested and proven to show only minor deviations in volume and hardness, making it an ideal choice for chloraminated water systems.

WaterPro® 557WE

Superior flexibility and adaptability

WaterPro® 557WE is a 60 Shore A elastomer material specifically engineered to deliver exceptional flexibility and mechanical durability in both static and dynamic applications that require low sealing force.

APPLICATIONS

WaterPro® 557WE has the unique ability to conform more easily to irregular surfaces, providing better sealing performance in applications where a tight fit is essential. Moreover, this increased flexibility can reduce seal failure in dynamic conditions, thereby enhancing the material's durability.

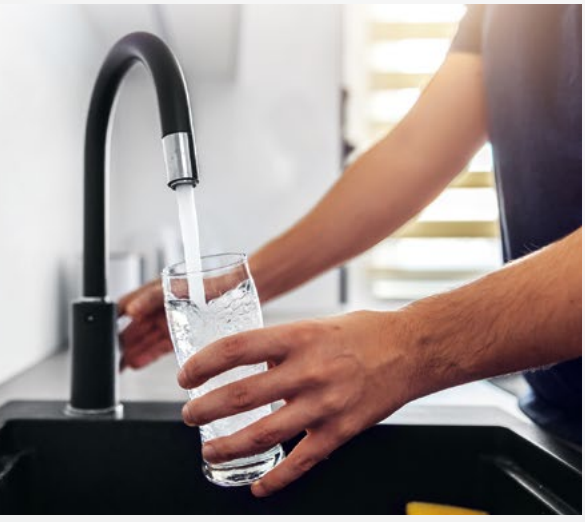
WaterPro® 557WG

All-purpose compound

WaterPro® 557WG is a 70 Shore A rubber material designed for use in a wide range of applications. Due to its flexibility and elasticity, it is suitable for sealing along irregular surfaces and in semi-dynamic applications.

APPLICATIONS

WaterPro® 557WG is ideal for applications requiring frequent compression and decompression of the seal, such as in some types of valves. It is also suitable for low to moderate pressure environments, where the seal must adapt to the environment and meet tolerance requirements.



WaterPro® 557WM

Durable material for demanding applications

WaterPro® 557WM is a 90 Shore A rubber material, which is harder and offers higher resistance to physical abrasion and deformation under load than standard materials. This material is ideal for high-pressure applications, which require robust sealing materials.

APPLICATIONS

WaterPro® 557WM is optimal for high-pressure water hydraulic systems and in applications where the seal is subjected to abrasive conditions. This material demonstrates high wear and tear resistance in demanding environments.

MATERIAL PROPERTIES

General data	WaterPro® 557WE	WaterPro® 557WG	WaterPro® 557WM
Basic polymer	EPDM	EPDM	EPDM
Color	black	black	black
Hardness	60 Shore A	70 Shore A	90 Shore A
Temperature range	-40 °C to +140 °C -40 °F to +284 °F	-40 °C to +140 °C -40 °F to +284 °F	-40 °C to +140 °C -40 °F to +284 °F

Properties*	Test Specification	Test result**			
		557WE	557WG	557WM	Unit
Density	ASTM D 297	1.02 0.037	1.06 0.038	1.15 0.042	g/cm³ lb/in³
Tensile strength	ASTM D 412	11.8 1711	11.9 1726	16.3 2364	MPa psi
Modulus at 100% Elongation	ASTM D 412	4.4	7.4	N/A	%
Elongation at break	ASTM D 412	244	161	73	%
Compression set 22h/+125 °C, 22h/+257 °F	ASTM D 395 1B solid	5	5	6	%
Low temperature behavior Glass transmission point TG (DSC)	ASTM D 7426	-51 -60	-50 -58	-48 -54	°C °F

*) All tests were carried out on standard samples cured on specified conditions. Values can vary on final product.
**) Typical values are given only as indication and actual results may vary depending on material batch, cure and post-cure conditions as well as on sample's geometry.

Proven Performance

Using extensive in-house facilities, our material engineers conduct tests to prove the resistance of WaterPro® materials to the rigors of everyday use.

CHLORINE AND CHLORAMINE TESTING

To push materials to their limits, we employ the continuous flow method, which is a more rigorous test compared to the industry standard, ASTM D6284.

Elastomer samples are suspended from a wire and fully immersed in a water tank maintained at a constant concentration of 50 ppm of either chlorine or chloramine. The water solution is titrated daily to ensure the concentration remains at 50 ppm and to verify the dosing system's proper function.

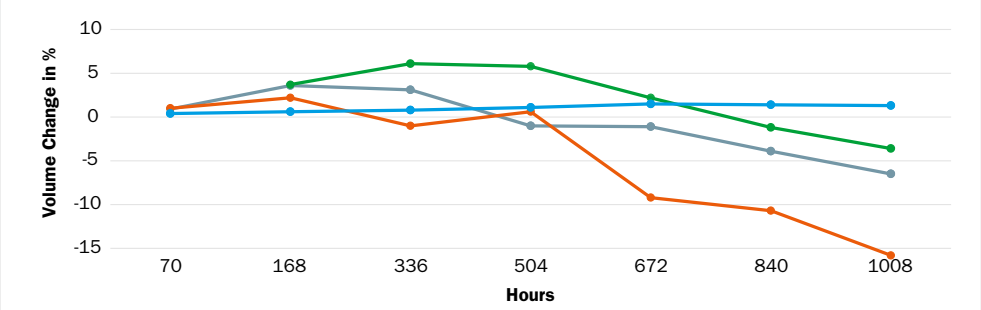
The elastomer samples are assessed for volume change at intervals of 3 days, 7 days, and then every 7 days thereafter until approximately 1,000 hours. Additional documentation is kept to record the levels of degradation and devulcanization.

ENSURING COMPLIANCE

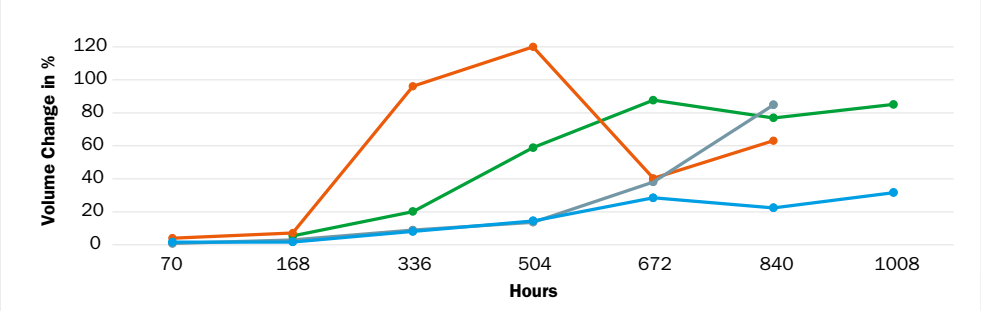
Our laboratories continuously strive to stay at the forefront of advancements in material development and evolving regulatory requirements. This commitment allows our experts to select the safest, cleanest and highest-performing raw materials for our proprietary EPDM compounds. Through proactive analysis and scientific research, our EPDM compounds meet increasingly stringent global certifications.

Once approved by various water certification agencies, our molding facilities undergo rigorous audits. For NSF, this involves annual production sample audits. A new KTW requirement mandates that each molding site submit samples for testing and approval, a standard we diligently meet.

Chlorine Compatibility



Chloramine Compatibility



WaterPro® 557WG*
WaterPro® 557WM
EPDM A
EPDM B
Competitor

* Testing is based on the higher volume compound WaterPro® 557WG and its 70 shore A equivalents. Testing of the 90 Shore A WaterPro® 557WM and 60 Shore A WaterPro® 557WE show similar excellent performance for both chlorine and chloramine.

Custom-Engineered Solutions

At Trelleborg Sealing Solutions, we recognize that one-size-fits-all approaches fall short in today's varied and dynamic industries. That's why we adopt a collaborative method for seal design and manufacturing.

Our process includes comprehensive engineering consultations, material selection, prototyping and rigorous testing before transitioning to serial production. By adhering to these steps, we ensure your specific requirements are consistently met throughout your product's lifecycle.

Our process encompasses:

- Tailored design capabilities
- Precise material selection
- Development and FEA capabilities to reduce time to market
- High-volume manufacturing
- Multicomponent and rubber-to-metal capabilities with specialized EPDMs
- Comprehensive integration support and service

COLLABORATIVE ENGINEERING: BALL VALVE FOR WATER METER BOX

EPDMs are commonly used in seals and gaskets in ball valves in water meter boxes due to their excellent resistance to weathering, ozone, UV exposure and temperature extremes. The seals prevent leaks, maintain consistent pressure, ensure accurate control and measurement of water flow and facilitate servicing. Sealing components are expected to last for the full lifetime of a water meter, estimated as 50 years, and be fully certified to global drinking water standards.

A customer approached us requiring a valve seat for a new water meter ball valve. They required a precise and complex, overmolded, rubber-to-metal part, which met compliance and long-term reliability requirements.

Our approach included:

- Design Services – Collaborating closely with the customer's engineers, we analyzed the design specifications and performance requirements. This approach allowed us to identify potential improvements for enhancing product functionality and durability and ensure design for manufacturability.
- Prototyping & Validation – Leveraging our engineering capabilities, we quickly moved into the prototyping phase. Our advanced facilities and experienced team enabled us to create precise prototypes efficiently, ensuring all critical parameters were met. By incorporating our proprietary materials and advanced molding techniques, we optimized the component's performance.
- Advanced Manufacturing – With validation complete, our focus shifted to meeting the customer's time-to-market and high-volume production needs. Our global manufacturing capabilities enabled us to scale up production rapidly without compromising quality.

By combining our WaterPro® EPDM compounds with our expertise in engineering, validation and high-volume production, we were able to transform the customer's original design into a robust and reliable product that met their timeline, tight tolerance, life expectancy and water certification requirements.

Trelleborg is a world leader in engineered polymer solutions that protect essential applications in demanding environments. Its innovative solutions accelerate performance for customers in a sustainable way.

Trelleborg Sealing Solutions is a leading developer, manufacturer and supplier of precision seals, bearings and custom-molded polymer components. It focuses on meeting the most demanding needs of aerospace, automotive and general industrial customers with innovative solutions.

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If you'd like to talk to Trelleborg Sealing Solutions, find your local contact at: www.trelleborg.com/seals/worldwide

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