

Immediate sealing performance for demanding fasteners

Fasteners used in fluid and gas carrying assemblies are required to provide reliable sealing performance immediately after assembly, often under demanding pressure and thermal conditions. precote® 15 from SurTec International GmbH guarantees the preservation of preload force, ensuring long-term joint integrity and functional reliability.

Fasteners used in these assemblies also have increased automation and shorter cycle times, which place growing demands on process stability and reproducibility. In this context, sealing solutions must not only deliver functional performance but also support consistent assembly results.

One critical aspect in this regard is the long-term stability of the preload force within the joint. Loss of clamp load can compromise sealing performance over time, particularly in applications exposed to vibration, thermal cycling or internal pressure. Ensuring both immediate sealing and sustained preload stability therefore represents a central technical challenge in modern fastening technology. precote® 15 can be applied both on the thread and under fastener heads, providing maximum flexibility in joint design.

precote® 15 is suitable for both cylindrical and tapered threads and is used wherever immediate sealing reliability is required without additional processing steps. Typical applications include battery housings, fluid carrying components and pressure sensitive assemblies, particularly in industries such as automotive, electromobility and mechanical engineering.

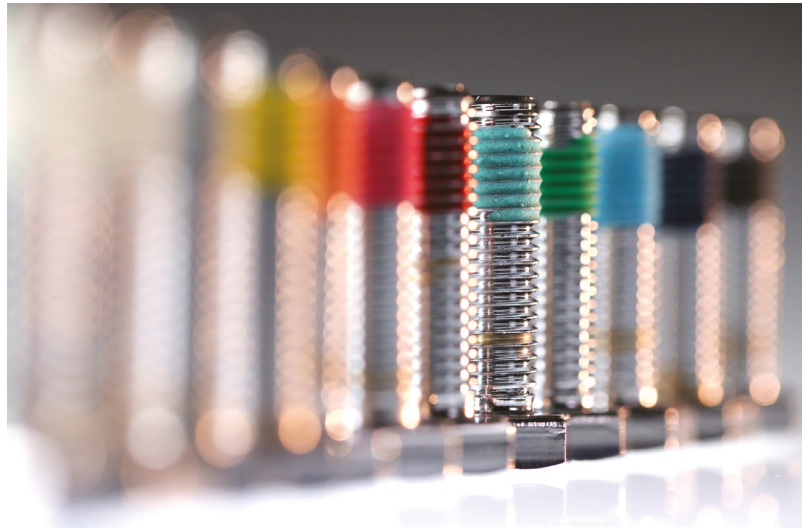
In battery housing manufacturing, for example, threaded joints are exposed to a combination of thermal cycling, vibration and internal pressure. Immediate sealing performance is required to allow safe handling directly after assembly, supporting efficient downstream processes, such as testing, transport or further integration.

From a production perspective, reproducibility is a key quality criterion. Variations in sealing performance often result not from the fastening concept, but from fluctuations in application parameters, such as material quantity, distribution or curing conditions. Unlike liquid applied sealants that are introduced during assembly, pre-applied coating systems separate the sealing function from the assembly process. The coating is applied under controlled industrial conditions, ensuring a defined material quantity and uniform distribution on the fastener. As a result, operator influence and environmental effects during assembly are minimised.

In practice, this leads to more stable assembly results; reduced scatter in testing outcomes; and higher overall process reliability, particularly in automated production environments with high throughput requirements.

The sealing performance of precote® 15 is validated through established pressure, leakage and media resistance tests that simulate real application conditions. These tests confirm stable sealing behaviour under varying pressure and temperature conditions, as well as resistance to common operating media.

precote® 15 enables direct metal to-metal contact between the fastener and the base material, ensuring preload force retention. The



sealing function is realised by filling all the gaps between the fastener and the base material. In under-head sealing applications the coating fills out the surface inconsistencies. It also fills out gaps in the transition between the head and the thread.

As a pre-applied coating, precote® 15 contributes directly to process efficiency and quality assurance. It simplifies logistics, reduces handling steps and supports standardised assembly workflows. For manufacturers, this results in shorter cycle times, lower rework rates and enhanced operational reliability. By combining immediate sealing performance with controlled application, and verified quality parameters, pre-applied sealing systems, such as precote® 15, address key technical challenges in modern fastening technology.

SurTec supports customers in the design and optimisation of sealing performance, taking into account application specific requirements and testing protocols. From a quality perspective, functional performance must be verified through defined testing methods and controlled application processes rather than visual inspection alone. For this reason, the source of supply is an important factor.

At SurTec, quality assurance is based on defined specifications and systematic inspection procedures. Each batch of precote® coated fasteners undergoes inspection to ensure consistent coating performance and compliance with defined technical parameters. In safety relevant applications, this systematic approach contributes to reliable decision making along the supply chain.

With qualified applicators worldwide, precote® products are available globally, ensuring consistent quality standards and reliable supply across international markets. SurTec operates as a provider of chemical specialties for surface treatment within the Freudenberg Group – a globally active, family owned company based in Germany. This strong industrial background supports long-term development, standardised processes and a consistent quality approach. +

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