



# TEADIT®

## Seals the Connection Between Emissions Compliance and Proactive Solutions

*Teadit has built a trusted reputation for providing high-quality sealing solutions to several industries, including refining, chemical processing, and power generation. A proactive approach to advancing emissions compliance in these sectors has consistently demonstrated the company's commitment to enabling industrial facilities to move forward with confidence rather than be constrained by regulatory pressures. As requirements continue to evolve, this forward-looking strategy underscores the value of partnering with experienced sealing specialists such as Teadit, whose fugitive emission solutions are engineered to meet current standards while anticipating future regulatory demands.*

*Fugitive Emissions Journal had the opportunity to speak with Dale Norman, Engineering Manager, and Sean Hutesson, Regional Sales Manager, about how Teadit's sealing knowledge, experience, and superior materials benefit its customers' emissions compliance strategies.*

By TEADIT®

Potential leaks can occur anywhere a connection exists, including pumps, valves, threaded joints, or flanges. To prevent harmful fugitive emissions, sealing components, such as packing and gaskets, are employed. While these assets are essential to ensuring operational success, not all sealing solutions are created equal.

### Enabling Long-Term Performance Beyond Initial Compliance

Achieving compliance is only the starting point for facilities managing emissions risk. Sustained performance over time requires sealing systems that maintain integrity under real operating conditions, including pressure fluctuations, thermal cycling, vibration, and chemical exposure. Even components that meet regulatory thresholds at installation can degrade prematurely if material selection, installation practices, or maintenance procedures are not aligned with service demands.

Teadit emphasizes a lifecycle approach that considers not only laboratory performance but also field durability. By analyzing application parameters such as media compatibility, temperature ranges, mechanical loads, and equipment



condition, the company helps operators select sealing technologies that minimize degradation and maintain low emission performance throughout maintenance intervals.

Consistent use of correctly installed high-quality sealing materials is a fundamental element of maintaining compliance in increasingly regulated operating environments; it ensures readiness for inspections and performance verification. To address this need, Teadit works closely with facilities operating under ongoing audits and regulatory scrutiny, providing dependable sealing solutions, along with the technical expertise and training required for successful implementation.

This approach reduces the likelihood of unexpected failures, unplanned shutdowns, and compliance deviations. It also supports predictive maintenance strategies by identifying components that should be upgraded before performance declines.

“At the end user level, access to this knowledge and support is essential for sustaining compliance, operational reliability, and long-term confidence,” said Norman. “Relying on legacy technology without ongoing updates can make it more difficult for companies to achieve their financial and environmental goals.”

In regulated environments, such foresight can be the difference between routine operations and costly corrective actions following an inspection finding.

### Solutions Designed for Demanding Service Conditions

To support long-term performance in challenging environments, Teadit offers sealing technologies engineered to withstand the combined effects of pressure, temperature, and mechanical stress. High-purity graphite packing, such as TEADIT® 2848 or TEADIT® 2236, is designed to maintain seal integrity in valves subject to severe service, providing low leakage performance while resisting oxidation, extrusion, and relaxation over extended operating cycles. “Teadit will provide a solution that aligns with the customer’s requirements for whatever media is flowing through a specific application. The proof is in the packing,” stated Huteson.

For bolted-flange connections, TEADIT® 913M spiral-wound gaskets (SWGs) provide a resilient semi-metallic sealing element that accommodates flange movement, thermal expansion, and load fluctuations while maintaining a high-quality seal.

Together, these solutions address common failure mechanisms that lead to emissions deviations, enabling facilities to maintain reliable sealing performance between maintenance intervals and reducing dependence on reactive repairs.

### Maintenance Programs Matter

Achieving low-emission (Low-E) or no detectable emissions (NDE) performance does not depend solely on selecting high-performance sealing materials. Equipment condition and maintenance discipline are equally important. While advanced packing and gaskets can accommodate minor imperfections, severely degraded equipment will undermine even the best solutions.

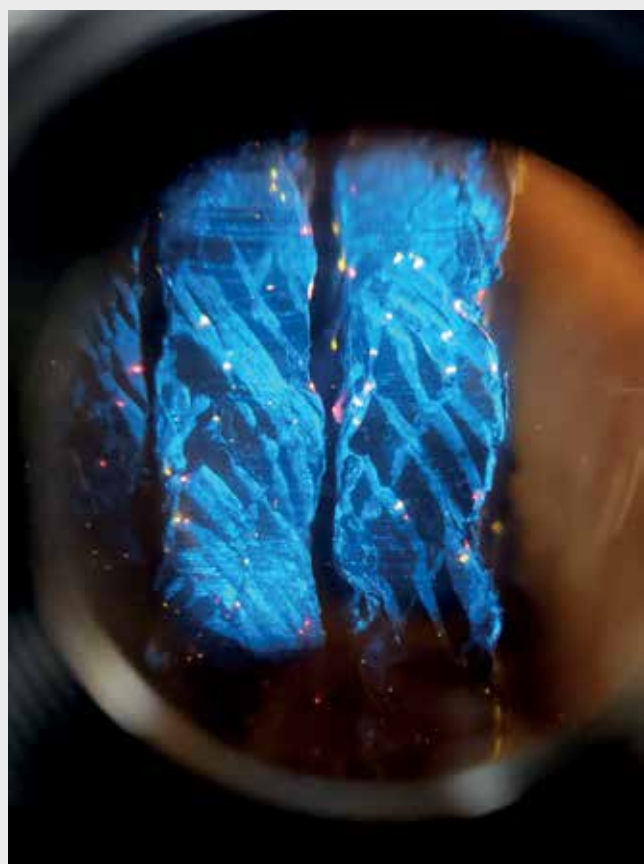
**“Facilities that prioritize NDE tend to take a more proactive approach to compliance. In contrast, the adoption of low-emission solutions is often driven by regulatory requirements, such as consent decrees.”**

*Dale Norman*

“Teadit frequently supports facilities in developing more structured bolting and maintenance programs to help reduce variability in assembly quality,” explained Huteson. “For example, smaller flanges are sometimes tightened using hand tools rather than calibrated torque equipment, resulting in inconsistent preload. Formal torquing procedures establish measurable force application, reducing the probability of leaks.”

Comprehensive emissions management, therefore, requires cyclical programs that address the entire lifecycle of sealing systems. “Recommended practices include scheduled bolt tightening verification, retightening when conditions allow, and systematic inspection of packing and valves during planned outages,” continued Norman. Establishing baseline values for torque and performance enables facilities to detect deviations before failures occur.

*TEADIT® 2848 packing with TEADIT® TAGS™. TEADIT® TAGS™ are traceable particles that may have different forms, compositions, sizes, and are able to be detected by distinct apparatus. This groundbreaking design ensures the traceability of the product before, or even after, it has been in service.*





**LOW RES**

When issues arise, Teadit supports customers with practical solutions rather than simple diagnoses. Assistance may include sharing case studies of solutions for similar situations or on-site assessments to resolve complex issues. Even during periods of restricted travel, remote troubleshooting via digital communication tools enabled facilities to address critical challenges without delay.

### Understanding Low-E and NDE Requirements

Technical execution must also be aligned with regulatory definitions governing emissions control. Confusion between Low-E performance classifications and NDE requirements can expose facilities to substantial financial penalties, particularly at sites operating under consent decrees.

“Valves exceeding specified leak thresholds may trigger fines on a per-component, per-day basis, making rapid detection and repair procedures essential,” explained Huteson. “Facilities are often encouraged to maintain clear plans to identify problem components, prioritize repairs, and document corrective actions. Regulatory agencies may allow limited time extensions depending on circumstances, but prompt response is the safest course.”

system, yet their effectiveness depends on the integrity of the entire assembly.

Huteson illustrated this concept by comparing it to building a Ferrari without proper guidance. “Providing all the correct parts does not guarantee the intended result if personnel are not given the knowledge to assemble it correctly. Installation practices, procedures, and equipment condition all play decisive roles in achieving NDE. You have to start out with something good to end up with something good.”

### Proactive Measures

As installation quality directly influences performance, training becomes a central pillar of a proactive emissions strategy. Norman emphasized that technical training is not a one-time event but a continuous process. “Skills can diminish if they are not applied regularly. It is best to conduct periodic training to maintain competency.”

“Many plant engineers are required to complete ongoing professional development to retain their credentials, which creates opportunities to reinforce best practices for sealing installation and maintenance,” added Huteson.

Effective compliance strategies require coordination across fixed and rotating equipment, process engineering, maintenance, and environmental teams, as emissions performance depends on collective execution rather than isolated responsibilities. Teadit’s on-site engagement focuses on aligning these groups around consistent procedures and shared objectives through targeted training delivered to key personnel who then communicate expectations. “Hands-on instruction reinforces accountability and demonstrates the tangible impact of correct methods,” explained Norman.

Proactive training also reduces the need for costly reactive interventions. Improperly installed equipment can create safety risks, increase the likelihood of injury, and expose facilities to liability. By contrast, well-trained teams are better equipped to maintain equipment integrity and prevent emissions incidents before they occur.

### The Importance of Proper Assembly

Even the most advanced sealing technology cannot compensate for poor assembly practices. Facilities that consistently verify proper installation significantly reduce the likelihood of conditions that meet the technical definition of a leak. Gaskets and packing are critical components within a sealing





## Closing the Gap Between Low-E Performance and True NDE Compliance

Facilities seeking measurable improvements can begin by identifying equipment with a history of recurring leaks and prioritizing upgrades using reliable sealing technology. Sealing solutions tailored to specific applications result in lower overall emissions. “Each Teadit low-E solution undergoes extensive testing, often beyond those seen in controlled laboratory conditions,” explained Huteson. “Meaningful validation requires confirming that products remain leak-tight during actual service, not only during initial qualification testing. Other companies have standard gaskets and Low-E gaskets, whereas our standard gasket is a Low-E gasket. When you install a high-quality gasket that is assembled correctly, you get lower general emissions and reduced need for maintenance.”

Facilities can also consider the broader financial implications of emissions reduction. “Operating fees are often based on permitted emission levels, meaning lower actual emissions can reduce annual costs while preserving capacity for production expansion,” added Norman. Installing higher-performance sealing materials early allows facilities to realize these benefits without waiting for enforcement actions to compel change.

### The Baseline Expectation

Regulatory trends indicate that emission limits will continue to tighten. While historical NDE definitions have allowed higher thresholds, some jurisdictions already enforce significantly lower limits, signaling the direction of future standards. Facilities that adopt advanced technologies ahead of these changes position themselves for long-term compliance rather than periodic retrofits.

“Teadit therefore positions itself as a long-term partner, helping customers anticipate future expectations and implement solutions that remain viable as standards tighten. Continuous research, testing, and product development allow the company to deliver technologies designed not only for current compliance but also for emerging environmental priorities,” explained Huteson.

For operators, this partnership approach provides confidence that sealing strategies will remain effective over time. Instead of reacting to each regulatory update independently, facilities can adopt a forward-looking plan that integrates technology upgrades, maintenance practices, and operational goals.

Ultimately, strengthening emissions performance requires a shift in mindset towards continuous improvement. Higher-quality materials, proper installation, disciplined maintenance, and informed decision-making collectively reduce risk while enhancing reliability.

“The most effective path forward may begin with selecting the right partner to guide facilities through evolving regulatory and operational challenges,” stated Norman.

*The views and opinions expressed in this article do not necessarily reflect the position of Fugitive Emissions Journal.*



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### DEFINING THE DIFFERENCE BETWEEN NDE AND LOW-E

*The terms low emissions (Low-E) and no detectable emissions (NDE) are often used interchangeably. Someone using an emissions-detecting tool detects emissions no lower than 600 ppmv can claim to have achieved no detectable emissions. In the Environmental Protection Agency’s (EPA) realm, however, that definition is inaccurate. The EPA defines NDE as a measurement below 500 ppmv using a Method 21 monitoring device.*

*When low-E detection began, there were no parameters to follow, and quantification varied depending on the application used to detect a leak. “We used to measure leaks by drips per minute followed by spraying soapy water on it and looking for a bubble,” recalled Huteson. “We are now looking at parts per million. Standards like Method 21 define how to look for a leak. Industries are no longer putting a bucket under the valve to see how long it takes to fill the bucket.”*

*If the EPA issues a consent decree, the leak must be resolved using ‘Certified Low Leak Technology’ or commonly referred to as Low-Emission or Low-E technology, and it will typically require below 100 ppmv upon retesting. Reaching this lower ~100 ppmv limit is the typical definition for ‘Low-E.’*

*“Facilities that prioritize NDE tend to take a more proactive approach to compliance. In contrast, the adoption of low-emission solutions is often driven by regulatory requirements, such as consent decrees,” added Norman.*