

Bimetal vs Carbon Steel: Insights From China Leading Bimetal Self Drilling Screws Manufacturer Fasto



Xian, Shanxi Jan 26, 2026 (Issuewire.com) - On a coastal construction site near the North Sea, a lead engineer inspects the structural integrity of a newly installed aluminum façade. The salty air and high humidity pose a constant threat of oxidation, a challenge where the choice of a single fastener determines the longevity of the entire building envelope. In such demanding environments, the selection between material types is not merely a matter of cost, but a critical engineering decision.

As a [China Leading Bimetal Self Drilling Screws Manufacturer](#), Fasto Industrial Co., Ltd. (Fasto) provides the technical expertise required to navigate these choices. Bimetal self drilling screws represent a sophisticated hybrid technology, combining a stainless steel body for maximum corrosion resistance with a hardened carbon steel drill point that can penetrate thick steel substrates without pre-

drilling. While standard carbon steel screws offer exceptional hardness and cost-efficiency for interior framing, the bimetal alternative addresses the specific vulnerabilities of high-exposure projects, bridging the gap between mechanical strength and chemical stability.

Understanding the nuance between these two materials is essential for modern infrastructure. Carbon steel is prized for its uniform hardness and high torque capacity, making it the industry standard for drywall installations and general timber construction. However, in outdoor or corrosive environments, even galvanized carbon steel may eventually succumb to the elements. This is where the innovation of bimetal self drilling screws becomes indispensable. By utilizing a fusion-welded tip, these fasteners allow engineers to utilize the non-corrosive properties of 304 or 316 grade stainless steel in the main shank, while the carbon steel tip handles the initial high-friction task of piercing the metal sheet. This dual-material approach ensures that the fastener does not become a point of failure due to hydrogen embrittlement—a common risk in high-strength carbon steel fasteners exposed to moisture.

Material Performance and Precision Engineering

The technical superiority of bimetal self drilling screws lies in the metallurgical bond between the two metals. Fasto has refined this interface structure to ensure that the transition from the hardened tip to the stainless body is seamless. In practical applications, such as solar PV mounting or coastal roofing, this prevents galvanic corrosion where different metals meet. Unlike traditional fasteners that might require separate washers or complex coatings, bimetal versions provide an all-in-one solution that maintains structural integrity for decades.

For interior applications where environmental stress is lower, carbon steel screws remain the highly effective choice. Products like the Phillips head fine thread drywall screw are designed specifically for speed and grip in gypsum-to-steel-stud applications. These fasteners undergo rigorous heat treatment to ensure the heads do not "pop" during high-speed installation. Similarly, the double countersunk torx star drive decking screw showcases how carbon steel can be optimized for outdoor timber use through advanced coatings like mechanical galvanizing, which provide a significant barrier against rust while maintaining the driving power of steel.

Customization and Technical Problem-Solving

Beyond standard specifications, the ability to customize hardware is what defines a top-tier manufacturer. Fasto's approach to customized bimetal screws for corrosion resistance and strength involves tailoring the thread geometry and tip length to the specific gauge of the substrate. Whether it is a bi-metal tek self drilling screw with an EPDM washer for a watertight seal on a metal roof or a flat head machine screw for flush-fit machinery components, the focus remains on precision.

Customization also extends to the carbon steel line. Collated belt drywall screws, for instance, are engineered for high-volume automated tools, requiring exacting tolerances in the "collation" process to prevent jamming. By analyzing the specific torque requirements and pull-out strength needed for a project, [Fasto](#) can adjust the alloy composition and finishing process—ranging from dacromate to phosphate coatings—to match the project's lifespan expectations. This level of service ensures that the fastening solution is never the weakest link in the architectural chain.

Integrated Manufacturing and Global Supply Solutions

As the industry evolves, the role of a manufacturer has shifted from a simple supplier to a comprehensive solution provider. Fasto's capabilities extend far beyond specialized screws to include a

vast array of hardware such as rivets, bolts, nuts, and anchors. This holistic manufacturing approach allows for better quality control across an entire project's Bill of Materials. Using materials like stainless steel, copper, and even titanium, the facility manages diverse production lines that cater to everything from heavy industrial energy projects to intricate interior design.

The manufacturing process at Fasto integrates traditional craftsmanship with modern quality control. Each batch of bimetal self drilling screws undergoes rigorous testing for drilling speed, shear strength, and salt spray resistance. This ensures that when a shipment arrives at a solar farm in South America or a skyscraper in Dubai, the fasteners perform exactly as specified. The company's history is rooted in this commitment to reliability, moving from standard hardware production to the development of high-performance bimetal technology that meets international standards for the construction and energy sectors.

Application Scenarios and Environmental Resilience

The choice of fastening technology often depends on the specific "micro-environment" of the installation. In aluminum façade systems, the thermal expansion and contraction of the metal panels require a fastener that can handle movement without losing tension. Bimetal self drilling screws are particularly effective here, as the stainless steel shank offers better ductility than fully hardened carbon steel. Meanwhile, in heavy-duty structural steelwork, high-strength carbon steel screws provide the sheer force required to hold massive loads in place.

In the renewable energy sector, particularly solar installations, the hardware is often the most overlooked yet critical component. These systems are expected to last 25 years in direct sunlight and varying weather conditions. Fasto's bimetal solutions provide the necessary insurance against the elements, ensuring that the mounting brackets remain secure without the risk of rust streaks staining the panels or compromising the roof's waterproofing. By providing both bimetal and carbon steel options, the company allows project managers to balance their budgets effectively, using premium bimetal fasteners where exposure is highest and optimized carbon steel where it is protected.

Future Perspectives in Fastening Technology

Looking ahead, the demand for precision hardware is driven by the increasing complexity of building materials. As composite materials and new alloys enter the construction market, the engineering behind the screw must keep pace. The integration of various protective coatings and advanced organic coatings will continue to extend the life of carbon steel screws, while further refinements in fusion welding will make bimetal self drilling screws even more accessible for mid-scale projects.

Fasto remains committed to this path of technical evolution. By maintaining a deep understanding of metallurgical properties and the practical realities of the job site, the company continues to bridge the gap between high-end engineering and mass-market reliability. Whether it is through the development of more efficient drill points or the expansion of their "single-source" capability for all hardware needs, the focus remains on the core principle of fastening: providing a connection that lasts.

For more information on high-performance fastening solutions and technical specifications, please visit Fasto's official website: <https://www.fastoscrews.com/>.



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