Earnest

Fastener Concepts

Why Certify?

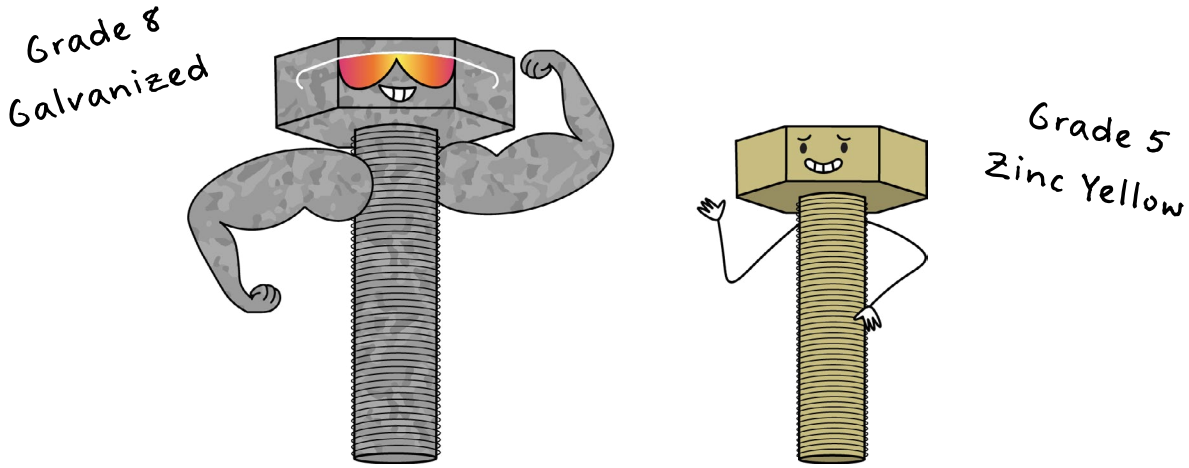
Understanding Fastener Certifications

Part I

All Fasteners are Not Made Equal

Fasteners are the building blocks of modern engineering. When used in the correct application, they allow us to secure pieces of an assembly together. But in the wrong application, they can become a safety hazard. This is because all fasteners are not created equally. Every fastener has specific chemical properties depending on its base material and finish. A fastener's chemical makeup determines what application it can safely withstand.

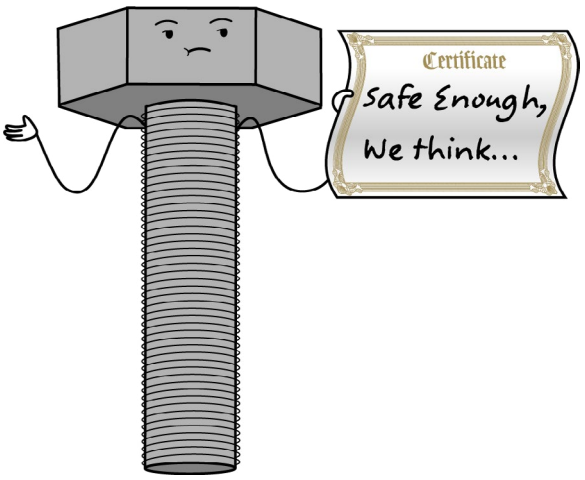
As an example, let's consider a harsh application for a fastener: a beach pier. A critical joint in a pier would need a grade 8 fastener with a galvanized finish. "Grade 8" tells us the base material is strong enough to withstand the weight. A galvanized finish will protect the metal from the corrosive salt water. This also gives us a rough estimate of when we'd need to replace the fastener to maintain a safe application. If the beach pier fastener was a different grade, a different finish, or both, it would fail much faster. Accurate part descriptions are an important part of maintaining safe joints.



Tightening the Screws

In the 1980s, the United States saw a rise in major injuries due to fastener failure. Most of these injuries happened to workers while operating industrial machinery. Over the decade, the threat of faulty fasteners became too large to ignore. To get to the root of the problem, the U.S. launched a congressional investigation.

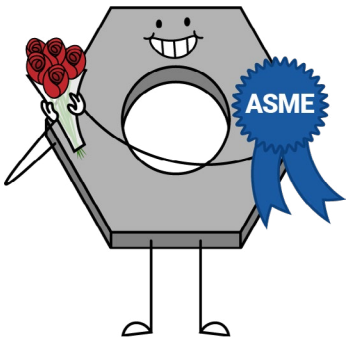
Among local manufacturers, they found an egregious lack of standards and quality control. Overseas, they found many manufacturers passing cheap stock off to the U.S. as higher quality. In some cases, they even found fraudulent quality certificates. It was hard to know which fasteners were correct, which explained many of the injuries. As a result, President George H.W. Bush signed the Fastener Quality Act (FQA) into law in 1990.



The Fastener Quality Act enforces quality control measures to keep the public safe. It holds manufacturers accountable for their product by requiring an identifying insignia on each fastener. It also requires an accredited testing facility to test each lot of products to ensure the grade is correct. Under the FQA, misrepresenting product specifications is punishable by law.

Specification Speculation

To decide the standards, the government turned to the National Institute of Standards and Technology (NIST), and a committee of fifteen professionals from across the fastener industry. With so many perspectives, they realized one set of standards would not fit all applications. Today we have a variety of fastener standards from different publishing groups. They range in detail and scope depending on the industry of intended application. For example, ASTM international (formerly the American Society for Testing and Materials) has a wide scope of manufacturing and construction standards. Any materials used for construction or manufacturing, including fasteners, would fall under ASTM standards. SAE International (formerly the Society of Automotive Engineers) standards focus on automotive and aerospace engineering, so their fastener specs only cover those applications. For most of the products we stock at Earnest, we look to ASME (American Society of Mechanical Engineers). Their fastener standards come from ASME B18, a committee of fastener experts dedicated to maintaining safe fastener specifications.



At Earnest Machine, we use 5 types of certifications: Certificate of Conformance (CofC), Material Testing Report/ Manufacturer's Testing Report (MTR), Plating Certification, Initial Sample Testing Report (ISIR), and Production Part Approval Process (PPAP). Each certificate has its own standards and regulatory tests, but all tell us specific information about the fastener. In compliance with the FQA, we keep each necessary certificate on file for 5 years. This ensures that each certificate related to your order remains available upon request throughout that period.