

Fastener Quality:

Certification, Compliance,
Conformance & More

INTRODUCTION

The Fastener Quality Act (FQA) was signed into law on November 16, 1990, in response to a series of high-profile fastener failures in the 1980s. The Congressional Subcommittee on Oversight and Investigations uncovered deficiencies in manufacturing standards, quality control processes, and safety inspections within the fastener industry. They also discovered that a large number of overseas suppliers were using counterfeit safety certificates to pass off cheap, inferior fastener products as being of high quality.

The FQA (Public Law 101-592) was enacted in order to protect public safety through a three-part effort:

- *Requiring that fasteners sold in commerce conform to the specifications to which they are represented to be manufactured;*
- *Providing for accreditation of laboratories engaged in fastener testing; and*
- *Requiring inspection, testing, and certification in accordance with standardized methods.¹*

Clearly, fastener quality is a topic of serious importance. For specifying engineers and purchasers of fastener products, a comprehensive evaluation of quality assurance must be considered when selecting a manufacturer or distributor of fastener products. In the following pages, we will discuss various aspects of fastener quality assurance programs and why they are important.

¹ National Institute of Standards and Technology, U.S. Department of Commerce,
<https://www.nist.gov/standardsgov/compliance-faqs-quality-act-fqa>

CERTIFICATIONS

In searching for quality-assured fasteners that perform to expected standards, first consider industry certifications and accreditations that are held by the manufacturer and/or supplier. These certifications and accreditations help demonstrate that the supplier is committed to achieving high levels of quality in the materials, processes, and testing procedures they employ. Take the time to understand the certifications and research any accreditations with which you are not familiar. Be aware that while some accreditations are specific to a particular industry, others are available to companies across the board. While not a blanket guarantee of quality, certifications and accreditations can help ensure that organizations have implemented processes for quality assurance and continual improvement. For this reason, it's a good place to start.

ISO: 9001 Certification

ISO:9001 is an international standard that specifies a multitude of requirements needed for the operation of a quality management system (QMS). Companies use the ISO:9001 standard to demonstrate their consistent ability to provide goods and services that meet customer and regulatory requirements.²



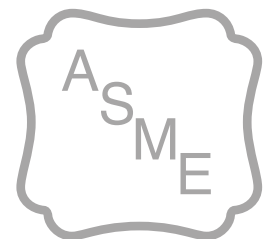
A2LA Accreditation

The American Association for Laboratory Accreditation (A2LA) is one of the largest accreditation bodies in the world. As an independent and international non-profit accreditation body, A2LA offers a full range of conformity assessment accreditation services. It is dedicated to the recognition of competent testing and calibration laboratories, inspection bodies, product certification bodies, reference material producers, and other providers.



ASME Certification

Businesses and regulators around the world rely on The American Society of Mechanical Engineers (ASME) certifications to ensure that a company is committed to product safety and quality. ASME's Conformity Assessment program certifies that manufacturing, power generation, stamped products and parts fulfill the requirements of relevant ASME codes and standards.³



² International Organization for Standardization, <http://www.iso.org/home.html>

³ The American Society of Mechanical Engineers, <http://www.asme.org/>

Other Certifications

Other certifications may be offered by independent organizations and governing bodies within specific industries. For example, in the oil and gas industry, Individual Certification Programs (ICPs) are offered by the American Petroleum Institute (API) as a way to test the knowledge and document the experience of inspection and technical personnel.⁴

COMPLIANCE

Whereas certifications are awarded to companies who are found to satisfy the requirements of specific manufacturing standards and/or quality assurance processes, compliance relates to the quality of the actual product or service provided.

Compliance can be granted by an independent organization, or claimed by the manufacturer, providing that the requirements have been published by an independent, third-party organization.

A certificate of compliance can typically be provided by a company to provide confirmation that the company's products and services comply with specific operational, material, or process requirements.

Health, Safety and Environment Compliance

In the area of Health, Safety and Environment, companies may provide a statement of compliance with applicable health, safety, and environmental laws, as well as processes to ensure a safer, healthier workplace, while minimizing environmental impacts.

Conflict Minerals Compliance

As a result of the Dodd Frank Wall Street Reform and Consumer Protection Act of 2010, certain companies are required to disclose their use of "conflict minerals" – minerals determined by the U.S. Secretary of State to be used to finance conflict in the Democratic Republic of the Congo or adjoining countries.

ATSM Standards Compliance

The annual Book of ASTM Standards is an 80+ volume that contains 12,800+ global standards that are designed to improve product quality, enhance health and safety, strengthen market access and trade, and build consumer confidence on a global basis. These standards are published by ASTM International (formerly the American Society for Testing and Materials) who offers memberships, technical committees, meetings and symposia, academic programs, and publishing channels in which manufacturers and distributors can participate.⁵

⁴ American Petroleum Institute, <https://www.api.org/products-and-services/individual-certification-programs>

⁵ ASTM International, <https://www.astm.org/>

Other Compliance

Many customers are subject to special regulatory requirements as a result of their industry, geographic presence, or internal operating policies. In some cases, manufacturers may be asked to provide a certificate assuring compliance with required rules, regulations, or guidelines. Examples of such compliance may include meeting the requirements of the Defense Federal Acquisition Regulation Supplement (DFARS), the Toxic Substance Control Act (TSCA), or Restriction of Hazardous Substances (RoHS) for products being used in the European Union, as well as other regulatory or corporate initiatives. Mil-I-45208, ISO/IEC 17025, ANSI/ASME, are examples of additional types of standards compliance.

CONFORMANCE

Conformance relates to the end product, rather than procedures or processes that are used to make or test the product. Conformance to consensus standards is required by the Fastener Quality Act (FQA) with regard to the manufacture and testing of many types of fasteners.



Fasteners regulated under the Fastener Quality Act (FQA) include metallic bolts, nuts, screws, and studs with a nominal diameter of 6 millimeters/0.25 inch or greater – or direct tension-indicating washers – that are through-hardened and manufactured to the standards and specifications of consensus standards organizations or government agencies that require a grade mark.

Manufacturing Insignia

Prior to offering a fastener for sale, the manufacturer must record the insignia with the U.S. Patent and Trademark Office (USPTO) and must apply the insignia to any fastener that is available for sale.



The FQA requires that testing on subject fasteners is performed by an accredited laboratory to verify that the lot of manufactured fasteners conforms to the grade identification marking called for in the consensus standard (or standards) for that lot of fasteners.

Information about the manufacturing insignia of All-Pro Threaded Products, the manufacturing arm of All-Pro Fasteners, can be found at https://www.uspto.gov/sites/default/files/documents/FQA_Registry.pdf.

Record of Conformance

The manufacturer must also create a record of conformance to demonstrate compliance with the consensus standards or specifications.

The record of conformance must include the name and address of the manufacturer, a description of the type of fastener, lot number, nominal dimensions, thread form, chemistry and grade of material, coating materials and characteristics, and results (or summary results) of any testing that is performed.

Regulatory Compliance

Manufacturers and importers must retain the record of conformance for a period of five years, either in hardcopy or electronic form that allows for verification of authenticity. This record must be provided upon request by any distributor or purchaser of fasteners who is involved in the production of a commercial product.

The Fastener Quality Act (FQA) makes it a violation to knowingly falsify or misrepresent the record of conformance for a lot of fasteners, including the identification, characteristics, properties, mechanical or performance marks, chemistry, strength of a manufactured lot of fasteners, or the manufacturer's insignia.

QUALITY TESTING



In addition to its own laboratory accreditation program, the NIST maintains a list of laboratory accreditation organizations (as well as quality system registrar accreditation organizations) who have affirmed to NIST that they meet specific ISO/IEC requirements. This includes the American Association for Laboratory Accreditation, which provides A2LA accreditation to quality assurance laboratories meeting its criteria. To ensure the delivery of reliably quality fasteners, All-Pro operates a fully accredited A2LA quality lab.

Through an accredited quality testing laboratory, a number of tests can be performed, and Material Test Reports can be made available for distributors and customers.

Selected Quality Assurance Tests for Fasteners

| | |
|--|---------------------|
| Plating Thickness | Rotational Capacity |
| Positive Material Identification Testing (PMI) | Fatigue Testing |
| Dimensional Metrology | Adhesion Testing |
| Charpy Impact Testing | Bend Testing |
| Hydrogen Embrittlement | Tensile |
| Magnetic Permeability | Proof Load |
| | Hardness |

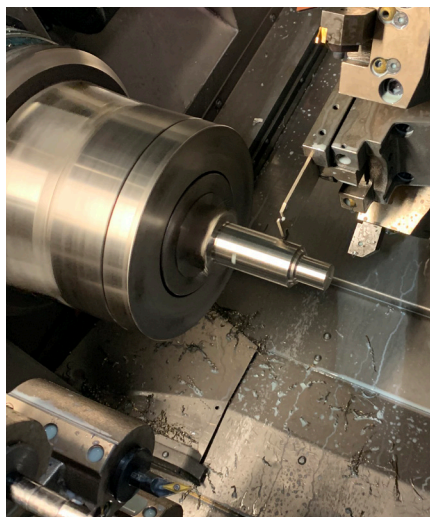
Material Test Reports

When quality assurance and traceability are critical, Material Test Reports can be requested. These reports list the physical properties of the product and contain all information that is required by the Fastener Quality Act (FQA) for each lot of heat-treated and grade-marked fasteners.

All-Pro Fasteners ensures that customers are covered with free Material Test Reports with any purchase of product. Digital versions of customer Material Test Reports are accessible for download after purchase and remain accessible forever, free of charge.

Other Certs

Customers may also request other types of “certs” (certificates) from fastener manufacturers or distributors as part of its procedures to document fastener quality.



A Certificate of Conformance (or Compliance) – commonly referred to as a CofC – is a statement that the products meet customer or industry specifications.

A Plating Certificate lists the type, thickness, and chromate color of any plating material applied to the fastener and can include results of salt spray testing or hydrogen embrittlement testing.

An Initial Sample Inspection Report (ISIR) is sometimes requested when a product is first supplied to a customer. The ISIR lists the dimensions and physical properties of the product, to verify that the product meets the customer’s specifications.

TRACEABILITY

Whether purchasing fasteners through a manufacturer, distributor, or a third-party channel, it is important to have assurance that the seller of the fasteners is able to offer life cycle traceability of its products by manufacturing lot number. Confirm the supplier's policies and procedures for product traceability.

CONCLUSION

Fastener quality is of serious importance given the role of fasteners in the products, machinery, and infrastructure that are an integral part of the world in which we live. An awareness of the issues involved in achieving – and verifying – fastener quality is advantageous for anyone involved in the design, specification, manufacture, purchasing, or use of fasteners.



All-Pro Fasteners offers a comprehensive approach to quality that impacts all elements of its operations. Quality is assured on every product manufactured domestically, sourced globally, or distributed internationally. Through our certified quality assurance programs, we establish and ensure defined procedures for meeting the quality requirements of ISO 9001:2015, Mil-I-45208, ISO/IEC 17025, ANSI/ASME, API Q1, and ASTM specifications. Our in-house testing capabilities include fatigue testing, adhesion testing, bend testing, proof load, shear stress, Charpy impact testing, failure analysis, and other industry standard analyses.

ABOUT ALL-PRO FASTENERS

All-Pro Fasteners supplies high-quality fastener products to meet a wide range of industrial, manufacturing, and fabrication applications. The teams at All-Pro Fasteners go the extra mile with customized inventory management, kitting, custom shipping, and more — offering a full range of service and support to makes your business more efficient.



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