What is NIST and ISO – Quick Tips



Get the NIST and ISO information you need here. Get an overview of these organizations to ensure you're in the know when it comes to standards.

The National Institute of Standards and Technology (NIST) is a non-regulatory federal agency under the Department of Commerce. NIST is the United States National Measurement Institute. Their mission is to develop and promote measurement, standards and technology to enhance productivity, facilitate trade and improve the quality of life.

As part of their main mission, NIST certifies and provides standard reference materials (SRM). SRMs are used to perform instrument calibrations, verify accuracy of specific measurements and to support development of new measurement methods. SRMs are also used to support measurement traceability in the United States. NIST provides a Certificate of Analysis and a Material Safety Data Sheet (if applicable) with every SRM.

NIST certification means a product has been tested against an NIST SRM and meets the exacting requirements for that product. Some common NIST certified products include timers, calibration weights, sound level meters, tachometers, electrical multi-meters, thermometers, clocks, pressure gauges, anemometers, pH meters, micrometers and light meters, just to name a small selection. Basically, most products that measure for something have an equivalent NIST SRM that a manufacturer can compare the product against to ensure it is working within the acceptable parameters. Once the item has been tested it is sold with an NIST certificate with an expiration date on it to let the end user know when the item needs to be recalibrated or retested.

An NIST certification can be a NIST Certificate of Calibration, meaning that the item was tested to be within its stated tolerance of accuracy and if it was not, the unit is adjusted to be within that tolerance. Another type of NIST certification is an NIST Certificate of Compliance. A certificate of compliance means that the unit was tested to be within its stated tolerance and did fall into that tolerance, but no adjustment is possible on the item. Certificates of compliance would be applicable for products such as glass tube thermometers or hydrometers.

NIST Traceable Certificates means that the item in question would not have been tested against an NIST SRM but has been tested against an item that has a paper

trail leading back to an NIST SRM. An NIST SRM thermometer might test a second thermometer. If all the appropriate paper work listing all stated uncertainties is filled out properly, that 2nd thermometer would have a certificate of compliance traceable to NIST Standards. Traceability requires the establishment of an unbroken chain of comparisons to stated references. NIST states that it is the responsibility of the provider of the NIST traceable item to support the claim of traceability, but it is the responsibility of the user to assess the validity of the claim.

NIST certification does not imply or indicate any approval, recommendation or endorsement of any product, supplier, manufacturer or user of any NIST certified equipment.

Why get NIST certification or calibration?

NIST certification can be expensive, adding as much as several hundred dollars to the price of the same item without the certification. However, there are several benefits to getting a certified product. NIST certification will prove that the product you receive has been specifically tested before you receive it to ensure it is accurate. The service of calibration is specifically designed by the NIST to help the makers and users of precision instruments achieve the highest possible levels of measurement quality and productivity.

There are some industries that require International Organization for Standardization (ISO) compliance. Also, there are some organizations that voluntarily strive to meet the ISO requirements so they can advertise as ISO compliant. This compliance is often seen as an indicator of a company’s excellent service or product quality. ISO requirements often call for all testing instrumentation to have NIST certification for documentation purposes.

What is ISO?

The International Organization for Standardization (ISO) is a non-governmental organization that is the world’s largest developer of standards. Their goal is to create international standards that help facilitate trade, lead to similar levels of workmanship, increase product quality, make the world safer, create more reliable products and services, and increase interchangeability of products and services. Because ISO is non-governmental, their standards are voluntary. They have no authority to enforce their standards. Regulatory agencies may choose to adopt ISO standards and then use their regulatory powers for enforcement.

A common ground for international companies and products make trade easier and more fair. For instance, ISO has a standard regarding the size and configuration of bank cards. That allows international banks to follow one format for automated teller machines (ATM) and credit card swiping machines. It also allows consumers to cross international borders and still use their same cards. Standardization such as this makes life easier for both consumers and manufacturers.

Standards are developed by ISO based on a need that is felt by an industry or business sector which then passes that need on to ISO. A technical committee is then set up which consists of experts in the field from the industry or business sector requesting the standard. The committee meets to discuss, debate and argue to come up with a draft agreement. The draft is circulated for more discussion

and balloting. After accounting for feedback, the draft is circulated again as a final draft for a final vote. If that vote is positive, the standard is published as an International Standard.

ISO's most popular and far reaching standards are their generic standards. Generic standards can be applied to any organization regardless of the size of the operation. Generic standards can apply to both product producers and service providers. ISOs most far reaching generic standards are the ISO 9000 and ISO 14000 families.

ISO 9000 is a family of standards which deals primarily with quality management. Companies striving to meet ISO 9000 requirements are trying to increase customer satisfaction, meet all regulatory requirements, meet customer quality demands and continue to improve their performance in order to meet such objectives.

The ISO 14000 family of standards covers environmental management. Organizations meeting these standards are expected to minimize harmful effects to the environment caused by its activities and to achieve continual improvement of its environmental performance. The main goals of these standards are to reduce the use of raw materials, reduce energy consumption, improve process efficiency, reduce waste generation and disposal costs, and to utilize recoverable resources.

Commonly Asked Questions

Q: Do I need to buy an NIST certified instrument for my application?

A: That is a question that only the end user can answer. There is no difference whatsoever from an instrument without NIST certification and an instrument with NIST certification. The difference is in the paperwork that accompanies the instrument. If, for your application, you need documentation that the instrument you receive has been tested prior to shipment, then NIST certification is the only way to get that proof. Also, companies that are trying to meet ISO standards need to get the NIST certification.

Q: Can I buy the meter now and then ask for and buy the certification letter at a later time?

A: No. All certifications must be directly linked to their products. You are not only purchasing a letter of certification. That letter is a certification that the exact product you buy has been compared and/or calibrated to NIST standards.

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