

Metrology Program



***California Department of Food and Agriculture
Division of Measurement Standards
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INFORMATION GUIDE

Introduction

Metrology is the science of measurement and is the basis of weights and measures. The State Metrology Laboratory keeps and maintains the standards of weight, volume, and length that are used to ensure accuracy for all weights and measures in the state of California.

These physical standards form the legal and scientific basis for all commercial transactions in California involving weights and measure. The values of these standards are traceable to national and international standards. The photograph on the front of the Information Guide is of the international prototype kilogram that is kept near Paris, France. The value of all weights used in the United States and California can be traced back to this one object. Other standards can be traced to naturally occurring physical phenomena, for example: Atoms and protons emitted at various wave lengths, electrical forces relating to constants, and the frequency of a laser light.

The Metrology Branch is responsible for:

- Certification of state, county and service agency standards.
- Maintenance of recognized certification standards.
- Providing scheduling and pricing information.
- Coordinating measurement activities, for a fee, among local agencies, industry and the general public.
- Providing calibration services for the industrial community.

General Terms and Definitions

Commercial Measuring Device	A device used to measure the amount of a commodity for the purpose of completing a monetary transaction. Examples would include: scales, gas pumps, water meters, electric meters, or taxi meters.
Measurement Standard	A “measurement standard” is a “physical” object or system that contains a physical quantity and serves as the basis for measurement of that quantity.
Metrology	Metrology is the science of measurement.
NIST	NIST is the National Institute of Standards and Technology , the national laboratory for the United States. NIST maintains the national standards traceable to the International System of Units (SI).
Primary Standards	Primary standards are the highest accuracy level standards maintained by a metrology laboratory.
Service Agency	A service agency is a business that repairs commercial weighing and measuring devices.
Traceability	<p>Traceability is the property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties.</p> <p>This chain of comparisons, calibrations, tests, and other terms that imply a measurement involves increasing levels of accuracy for each measurement in the hierarchy reaching or traceable to the highest accuracy level or measurement origin. This measurement origin is normally standards and procedures maintained at the National Institute of Standards and Technology.</p>

Questions and Answers

The following information provides you with answers to frequently asked questions and should be used only as a guide and not considered to be a legal authority.



Where can I purchase standards and instruments used in weights and measures applications?

To obtain a [list of manufacturers and suppliers](#), contact the Division of Measurement Standards (DMS) Metrology Laboratory by e-mail at DMS@cdfa.ca.gov or you can print the list from this website.

You may contact us to obtain additional information to help determine if standards or instruments used in weights and measures applications conform to required specifications and are certifiable.

You can access the [National Institute of Standards and Technology \(NIST\)](#) web page to print a copy of the NIST 105 Series Handbooks that provide detailed required specifications.



Where can I have my weights and measures standards and instruments certified?

You may contact us by e-mail at DMS@cdfa.ca.gov for information on standards certification sources, or you can print the [Service Agency Certification Sources list](#) by clicking on this link.

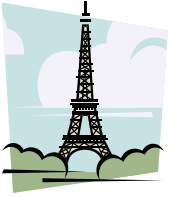
How do I make an appointment to have my weights and measures standards or instruments certified by the State Metrology Laboratory? Is there a cost involved?



To obtain information about pricing or having your standards or instruments scheduled for testing, you can contact us by telephone at (916) 229-3000, or e-mail us at DMS@cdfa.ca.gov, or send your written request to:

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All certifications require scheduled appointments and are subject to current workload considerations. Payment is required prior to the issuing of a Report of Test.



Where Can I find more information about international standards?

The [International Bureau of Weights and Measures \(BIPM\)](http://www.bipm.org) ensures worldwide uniformity of measurements and their traceability to international standards.



How do I know if the scale used in part of the state will weigh an item the same as a scale in another part?

County Weights and Measures Officials throughout California use weight standards to determine the accuracy of weighing devices. Every one of these standards is checked for accuracy against the same State standard.



Where can I find conversion factors?

You can obtain this information at <http://ts.nist.gov/WeightsAndMeasures/Metric/doc5.cfm>.