

Glossary

[Glossary]

Field of measurement standard/reference material

	Term	Meaning
Ki	prototype kilogram	A solid metal block made of alloy composed of 90% platinum and 10% iridium which is defined to represent the unit for mass, "kilogram (kg)". The international prototype kilogram is kept at the International Bureau of Weights and Measures at Paris, France, and the mass of the Japan prototype kilogram is compared with the international prototype kilogram and calibrated approximately every 30 years to confirm the equivalency of the mass. The Japan prototype kilogram was distributed to Japan in 1889, and is currently kept at AIST (located in Tsukuba).
Ke	measurement standard	A standard for measurement. An accurate measurement.
	Measurement Act	A Japanese act which aims to contribute to the development of economy and advancement in culture through establishing measurement standards and securing implementation of appropriate measurement.
	prototype	A standard for defining the unit of various physical quantities. Currently, the only prototype for International System of Units (SI) is the prototype kilogram representing the unit for mass.
Ko	calibration	A sequence of work to determine the relation between the value of amount indicated by an instrument or a measuring system, or the value given by an instrument or a standard substance, and the corresponding value realized with the standard under certain condition.
	calibration certificate	The result of calibration is recorded as a document. This document is usually referred to as a "calibration certificate".
	public research institute	A public testing and research institute established in municipalities nationwide (e.g. Industrial Technology Center of ** Prefecture).
	International System of Units	An internationally determined universal system of units. Also referred to as the SI unit system.
	General Conference of Weights and Measures (CGPM)	The supreme decision-making organization for the Metre Convention.
	International Committee of Weights and Measures (CIPM)	The representative executive organization for the decisions made by the General Conference on Weights and Measures. The practical directing organization.
	international comparison	A test performed periodically to confirm equivalency of the measurement standards in Japan and those in other countries. Comparisons such as the CIPM key comparison organized by the Consultative Committee (CC) of each measurement field which is the lower branch of the International Committee of Weights and Measures (CIPM), international comparison organized by regional measurement organizations, and international comparison between two countries are performed. The results of international comparison are registered in a database (KCDB Appendix-B) managed by the International Bureau of Weights and Measures (BIPM), and are published on a website.
Shi	designated calibration organization	A calibration organization designated by the Minister of Economy, Trade and Industry based on the Measurement Act. Instrument calibration and reference material pricing are performed using specified standard instruments or specified reference materials.
So	composition reference material	An impure material among reference materials for chemical analysis measurement generally of which the concentration range or composition of a minor component within the matrix is a characteristic value. Depending on the type, component compositions which cannot be regarded as minor components may be included. Examples of composition reference materials are steel, seawater, rocks, serum, etc.
To	"doryoko" (weights and measures)	A general term for an "object" or "unit" for measuring various amounts. <i>Do</i> refers to "length, measure", <i>ryo</i> refers to "capacity, volume, measuring container", and <i>ko</i> refers to "mass, weight, scale".
	traceable	Measuring instruments are calibrated with standards, and the standards are calibrated with more accurate (less uncertain) standards. Further pursuing more accurate standards for calibration will finally end up with the national standards. If this chain of calibration for a measuring instrument is sure to be traced back to the national standard, this measuring instrument is considered as traceable to the national standard. Likewise for an analytical device, if the reference material used for its calibration is traced back to the reference material of the national standard, the analytical device or reference material is considered to be traceable to the national standard.
	traceability (measurement traceability)	The noun for traceable is traceability. The state where the reliability (accuracy, quality, etc.) of a measuring instrument is certified by the standard used for its calibration being traceable to the national standard. The nature of a measurement result where the measurement result is related to the measurement reference through the chain of continuous and documented calibration where each calibration contributes to the uncertainty of measurement. By using an authorized calibration organization, traceability can be assured without close attention to the intermediate chain of calibration.

Ni	secondary standard	A measurement standard established by being calibrated with a primary measurement standard of the same type and quantity.
	certified reference material	A reference material attached with a document issued by an authorized organization. Also referred to as CRM (abbreviation for certified reference material). The document includes one or more characteristic values of the reference material and their uncertainty, and states that its traceability is secured by adequate means.
Hi	standard product	Reagent etc. with characteristic values guaranteed by analytical methods mainly decided by company judgments. In many cases, it refers to self-guaranteed reagents etc. without traceability, in contradiction to reference materials.
	reference material	A material which is the base for determining characteristic values of other materials. Its characteristic is sufficiently homogeneous and stable, and it is created to suit for uses in measurement and inspection. A material where one or more characteristic values are sufficiently homogeneous and properly determined to be used to calibrate a measuring instrument, to evaluate a measuring method, or to price materials.
Fu	uncertainty	An internationally determined scale indicating the reliability of measured values.
Me	prototype meter	A prototype fabricated with a pure base metal alloy composed of 90% platinum and 10% iridium with a scale mark indicating 1 m at 0°C. A prototype was distributed to each country by the International Committee of Weights and Measures in 1889. Currently, 1 m is defined as the distance light travels through vacuum in 1/299792458 second (about 1/300 million second), and the national measurement standard is an optical frequency comb device.
	Meter Convention	A multinational convention which decided to organize and maintain the International Bureau of Weights and Measures as an organization to maintain and supply international standards for weights and measures (length, mass, etc.) to internationally establish and maintain the metric system, and which aims to establish a universal system of measuring units. It was established in 1875.

B	BIPM	International Bureau of Weights and Measures. An organization with secretariat functions for the International Committee of Weights and Measures (CIPM). It is located on a small hill at Sevres, Paris. The international prototype kilogram, the base of the Japan prototype kilogram, is stored here.
C	calibration	A sequence of work to determine the relation between the value of amount indicated by an instrument or a measuring system, or the value given by an instrument or a standard substance, and the corresponding value realized with the standard under certain condition.
	CERI	Chemicals Evaluation and Research Institute, Japan. A designated calibration organization based on the Measurement Act.
	CGPM	General Conference of Weights and Measures
	CIPM	International Committee of Weights and Measures
	CIPM MRA	An arrangement concluded in 1999 by the International Committee of Weights and Measures (CIPM) comprised of the representatives of major national measurement standard organizations of the member nations from the Meter Convention to correspond to globalization of economy.
	CMC	An abbreviation for calibration and measurement capabilities. Technical capabilities which are registered or published as a result of comparison and examination of technical capabilities of a national measurement standard organization of each country based on a unified criteria.
	CRM	A reference material with certification. An accurately valued certified reference material required to determine measurement values of chemical measurements such as calibration of analytical devices, evaluation of analytical methods, etc. A characteristic value is determined in a procedure with secured traceability, and its uncertainty specifying the level of reliability is noted to each certified value. An abbreviation for certified reference material.
I	IEC	An abbreviation for International Electrotechnical Commission. An international commission which aims to further promote global development of economy and international trade by internationally unifying the standards in the electric/electronic technology field.
	ISO	An abbreviation for International Organization for Standardization. An international organization which makes international standards related to all industrial fields (mineral industry, agriculture, medicine, etc.) excluding electric and electronic technology field.
	ISO/IEC17025	General requirements related to capability of testing laboratories and calibration organizations. It includes advanced technical capabilities for calibration and testing in addition to ISO9000 series, etc.
	ISO9000	An international standard related to quality management system.
J	JCSS	A system for supplying measurement standards (registration of calibrating service) based on the Measurement Act. An abbreviation for Japan Calibration Service System.
	JEMIC	Japan Electric Meters Inspection Corporation. An organization which supplies electrical standards, etc.
	JIS	An abbreviation for Japanese Industrial Standards.
	JQA	Japan Quality Assurance Organization. A designated calibration organization based on the Measurement Act.
N	NICT	National Institute of Information and Communications Technology A designated calibration organization based on the Measurement Act.
	NITE	National Institute of Technology and Evaluation. The NITE authorization center is in charge of office work related to authorization systems such as JCSS.
	NMI	A general term for national measurement standard organization. An abbreviation for national metrology institute.
	NMIJ	National Metrology Institute of Japan, National Institute of Advanced Industrial Science and Technology. A national measurement standard organization in Japan.
R	RMinfo	A database of reference materials available in Japan.
S	SI	An abbreviation for the International System of Units.

[Glossary]

Field of microorganism genetic resources

	Term	Meaning
A	amino acid	A general term for organic compounds having both functional groups of amino group and carboxyl group. Proteins are composed of many kinds of bonded amino acids and are essential nutrient for humans. The first amino acid was found from a sprout of asparagus in the beginning of the 19th century and named asparagine. Thereafter, all amino acids which compose protein were found by 1935.
	gene	A gene determines the inheritance of traits (face, colors of skin and eyes, etc.) from the parent. All living creatures on earth (humans, animals, plants, microorganisms) have "genes".
I	gene recombination technology	A technology to extract a target gene, modify as needed, and introduce to a living creature who will be the recipient (host). It is performed in an artificial manner which does not occur in a natural growing process of living creatures. Its purposes are to express useful proteins, to introduce new traits to living creatures, etc.
	mold	Molds have long been used to produce sake, miso, soy sauce, etc. Penicillin, an innovative antibiotic, is also made by a kind of mold called blue mold.
Ka	genome	All living creatures have genes, which are encoded with information on the figure, shape, character, constitution, etc. which the child inherit from its parent. The entire set of genes are called "genome", the blueprint of the living creature. "Genome" is a word made by combining "gene" and "-ome" which characterizes a collection, and refers to a set of the entire genes (genetic information) the living creatures carry. Its entity is the DNA molecules inside cells of living creatures which contain genes, information on gene expression control, etc. Proteins are produced from information of genes through processes called transcription and translation.
	genome analysis	To comprehensively analyze the genetic information of the genome of a living creature. Genome analysis starts by determining the base sequence of DNA molecules (sequence of A, C, G and T) which construct the genome. However, it is not easily determined only from the base sequence data where and what kind of gene it contains. Therefore, the analysis is conducted based on analysis of gene products such as messenger RNA and proteins which are made by transcription and translation, comparison of similarities of the base sequences between species, and also data related to individual genes analyzed in experimental living creatures such as <i>E. coli</i> and <i>S. cerevisiae</i> . Computers are indispensable in genome analysis since analysis on the base sequences of over 1 billion is necessary from various points of view. The field of study for analyzing genome data and other biological information by computers is called bioinformatics.
Ko	antibiotic	A general term for substances produced by microorganisms which suppress multiplication of other microorganisms. Since antibiotics also act upon non-pathogenic bacteria, the balance of internal indigenous bacteria may be lost by excessive dosage. Furthermore, resistant bacteria evolved from surviving bacteria have become a problem.
	antibacterial testing	There are several methods for testing. One example is a test to determine the concentration and contact time necessary for a disinfectant etc. to kill bacteria and fungi.
	enzyme	A molecule which functions as a catalyst in a chemical reaction occurring in living bodies. Enzymes are involved in all biological processes from digestion to absorption, transportation, metabolism and excretion of substances, and are indispensable for a living creature to convert substances for its use. For example, amylase, a digestive enzyme contained in saliva, decomposes starch. It is sold commercially as a gastrointestinal drug or digestive, and is used to treat or prevent dull feeling in the stomach or heartburn.
	photosynthesis	A biochemical reaction generally performed by living creatures with photosynthetic pigments such as plants, phytoplankton and algae, which converts light energy to chemical energy.
	yeast	Yeast is responsible for alcohol fermentation, and has long been used for fermentation of liquors such as beer and wine, and breadmaking.

Sa	bacteria	Bacteria includes <i>E. coli</i> , <i>L. lactis</i> , <i>B. subtilis</i> , etc. They play important roles in circulation of substances in nature such as photosynthesis, nitrogen fixation, decomposition of organic substances, etc. Furthermore, they are used in production of fermented food such as yogurt and fermented soybeans.
Se	Biological Resource Center	Biological Resource Center (BRC) is an organization with the following functions as the foundation to support life science and biotechnology. (1) Conserve and supply biological resources useful for research, development and application of science, industry, agriculture, environment and medicine. (2) Conduct research for identification, property determination and conservation related to biological genetic resources. (3) Preserve biodiversity threatened by economic development, natural disaster, etc. (4) Store biological genetic resources to protect intellectual property rights (deposit of patent microorganisms). (5) Provide information for policy making by the government and for ordinary citizens.
Ta	Expression of proteins	To synthesize proteins from biological genetic information. Information on amino acid sequence for protein synthesis is written on the genes, and the proteins are synthesized inside living cells.
Ni	Japanese Industrial Standard (JIS)	An industrial standard established by the competent minister to comply with the Industrial Standardization Act based on a report from the Japanese Industrial Standards Committee. It is one of the national standards in Japan.
Hi	microorganism	A general term for very small living creatures which are generally observed only through microscopes. It includes molds, yeasts, bacteria, algae, etc., and they are found all over the earth including soil, deep sea, hot spring, food, human body, air, etc. Ancient humans had long used microorganisms in various ways, however, they were observed only after Leeuwenhoek of Netherlands started using his self-made microscope in the 17th century.
	identification of microorganisms	Identification is to examine the characteristics of a microorganism newly isolated from nature, compare it with known microorganism species, decide which species it belongs to, and appoint its scientific name. Identification of microorganisms is usually based on the shape of cells, etc., however, depending on the species of microorganisms, an identification method might employ genes that are common throughout the entire living creatures with highly versatile indicators.
	expressed characteristic	Colors, shapes, movements, growth conditions, etc. which are characteristic to a microorganism.
	pathogenicity	Property which induces disease of an animal or plant as a result of infection of a microorganism to that animal or plant.
Pe	penicillin	The world's first antibiotic discovered by Alexander Fleming of England in 1929. Penicillin was named after the scientific name for blue mold. It is effective against various bacterial infections such as pneumonia, gonorrhea and septicemia.
Ho	preservation efficacy test	A test to evaluate the preservation efficacy by forcibly inoculating and mixing the species of the bacteria subjected for testing to antibacterials, antiseptics, antibacterial products and other materials, and tracking the state of the tested microorganism over time.
Mo	algae	Algae perform oxygen-generating photosynthesis. In addition to their use as food or building materials, their application to biofuel etc. has been gaining attention recently.
Ya	Japanese Pharmacopoeia	A quality specification for medicine. It is established and published by the Minister of Health, Labour and Welfare based on opinions from the Pharmaceutical Affairs and Food Sanitation Council in compliance with the Pharmaceutical Affairs Law to ensure satisfying property and quality of medicine.

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Field of geology

	Term	Meaning
Ka	land and sea seamless geological map	Since the geological survey methods for marine and land differ from each other, and large research vessels cannot approach the neritic region of coast, gap areas used to exist in geological information. A seamless geological map is a comprehensive geological information of marine and land prepared by developing a survey method which solves the problems of gap areas.
	marine geological map	It is comprised of two maps: a marine geological map and a sedimentological map. The former shows stratigraphy, and distribution and characteristics of geological features below seabed revealed by removing sediments covering the sea floor, and shows submarine active faults etc.. The latter shows characteristics and distribution of surface sediments, and shows sea floor environments and depositional processes.
	geological map of volcano	A map showing the geological features of active volcanoes from the viewpoint of eruption history. Since a geological map on quadrangle series at scales of 1:50,000 is created by sections of a topographical map, there are cases where one volcano is divided into multiple geological maps. On a geological map of volcano, one volcano is shown on one geological map. It is used as the basic data for volcanic hazard maps made by municipalities.
	active volcano	A volcano designated by the Japan Meteorological Agency which has erupted approximately within past 10,000 years or is currently under fumarolic activity. As of 2011, there are 110 active volcanoes in Japan.
	active volcano database	A database made by AIST which collects the eruption history, scale and style for each active volcano throughout Japan. The geological map as well as the eruption age and style are linked, and it is made to enhance utility of geological map of volcano. It is comprised of a database for eruptions in 10,000 years. It is used as the basic data for volcanic hazard maps made by local governments.
	active fault	A fault which has repeatedly ruptured in the past about 100,000 years, and has a potential to rupture in the future to generate earthquakes.
	active fault database	A database recording bibliographic data on active faults in Japan, survey result data on each survey spot recorded in documents, and survey result data gathered by AIST. Data search from over 9,000 reference data and survey results for over 10,000 spots is available on the internet. Information such as activity history can be searched as well as the location of active faults. It is used to create prevention plans for earthquakes etc. for the national or local government.
Ko	mineral resource map	A map that shows metal/non-metal resource distribution, types and location of mineral resources and geological relevance on a geological map.
Sa	3D ground structure model	A model that shows underground distribution and thickness of bedrock or sediment, and 3D structure of earthquake faults based on drilling data and results of seismic reflection surveys, tremor survey, etc. It is used to predict the ground motion in case of earthquakes.
Shi	seamless geological map	A geological map with the uniform legend that the geological boundaries and faults were adjusted to continue between adjacent geological sheet maps. It is distributed via digital media or through the internet. This service is available on a PC or a smartphone, and the geology of a region or entire Japan can be browsed easily. This geological map makes the preliminary survey of detailed surveys for civil engineering and environmental protection easily.
Su	water environment map	Name of hydrogeological map published by GSJ since 2002. Previous and the newest hydrogeological data such as groundwater level and water quality are compiled as layers in electrical form (CD). The user can display them on browser to obtain brief hydrogeological information on the basin or plain scale.
Chi	geological/ground information and urban geological map	Topographical classification, subsurface geology, and ground data such as borehole logs with physical properties that are important for understanding geological condition beneath urban areas. Urban geological map shows the geological features from near-ground surface to subsurface drawn with high accuracy by integrating the data.
	strata classification	A classification where the strata are classified not only by their grain sizes such as sand and mud, but also by their depositional ages, environments (for mud, whether it originates from marine, lake, or from floodplain, etc.), etc. This classification helps to understand subsurface geological conditions, geological history of the ground, and how earthquake waves are
	Geology	Feature, condition and type of underground rocks and strata.
	geological	This term refers to a way of thinking about features of the geological condition based on scientific viewpoints such as its formation and genesis. Geological information shows the distribution, characters and formation age of the strata and rocks. The information is provided to be used and applied in resources and energy, disaster mitigation, environmental conservation, civil engineering and construction. Disaster mitigation refers to such as earthquakes, eruption and landslides and environmental conservation refers to such as groundwater pollution.

Chi	geological map	A map expressing the nature of strata or rocks laying beneath the top soil and vegetation. The nature includes their geological age, geological structure, etc.
	geological quadrangle map	Geographical quadrangle map is a geological map in which quadrangle map published by the Geographical Survey Institute is used as base map. There are many scales such as 1:50,000, 1:200,000, 1:1,000,000 etc. depending on the precision. Generally, igneous rocks are colored in reddish colors, sandstones in yellowish colors, mudstones in blueish colors, metamorphic rocks in brownish colors, etc., and rocks with older formation age is colored in darker colors.
	geological survey	A survey for integrating primary geological data. This includes land surface survey, boring and trenching survey, geophysical prospecting, oceanographic survey, etc.
	geothermal potential map	A map with geothermal resource information that is a collection of various fundamental information relating to potential and characteristics of geothermal resources throughout Japan (especially hydrothermal resources). It indicates distribution of geothermal resources by an unified criterion, and results of systematic potential evaluation throughout Japan, and is utilized by the national or local government as the basic data in formulating geothermal resource development such as investigation of the location of geothermal power plants. Geothermal resource maps in the scale of 1:500,000 for Sapporo, Aomori, Akita, Niigata and Kyushu were prepared between 1993 and 2003, and based on these maps, the national geothermal potential map was created in 2009.
	international standards on geographic information	In 1994, ISO established TC211 (Geographic information/Geomatics), a committee of experts related to geographic information, and has been formulating international standards on geographic information. Furthermore, in the same year, OGC (Open Geospatial Consortium), a nonprofit organization which promotes standardization for the use of geospatial information, especially geographic information acquired through the internet, was established. As of July 2012, the number of participants counts up to 463, including enterprises, government-affiliated organizations and academic organizations. As seen in the case of Web Map Service (WMS), a standard protocol for providing image data with location information through the internet proposed by OGC which was adopted in ISO 19128 (Geographic information – Web map server interface), the two organizations actively collaborate, especially for <u>distribution of geographical information through the internet</u> .
Tsu	tsunami inundation history map	A map showing inundation areas due to large tsunami that occurred from the past earthquakes on a topographical map, based on tsunami simulation results using geological field survey data.
Hi	geological sample database	A database for geological samples of minerals, rocks, fossils, etc. used for research purposes, gathering in geological surveys. The database secures traceability of the geological information, and it is also used for education and research.
He	vectorization	To convert lines composing a drawing with information such as the start/end point, and thickness and color of lines. The replaced data are called vector data, and using these data for drawing on a computer will facilitate zoom in/out, rotation, etc., and the lines in the drawing will be smooth in any enlarged scale. Data processing and overlapping comparison with other map information are facilitated.
G	GIS	An abbreviation for Geographic Information System. An information processing system which displays on a computer various data with location information such as the latitude, longitude and address, and manages and processes them to allow further analysis. By including location information on a geographical map, overlapping various map information is made possible, <u>allowing to extract information spacially and create hazard map</u> .
	GSJ	An abbreviation for Geological Survey of Japan. GSJ includes all research and research promotion units to carry out “geological surveys” in AIST.