SRM SPOTLIGHT

November 2010 Editor: Regina R. Montgomery

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New NIST SRMs/RMs

NIST SRM 1196 Standard Cigarette for Ignition Resistance Testing

Cigarette Aids Efforts to Reduce Furniture and Bed Fire Risk

On September 10, 2010, the National Institute of Standards and Technology (NIST) made available for purchase a new Standard Reference Material, SRM 1196 Standard Cigarette for Ignition Resistance Testing.

For over 40 years, upholstered furniture and mattresses have been tested to verify that they are less prone to ignition by burning cigarettes. There are several such tests, some required by the federal government and the state of California, others adopted by the furniture and mattress industries themselves. In the tests, lit cigarettes are placed on the furniture or furniture components, and ignition or non-ignition is noted. These tests have contributed substantially to the overall decrease in fire-related deaths and injuries in the United States.

Since the 1970s, the cigarette used in these tests was a commercial cigarette that the National Bureau of Standards, now NIST, identified in the 1970s as the hottest burning. As of this year, nearly all of North America is subject to regulations that require cigarettes to be less likely to cause ignition. Therefore, the test cigarette that had been used for decades is no longer in production. The new generation of cigarettes appears to be reducing fire deaths from cigarettes by half, saving about 400 lives per year.

Holding onto this gain, however, requires that furniture and beds continue to be as resistant to cigarette ignition as they have been for the past 40 years. SRM 1196 cigarettes were specially produced to replicate the ignition performance of the earlier test cigarette that had been used for decades.

SRM 1196 was developed in collaboration with the U.S. Consumer Product Safety Commission. There are now two SRM cigarettes, each with different properties and serving different user communities. SRM 1082, first available in 2006, has a low ignition strength, characteristic of all commercial cigarettes that must now meet the new fire safety regulations throughout North America. SRM 1082 is used by manufacturers of cigarettes for certification and quality assurance of their products. As stated above, SRM 1196 is a high ignition strength cigarette, used by furnishings manufacturers to verify that their products meet mandatory and voluntary standards for ignition resistance. Regulators can use SRM 1082 to help verify regulatory compliance of commercial cigarettes and SRM 1196 to verify regulatory compliance of furnishings.

Technical Contact: Richard Gann
Email: richard.gann@nist.gov

NIST SRM 1689 Sulfur Dioxide in Nitrogen 5 µmol/mol

SRM 1689 is the latest addition to the collection of gas standards that underpins traceable measurements of sulfur dioxide from static and mobile sources in the United States. The new 5 µmol/mol (ppm) sulfur dioxide gas standard joins the present suite of gas standards ranging in concentration from 50 µmol/mol to 3500 µmol/mol, and will primarily support power plants aiming to attain very low emissions of sulfur from their tall stacks. Sulfur dioxide is the primary acid-forming gas in the atmosphere linked to acid rain, and is the subject of an Environmental Protection Agency emissions credit program. Traceable gas standards are vital to maintaining the integrity of emission credit trading and ensure the outcome of the program–lower sulfur emissions. SRM 1689 is delivered in a 6 liter aluminum cylinder containing approximately 0.73 m^3 of usable gas. The SRM is certified through January 1, 2014 and the sulfur dioxide concentration has a relative uncertainty of 0.76 %. It is anticipated that the need for lower concentration sulfur dioxide gas standards will increase as new emissions technologies come on line. NIST is already researching new lower-concentration gas SRMs to meet this need. For the official Certificate of Analysis visit our website.

Technical Contact: Franklin Guenther
Email: franklin.guenther@nist.gov

NIST SRM 1729 Tin Alloy Supports High-Reliability Electronics for Aerospace and Defense Systems

The release of Standard Reference Material (SRM) 1729 Tin Alloy (97Sn-3Pb) is a step toward ensuring the reliability of electronics components manufactured for use in satellites, spacecraft, and defense weapons systems. SRM 1729, a chill-cast disk-form material, directly supports revised Military Specification 1580 requirements for prohibited materials analysis of incoming electronics components and assemblies. "Prohibited materials" refers to solder and plating compositions that include lead-free solder, pure tin (Sn) coatings, cadmium (Cd) coatings, and zinc (Zn) coatings, which are prohibited because they allow growth of metal whiskers inside assemblies and increase the risk of failures in service. The U.S. Air Force Surface Missile Center sponsored development of SRM 1729 because they, along with other Department of Defense entities and NASA, have determined that a small amount of lead (Pb) must be included in solder and coatings to reduce the risk of whiskers to an acceptable level. Thus, they require a minimum mass fraction of 3 % Pb and a maximum of 97 % Sn, which is the alloy composition of SRM 1729.

SRM 1729 was developed in collaboration with The Aerospace Corporation (a government-sponsored research and development corporation), MBH Analytical (a supplier of custom alloys), Raytheon Corporation (a supplier of systems components), and Hire Laboratories (an expert laboratory). SRM 1729 is certified for bulk composition with values for Pb, Zn, Sn, bismuth (Bi), aluminum (Al), copper (Cu), iron (Fe), nickel (Ni), and antimony (Sb). Certification of SRM 1729 for bulk composition is critical because tin alloys rapidly develop an equilibrium surface composition enriched in Pb, Zn, and other elements that diffuse to the surface. Correctly executed X-ray fluorescence (XRF) methods reflect bulk composition. However, surface-sensitive techniques such as scanning electron microscopy with energy-dispersive spectrometry (SEM-EDS) obtain results that are significantly different from the bulk alloy composition. Tin alloy reference materials with bulk composition values (including SRM 1729) cannot be used for calibration or validation of SEM-EDS methods, which are used by a significant number of labs for measurements of Pb, Sn, and Zn. Follow-up efforts are planned to determine the concentration gradients near the surfaces of units of SRM 1729, assess the stability of the gradients, and make SRM 1729 directly useful for SEM-EDS analyses.

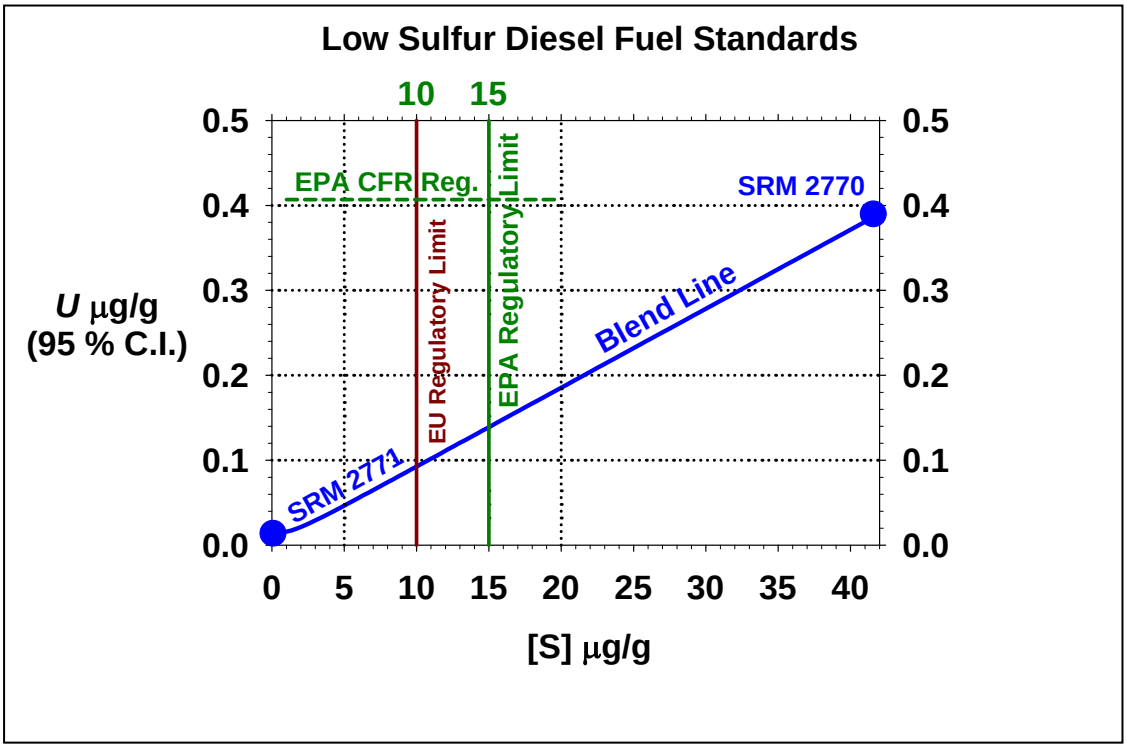
Technical Contact: John Sieber
Email: john.sieber@nist.gov

NIST SRM 2771 Sulfur in Diesel Fuel Blend Stock Supports EPA Ultra-Low Sulfur in Diesel Regulations

NIST has recently certified a new reference material for sulfur in diesel fuel at 0.102 µg/g ± 0.014 µg/g (95 % confidence level). This new standard will assist the petroleum industry in meeting the U.S. Environmental Protection Agency's (EPA's) 15 µg/g (ppm) limit on ultra-low sulfur diesel (ULSD), which took effect on June 1, 2006. The European Union's upper limit on sulfur in both diesel and gasoline is 10 µg/g. The ULSD is enabling new after-treatment technology to reduce particulates and NO_x in diesel emissions. The EPA estimates that the new highway heavy-duty and 2010 Tier 4 non-road diesel regulations will provide approximately $150 billion annually in health and welfare benefits to the American public when fully implemented. The primary transportation system for diesel and other refined products in the United States is an elaborate and efficient 200,000 mile underground pipeline system. Maintaining the integrity of 15 ppm diesel fuel by limiting sulfur cross-contamination during pipline transit is a formidable challenge.

SRM 2771 is an ultra-low level diesel fuel blend stock that can be used as a natural-matrix blank to check the near-zero point on calibration curves and as a gravimetrically blended diluent with existing diesel fuel SRMs to prepare calibration standards and check samples. The solid blue blend line in the chart below represents a continuous series of blends with existing SRM 2770. The uncertainty in the blends between 1 µg/g and 20 µg/g is well below the accuracy requirement of the EPA.

The accuracy required by the EPA as stated in 40 CFR 80.584 is stated as "the arithmetic average of a continuous series of at least 10 tests performed on a commercially available gravimetric sulfur standard in the range of 1 ppm to 10 ppm sulfur shall not differ from the accepted reference value (ARV) of that standard by more than 0.54 ppm sulfur." The same requirement is also specified for the 10 µg/g to 20 µg/g range. If this 0.54 µg/g requirement were interpreted as 3s limit, then it can be expressed as a 95 % confidence interval of 0.41 µg/g given by the green dashed line in the figure.



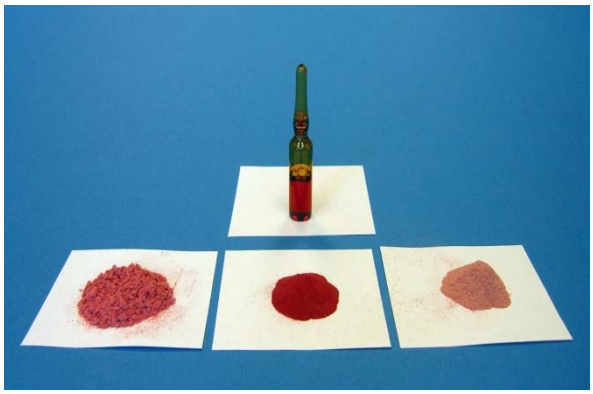
Technical Contact: *W. Robert Kelly*
Email: william.kelly@nist.gov

NIST SRM 3275 Omega-3 and Omega-6 Fatty Acids in Fish Oil

Fish oils that are used as dietary supplements, because of their omega-3 and omega-6 fatty acid content, have been added to the series of materials being produced by the National Institute of Standards and Technology and the National Institutes of Health's Office of Dietary Supplements. A unit of this material consists of three ampoules, one each of three oils: SRM 3275-1, a concentrate high in docosahexaenoic acid (DHA); SRM 3275-2, an anchovy oil high in DHA and eicosapentaenoic acid (EPA); and SRM 3275-3, a concentrate containing 60 % long-chain omega-3 fatty acids. EPA and DHA are both omega-3 fatty acids. Each ampoule contains approximately 1.2 mL of oil under argon. Values are assigned for each material for 11 to 16 individual fatty acids including the omega-3 and omega-6 fatty acids. Materials in this suite of SRMs are intended for use as primary control materials when assigning values to in-house (secondary) control materials and for validation of analytical methods.

Photo credit: Petr Kratochvil at www.publicdomainpictures.net
Technical Contact: Michele M. Schantz
Email: michele.schantz@nist.gov

NIST SRM 3281 Cranberry (Fruit)
NIST SRM 3282 Low-Calorie Cranberry Juice Cocktail
NIST SRM 3283 Cranberry Extract
NIST SRM 3284 Cranberry-Containing Solid Oral Dosage Form
NIST SRM 3285 Mixed Berry-Containing Solid Oral Dosage Form
NIST SRM 3287 Blueberry (Fruit)
NIST SRM 3291 Bilberry Extract



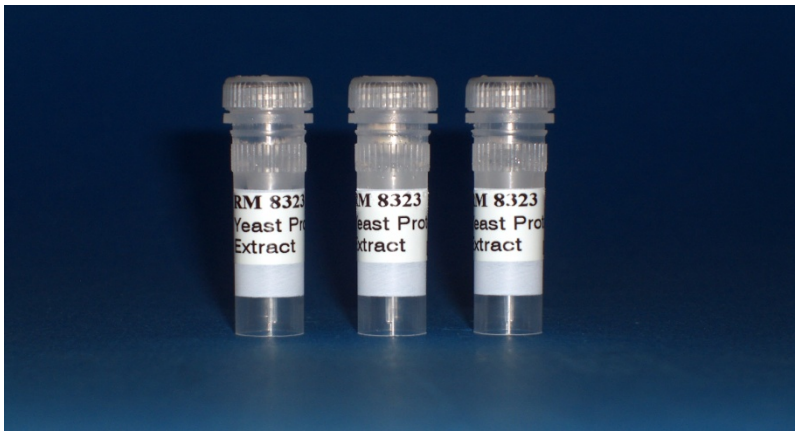
The National Institute of Standards and Technology has been working with the National Institutes of Health's Office of Dietary Supplements to produce SRMs, and seven new materials based on berries are part of this series: SRM 3281 Cranberry (Fruit), SRM 3282 Low-Calorie Cranberry Juice Cocktail, SRM 3283 Cranberry Extract, SRM 3284 Cranberry-Containing Solid Oral Dosage Form, SRM 3285 Mixed Berry-Containing Solid Oral Dosage Form, SRM 3287 Blueberry (Fruit), and SRM 3291 Bilberry Extract. These materials have been characterized for their organic acid content. Three of the SRMs are traditional foods (cranberries, cranberry juice, and blueberries), and they have been characterized for nine nutritional elements and sugars. The blueberries have also been characterized for proximates, two water-soluble vitamins, and amino acids. These new materials are intended for use in method development and validation as well as for quality assurance and traceability when assigning values to in-house control materials. A unit of each of these materials consists of five packets or ampoules, each containing the following quantities: cranberries, 6 g; cranberry juice, 1.2 mL; cranberry extract 2.5 g; both solid oral dosage forms, 2.5 g; blueberries, 5 g; bilberry extract 1 g, respectively.

Technical Contact: Lane C. Sander
Email: lane.sander@nist.gov

NIST RM 8323 Yeast Protein Extract

Reference Material 8323 Yeast Protein Extract is intended to support measurements used to identify proteins in complex protein mixtures such as those in proteomics. RM 8323 can be used to help assess measurement repeatability within a laboratory or comparability between laboratories or among different measurement approaches. RM 8323 can also be used in the development and validation of new measurement approaches for identifying proteins in complex protein mixtures. A unit of RM 8323 consists of three vials, each containing 200 µL of frozen yeast protein extract solution. The proteins extracted from *Saccharomyces cerevisiae* yeast have been solubilized in 50 mmol/L ammonium bicarbonate in water.

The development of RM 8323 was performed in collaboration with the Clinical Proteomic Technologies for Cancer (CPTC) program of the National Cancer Institute. The proteome from *Saccharomyces cerevisiae* yeast was used in several CPTC interlaboratory studies, which aimed to assess the repeatability and reproducibility of proteomic measurement for protein identification.



Technical Contact: Karen Phinney
Email: karen.phinney@nist.gov

Renewals

SRM 1667b Propane in Air (Nominal 50 µmol/mol) Lot # 83-J-XX

SRM 1669b Propane in Air (Nominal 500 µmol/mol) Lot # 81-I-XX

SRM 1689 Sulfur Dioxide in Nitrogen (Nominal 5 µmol/mol) Lot #98-A-XX

SRM 1729 Tin Alloy (97Sn-3Pb)

SRM 1888b Portland Cement

SRM 2092 Low-Energy Charpy

SRM 2389a Amino Acids in 0.1 mol/L Hydrochloric Acid

Revisions

Certificate Revisions: Are You Using These Materials?

This is a list of our most recent certificate revisions. NIST updates certificates for a variety of reasons, such as to extend the expiration date or to include additional information gained from stability testing. Users of NIST SRMs should ensure that they have the current certificates. If you do not have the current certificate for your material, you can print or view a copy at our website at **http**://**www.nist.gov/srm** or contact the Measurement Services Division at:

Phone: 301-975-2200 **Fax:** 301-926-4751 **Email**: srminfo@nist.gov

SRM 83d Arsenic Trioxide
New expiration date: 26 December 2017
Editorial changes

SRM 143d Cystine
New expiration date: 30 September 2018
Editorial changes

SRM 654b Titanium-Base Alloy
Technical and editorial changes

SRM 927d Bovine Serum Albumin
New expiration date: 30 June 2015
Editorial changes

SRM 955c Toxic Metals in Caprine Blood
New expiration date: 01 February 2020
Technical and editorial changes

SRM 1566b Oyster Tissue
New expiration date: 01 June 2020
Editorial changes

SRM 1620c Sulfur in Residual Fuel Oil (4%)
New expiration date: 01 October 2015

SRM 1660a Methane and Propane in Air (Nominal: Methane 4 µmol/mol; Propane 1 µmol/mol
Lot #13-XX-E
New expiration date: 01 October 2017
Editorial changes

SRM 1676 Carbon Dioxide in Air (Nominal 365 µmol/mol)
Lot #19-B-XX
New expiration date: 01 September 2017
Editorial changes

Revisions (continued)

SRM 1763a Low Alloy Steel
Correction of the uncertainty value for carbon
Editorial changes

SRM 1849 Infant/Adult Nutritional Formula
Reference value and uncertainty changed

SRM 1957 Organic Contaminants in Non-Fortified Human Serum
Editorial changes

SRM 1958 Organic Contaminants in Fortified Human Serum
Editorial changes

SRM 2133 Phosphorus Implant in Si Depth Profile
Editorial changes

SRM 2134 Arsenic in Silicon
Editorial changes

SRM 2137 Boron Implant in Silicon Standard for Calibration of Concentration in a Depth Profile
Editorial changes

SRM 2266 Hopanes and Steranes in 2,2,4 Trimethylpentane
Editorial changes

SRM 2613a Carbon Monoxide in Air (Nominal 20 µmol/mol)
Lot #22-XX-E
New expiration date: 01 August 2017
Editorial changes

SRM 2628a Nitric Oxide in Nitrogen (Nominal 10 µmol/mol)
Lot #49-H-XX
New expiration date: 01 November 2013
Editorial changes

SRM 2635a Carbon Monoxide in Nitrogen (Nominal 25 µmol/mol)
Lot #58-D-XX
New expiration date: 13 August 2017
Editorial changes

SRM 2636a Carbon Monoxide in Nitrogen (Nominal 250 µmol/mol)
Lot #57-E-XX
New expiration date: 01 September 2017
Editorial changes

Revisions (continued)

SRM 2658a Oxygen in Nitrogen (Nominal 10 % mol/mol)
Lot #72-D-XX
New expiration date: 01 June 2017
Editorial changes

SRM 2684b Bituminous Coal (Sulfur and Mercury)
New expiration date: 31 December 2013
Editorial changes

SRM 2718 Green Petroleum Coke
New expiration date: 31 December 2020
Editorial changes

SRM 2719 Calcined Petroleum Coke
New expiration date: 31 December 2020
Editorial changes

SRM 2775 Sulfur in Foundry Coke
New expiration date: 31 December 2020
Editorial changes

SRM 2776 Furnace Coke
New expiration date: 31 December 2020
Editorial changes

SRM 3067 Toxaphene in Methanol
New expiration date: 31 July 2016
Editorial changes

SRM 3134 Molybdenum Standard Solution
Lot #891307
New expiration date: 01 December 2015
Editorial changes

SRM 3152a Sodium Standard Solution
Lot #010728
New expiration date: 01 August 2013
Editorial changes

SRM 3183 Fluoride Anion Standard Solution
Lot #050721
New expiration date: 14 November 2014
Editorial changes

RM 8040 Sodium Oxalate ($Na_2C_2O_4$) Reductometric Standard
New expiration date: 07 November 2013
Editorial changes

ORDER NIST SRMs ONLINE

You can now order NIST SRMs through our new online ordering system, which is continually updated. **PLEASE NOTE:** Purchase orders and credit cards may be used when ordering an SRM online. This system is efficient, user-friendly, and secure. Our improved search function finds keywords on SRM detail pages as well as words in titles.

Also note that we are placing many historical archive certificates online for your convenience.

https://srmors.nist.gov

Please Register Your Certificate Online!

Registering will ensure that you have the most recent certificates.

http://tsapps.nist.gov/msdsurvey/register/default.aspx?ID=2

January 2011 Standard Reference Materials® Catalog

Coming soon

NIST SRM 2010/2011 Exhibit Schedule

Materials Research Society Meeting (MRS)
November 30-December 2, 2010
Hynes Convention Center
Boston, MA

Electronic Materials and Applications (EMA)
January 19-21, 2011
Royal Plaza Walt Disney World Resort
Orlando, FL

Energy & Environment Conference (EUEC)
January 31 – February 2, 2011
Phoenix Convention Center
Phoenix, Arizona

American Academy for Forensic Science (AAFS)
February 23 – 25, 2011
Hyatt Regency
Chicago, IL

The Minerals, Metals, and Material Society (TMS)
February 27 – March 3, 2011
San Diego Convention Center
San Diego, CA

Pittsburgh Conference (PITTCON)
March 13 – 18, 2011
Georgia World Congress Center
Atlanta, GA

American Chemical Society (ACS)
March 27 – 31, 2011
Anaheim Convention Center
Anaheim, CA

Materials Research Society Spring Meeting (MRS)
April 25 – 29, 2011
Moscone West
San Francisco, CA

Clearwater Clean Coal Conference
June 5-9, 2011
Sheraton Sand Key
Clearwater, FL

IFT – Food Expo
June 12- 14, 2011
New Orleans Morial Convention Center
New Orleans, LA

ISO/REMCO 34th Meeting
July 11-15, 2011
Delft, Netherlands

AACC Clinical Lab Expo
July 26-28, 2011
Georgia World Congress Center
Atlanta, GA

NCSL Symposium
August 21-25, 2011
Gaylord Natl. Convention Center
National Harbor, MD

Dioxin 2011
August 21-25, 2011
Brussels, Belgium

American Chemical Society (ACS)
August 28-September1, 2011
Denver Convention Center
Denver, CO

AOAC International
September 18-21, 2011
Sheraton New Orleans
New Orleans, LA

MS&T Show
October 16-20, 2011
Greater Columbus Convention Center
Columbus, OH

Air Quality VIII
October 24-27, 2011
Marriott Crystal Gateway
Arlington, VA

ChemShow
November 1-3, 2011
Jacob Javits Convention Center
New York City, NY

Material Research Society Fall Meeting (MRS)
November 28-December 2, 2011
Hynes Convention Center
Boston, MA

IMPORTANT MESSAGE when accessing the SRM website at http://www.nist.gov/srm

PLEASE NOTE: New security settings to protect your private information have been mandated by the U.S. government. The following are instructions to upgrade your browser settings so you can view SRM documents, perform searches, and order online.

For Mozilla Firefox

1) You must have version 3.0.5 or later
2) Enable SSL 3.0
3) Enable TLS 1.0

To enable SSL 3.0 and TLS 1.0

1) Go to Tools > Options
2) Click on the Advanced icon
3) Click the Encryption tab
4) Under Protocols, make sure both boxes are checked

For Internet Explorer

1) You must have version 6.0 or later
2) Enable SSL 3.0
3) Enable TLS 1.0

To enable SSL 3.0 and TLS 1.0

1) Go to Tools > Internet Options
2) Click on the Advanced tab
3) Scroll down to Security

3) Make sure that both SSL 3.0 and TLS 1.0 are checked

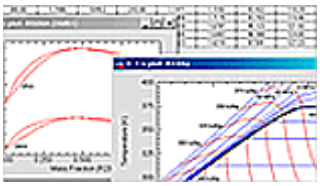
Other NIST Measurement Services Websites of Interest

Standard Reference Materials

Standard Reference Materials
www.nist.gov/srm

Historical Archived Certificates/Reports of Investigation
https://www-s.nist.gov/srmors/certArchive.cfm

Standard Reference Data



NIST Scientific and Technical Databases
http://www.nist.gov/srd

NIST Data Gateway
http://srdata.nist.gov/gateway

Calibrations

Calibrations Services
http://www.nist.gov/calibrations

Please take the time to rate our products:
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We appreciate your feedback!