

November 2011

Editor: Regina R. Montgomery

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The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

New and Renewal NIST SRMs/RMs

NIST SRM 2569 Lead Paint Films for Children's Products

A new certified reference material from NIST with assigned values for the amount of lead (Pb) in paint makes it possible for manufacturers of children's products to validate the test methods they use to demonstrate product compliance with the Consumer Products Safety Improvement Act (CPSIA) of 2008. The CPSIA requires that all paint coatings on children's products contain no more Pb than 90 mg/kg, which is a significant decrease from the prior standard of 600 mg/kg. Because toys and other products are mass produced, a test method for Pb must have high throughput and give clear results. X-ray fluorescence (XRF) spectrometry is the technique of choice because it is non-destructive and measurements can be accomplished in minutes.



Paint films are typically no more than tens of micrometers (μm) thick, which is small compared to distances traveled by Pb X-rays in paint and polymers. XRF direct analyses of thin films are naturally reported as mass of Pb per unit area ($\mu\text{g}/\text{cm}^2$). This can be understood by considering that calibration standards are prepared as thin films having a known mass of Pb deposited in a known area on a thin plastic support. The number of Pb X-rays measured is a function of the mass fraction of Pb in the paint, the thickness of the paint film, and the density of the paint. Because the CPSIA requires values of mass fraction of Pb, direct XRF measurements of mass Pb per unit area may not be accepted for demonstration of compliance of a product, but they can be used for screening, such as rapid checks of samples against an action level. To provide results as mass fractions, a method has been developed that uses multiple X-ray beams of different energies to measure a sample for mass Pb per unit area and to calculate estimates of paint thickness and density using mathematics that describe interactions of X-rays and matter. Mass fraction of Pb in paint is calculated from the values for mass Pb per unit area, thickness, and density. The method is published as ASTM International F2853 Standard Test Method for Determination of Lead in Paint Layers and Similar Coatings or in Substrates and Homogenous Materials by Energy Dispersive X-Ray Fluorescence Spectrometry Using Multiple Monochromatic Excitation Beams.

The most common XRF instruments in use today for measurement of Pb in paint are handheld spectrometers that offer portability at lower price and report mass of Pb per unit area. Multiple-beam spectrometers that perform ASTM F2853 are finding increasing use. New SRM 2569 serves users of both XRF technologies in a number of ways. First, the SRM consists of three different paint compositions: Level 1 is blank (no Pb) with a nominal thick-

NIST SRM 2569 Lead Paint Films for Children's Products (continued)

ness of 40 μm ; Level 2 contains 85 mg/kg Pb with a nominal thickness of 23 μm ; and Level 3 contains 314 mg/kg Pb with a nominal thickness of 39 μm . The three compositions allow validation of results at the 90 mg/kg regulatory limit and at a substantially higher level, and the blank aids in estimation of the method detection limit for Pb. These three compositions correspond to nominal mass Pb per unit area values of 0 $\mu\text{g}/\text{cm}^2$, 0.22 $\mu\text{g}/\text{cm}^2$ and 1.4 $\mu\text{g}/\text{cm}^2$. The assigned values for mass Pb per unit area allow users to validate results from methods that report mass of Pb per unit area. SRM 2569 also has assigned values for paint thickness and density that can be used to validate estimates of thickness and density obtained as intermediate results from ASTM F2853.

A unit of SRM 2569 consists of three coupons of paint on polyester and five coupons of uncoated polyester provided to allow users to simulate thicker substrates beneath the layer of paint. SRM 2569 is intended for use in evaluation of non-destructive, instrumental methods. SRM 2569 is not intended for use in test method calibration for thickness and density. SRM 2569 joins a variety of NIST SRMs offered in support of measurements of Pb in consumer products and buildings and their surroundings including Pb in paint films for housing (SRMs 2570 through 2576 and 2579a), Pb in powdered paint (SRMs 2580, 2581, 2582, and 2589), Pb in tin alloys (SRMs 1727, 1728, and 1729), Pb in solder alloys (SRMs 127b, 1129, and 1131), Pb in indoor dust (SRMs 2583 and 2584), and Pb in soil from paint (SRMs 2586 and 2587).

Technical contact: John Molloy

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NIST SRM 1950 Metabolites in Human Plasma

Scientists at NIST recently introduced a new reference material for measurement of metabolites in human plasma. NIST collaborated with the National Institutes of Health to develop this Standard Reference Material (SRM), with the goal of providing a stable, well-characterized reference material for metabolomics research. SRM 1950 Metabolites in Human Plasma is a plasma pool collected from 100 individuals, male and female, that is intended to represent normal human plasma. Because metabolomics research encompasses a wide range of interests and analytical platforms, it is nearly impossible to determine the specific requirements of the end user in advance. Therefore, concentrations of a broad spectrum of metabolites were determined in SRM 1950, including electrolytes, amino acids, hormones, vitamins, carotenoids, and fatty acids. Additional measurements were performed for total protein, selenoproteins, and perfluorinated compounds (PFCs). Value assignment of SRM 1950 was conducted in collaboration with the Centers for Disease Control and Prevention. SRM 1950 has certified, reference, and information values for nearly 100 species. This is NIST's first plasma-based SRM and is also the first certified reference material available to support metabolomics research.



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NIST SRM 2093 Low-Energy Charpy V-Notch Impact Specimen NIST SRM 2097 High-Energy Charpy V-Notch Impact Specimen

NIST has produced two new Standard Reference Materials (SRMs) for the self-verification of Charpy V-Notch impact machines in accordance with the ASTM Standard E23 or International Organization for Standardization ISO 148-1. SRMs 2093 and 2097 each consist of a set of five specimens used to perform one verification test at low- and high-energy levels respectively (approximately 20 J and 100 J levels). These SRMs are being produced to offer users a lower-cost option for machine verification when the NIST post-test specimen evaluation and machine certification documentation are not needed. Using SRMs 2093 and 2097, the user performs a self-verification of his/her machine, with no post-test assistance from NIST.



The material used to produce SRMs 2093 and 2097 is 4340 alloy steel, the same material in the full-service Charpy verification SRMs 2092 and 2096. The bars are finished to length, stamped, heat treated, and machined in SRM specimen lots of approximately 1200. Each specimen has a lot number and an identification number (three or four digits) stamped on one end. The SRM certification procedure is also the same as those used for SRMs 2092 and 2096. Specimens are taken from each SRM lot and tested by the NIST Materials Reliability Division on the Charpy V-Notch reference machines. These data are statistically evaluated to assess the homogeneity of the lot and establish the certified value. The certified values for energy absorbed for SRM 2093 and 2097 are provided to the user on the certificate when the SRMs are purchased.

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NIST SRM 2366 Cytomegalovirus (CMV) for DNA Measurements



NIST has released a DNA-based Standard Reference Material (SRM 2366) for viral load measurements of cytomegalovirus (CMV) that will help patients get more effective treatments. Measurement of patient viral load for CMV has become a critical aspect in determining the treatment of immune-compromised patients, but a lack of reference materials in the past has contributed to variability in measurements. Infection with CMV often happens in childhood. Although CMV generally results in no disease, it becomes latent in a large percent of the population. Immune-compromised individuals,

such as patients receiving an organ or stem cell transplant or infected by HIV, and infants infected congenitally, can develop life-threatening disease from CMV. Testing of these patients may be performed over long periods of time (months to years). DNA-based testing has largely replaced viral culture with quantitative real-time PCR (q-PCR) DNA assays the most common testing protocol. Accuracy of the measurements can vary from laboratory to laboratory as there are many different q-PCR protocols used and both commercial and laboratory-developed assays. SRM 2366 is designed to address these measurement problems by providing a pure DNA standard that can be used to establish traceability of secondary reference materials and calibrants. Improved measurement accuracy and correlation with patient clinical state will contribute to establishing effective patient treatment protocols. Traceability will provide the basis for the inter-laboratory comparability necessary for patients who will be tested at different facilities over time.

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NIST SRM 2828 Knoop Microhardness of Steel NIST SRM 2829 Vickers Microhardness of Steel

Two new steel block Standard Reference Materials (SRMs) from NIST will help the steel, coatings, and electroplating industries measure hardness to characterize their products for durability, uniformity, and general quality control.

Hardness is often measured using Knoop and Vickers hardness tests, where a diamond tip of prescribed geometry is impressed on a sample with a known amount of force. Knoop hardness number (HK) is defined as the value obtained by dividing the force applied to the Knoop indenter by the projected area of the permanent impression left by the indenter after the test is concluded. Similarly, the Vickers hardness number (HV) is defined as the value obtained by dividing the force applied to the Vickers indenter by the surface area of the permanent impression left by the indenter after the test is concluded.

SRMs 2828 and 2829 consist of steel blocks, approximately 3.2 cm in diameter and 1 cm in height. These blocks have been highly polished to provide flat and parallel surfaces suitable for microindentations. These standards are certified for mean Knoop hardness values (SRM 2828) and Vickers hardness values (SRM 2829) at a load of 4.9 N (0.5 kgf). The blocks were calibrated following ASTM E 384 specifications for the verification of microhardness machines and calibration of standardized hardness test blocks. Measurements performed on randomly selected blocks established that the hardness is uniform across the surface of each block tested. For the SRM units, serial numbers were imprinted on the top surface of the block for identification followed by measurements performed on each individual block for their resulting certification.

Other NIST standards available for calibrating and checking microhardness testers are: SRM 1893 Copper Microhardness Test Block (Knoop), SRM 1894a Vickers Microhardness of Copper, SRM 1895 Nickel Microhardness Test Block (Knoop), SRMs 1896b, 1908, 1909, and 2798a Vickers Microhardness of Nickel at different loads, SRMs 1905, 1906, and 1907 Nickel Microhardness Test Block (Knoop) at different loads, SRM 2830 Knoop Hardness of Ceramics, and SRM 2831 Vickers Hardness of Ceramics and Hard Metals.

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NIST SRM 2944 for Red Spectral Correction and Performance Verification of Fluorescence Instruments

A ready-to-use, fluorescent glass Standard Reference Material (SRM) has been released by NIST. It enables the relative spectral correction and day-to-day performance verification of fluorescence instruments to be achieved in the red and near infrared (NIR) spectral regions with relative ease, even by non-expert users. Luminescence measurements have become the detection methods of choice for many clinical and biochemical assays, due to their extraordinary sensitivity and selectivity. These analytical methods are becoming increasingly more quantitative, requiring standards to calibrate the luminescence measuring instruments that they utilize and aid in method validation as required by quality and regulatory systems. Ideally, users would like to employ the same organic dye probes used for analyte detection as standards for fluorescence intensity and spectral correction. Unfortunately, organic dyes photodegrade quickly, do not have long shelf lives in solution, have environment-dependent fluorescence, and are expensive to produce at high purity.

After studying the characteristics of the different types of fluorescent materials, NIST researchers found metal-ion-doped glasses to be the best choice for use as fluorescence standards for spectral correction and intensity. These glasses are photostable, robust, relatively inexpensive, and can be made to suit most detection formats. SRM 2944 has red and NIR emission that peaks at 703 nm and an effective emission range from 580 nm to 830 nm.

NIST SRM 2944 for Red Spectral Correction and Performance Verification of Fluorescence Instruments (continued)

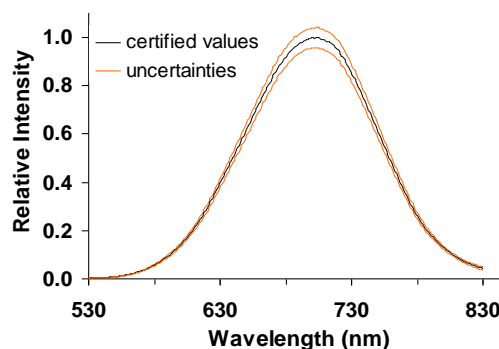
The certified, steady-state emission spectrum is supplied with each SRM, along with our estimated total uncertainties. The SRM is highly resistant to photodegradation and is, therefore, also recommended for use as a day-to-day and instrument-to-instrument intensity standard for performance verification. The SRM is in the form of a solid glass, standard-sized cuvette (12.5 mm x 12.5 mm x 45 mm) with three polished long faces for 90-degree detection and one frosted long face for front-face or epifluorescence detection.

The red and NIR emission range of SRM 2944 is used greatly in biological and medical applications due to the non-destructive nature of light and the lack of auto-fluorescence from samples in this range.

Due to these advantages, many new assays using red and NIR fluorescence detection have been developed. This SRM will aid in the qualification of instruments and validation of methods in these areas. In addition, SRM 2944 can be used in combination with pre-existing fluorescent glass SRMs 2940 (orange emission), 2941 (green emission), 2942 (UV emission), and 2943 (blue emission) for spectral correction of fluorescence instruments across their entire spectral range. In particular, this combination allows the user to cover the UV, visible, and NIR regions from 320 nm to 830 nm. The high photostability of SRMs 2940 through 2944 make them particularly useful as day-to-day intensity standards, even when spectral correction is not needed or when the excitation wavelength differs from that used for certification.

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NIST SRM 3257 Catechins Calibration Solution NIST SRM 3286 Organic Acids Calibration Solution

NIST continues to produce Standard Reference Materials (SRMs) to support the measurement of compounds with perceived health benefits in food and dietary supplement products. Two such classes of compounds are catechins and organic acids. Catechins are naturally occurring compounds in tea and chocolate. Manufacturers may choose to analyze their products so that they can provide label information about the quantities of these compounds that they contain. SRM 3257 Catechins Calibration Solution, which consists of 12 2-mL ampoules, four vials of each of three solutions containing (+)-catechin, (-)-gallocatechin, and (-)-gallocatechin-3-gallate; (-)-epicatechin, (-)-epigallocatechin, and (-)-epicatechin-3-gallate; and (-)-epigallocatechin-3-gallate, respectively, can be used for calibration of manufacturers' instrumentation. SRM 3257 can be used as a companion to SRMs 3254 through 3256, which are SRMs based on green tea, and SRM 2384 Baking Chocolate. The matrix materials can be used to confirm that the analytical method is working properly when "real" samples are analyzed. Organic acids may be linked to cranberry's prevention of urinary tract infections. SRM 3286 Organic Acids Calibration Solutions consists of five 2-mL ampoules, each containing approximately 1.2 ml of a solution containing citric, malic, quinic, shikimic, and tartaric acids in water, and can be used for calibration of instrumentation used to measure organic acids in fruit, juice and dietary supplement products. A number of berry SRMs available from NIST can be used to confirm that the analytical method is working properly.

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NIST SRM 3950 Vitamin B₆ in Frozen Human Serum



NIST has recently introduced SRM 3950 Vitamin B₆ in Frozen Human Serum. This Standard Reference Material contains two levels of the clinically-relevant vitamin B₆ metabolite, pyridoxal 5'-phosphate (PLP), in serum. Vitamin B₆ levels in serum are of clinical interest as they reflect dietary status and are associated with several disease states including stroke, cardiovascular disease, and hypertension. This SRM will allow laboratories to evaluate the accuracy of their measurement methods as well as to objectively compare results from multiple analytical methods and clinical laboratories. SRM 3950 Vitamin B₆ in Frozen Human Serum Level 1 is a human serum pool containing endogenous levels of PLP (4.59 ng/mL ± 0.16 ng/mL). Level 2 contains a naturally lower level serum pool that has been fortified with PLP to achieve the desired higher level (9.00 ng/mL ± 0.29 ng/mL). This is NIST's first serum-based SRM containing multiple levels of vitamin B₆, which complements the existing clinical SRM selection.

Technical contact: Johanna Camara
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NIST RM 8095 Si_{1-x}Ge_x Films on Silicon

NIST announces a new reference material, RM 8095, a SiGe microanalysis reference standard for the semiconductor industry, primarily for secondary ion mass spectrometry (SIMS) analyses. SIMS is widely used in this industry to measure the lateral and depth distributions of both major and trace elements in semiconductor devices. Reference materials of known composition of specific elements are required for calibration of the SIMS instruments for those elements. The RM is a set of two compositionally different SiGe thick films, each on a Si substrate. Advanced Semiconductor Materials America (ASM America, Phoenix, AZ) fabricated the films using chemical vapor deposition on a 20-cm Si wafer. The nominal compositions of the films are 10 % (atom fraction) Ge in Si (Si_{0.90}Ge_{0.10}) and 25 % (atom fraction) Ge in Si (Si_{0.75}Ge_{0.25}), and they are approximately 4 μm and 5 μm thick, respectively. Five 1 cm × 1 cm samples, cut from the thickest region of the film on each wafer, were characterized for macro and microheterogeneity and for composition using wavelength dispersive electron probe microanalysis (WDS-EPMA). The overall expanded (k=2) uncertainty for heterogeneity for both elements in both films is 1.5 % (relative) or less, which includes both the within- and between-specimen standard uncertainties as well as the measurement standard uncertainty. Several other techniques, such as SIMS, cold-neutron prompt gamma-ray activation analysis, spectroscopic ellipsometry, Auger electron spectroscopy, focused ion beam scanning electron microscopy, and transmission electron microscopy were used to characterize the films. For WDS-EPMA quantification, the Si and Ge compositions were determined from comparisons with reference standards of pure Si and pure Ge, and a bulk single crystal boule of Si_{0.86}Ge_{0.14} that had been characterized by NIST scientists for heterogeneity and composition using WDS-EPMA, instrumental neutron activation analysis, and inductively coupled plasma optical emission spectrometry.



Image of half of one of the films on the 20 cm Si wafer that was cut into 1 cm x 1 cm sections.

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Renewals

SRM 2391c PCR-Based DNA Profiling Standard

Standard Reference Material 2391c (SRM 2391c), the fourth-generation material for PCR-based DNA profiling, has been released by the Biochemical Science Division. SRM 2391c, unlike its predecessors 2391, 2391a, and 2391b, has been produced with an entirely new set of genomic DNA samples and has two dry-storage matrices including 903 paper, which is part of all the previous versions, and FTA paper.

SRM 2391c consists of six components: three are single-source genomic DNA samples that are labeled A, B, and C, with the fourth genomic sample (component D) as a mixture of components A and C in a 3-to-1 ratio. Component E consists of two 6 mm punches of 903 paper that have been spotted with approximately 75,000 cells/spot. Component F consists of two 6 mm punches of FTA paper that have been spotted with approximately 75,000 cells/spot of a different cell line.

The six components representing five different DNA samples plus the mixture component have been analyzed using 22 commercially available STR typing kits obtained from three different vendors, as well as the 26plex STR multiplex primer sets developed at NIST. In total there are data for 51 autosomal STRs and 17 Y-STRs included in the certificate of analysis.

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Renewals (continued)

SRM 1632d	Trace Elements in Coal (Bituminous)
SRM 1677c	Carbon Monoxide in Nitrogen (Nominal 10 $\mu\text{mol/mol}$) Lot #5-K-XX
SRM 2092	Low-Energy Charpy V-Notch Impact Specimen
SRM 2096	High-Energy Charpy V-Notch Impact Specimen
SRM 2391c	PCR-Based DNA Profiling Standard
SRM 2625a	Carbon Dioxide in Nitrogen Lot #36-XX-D (Nominal 3.5 % mol/mol)
SRM 2638a	Carbon Monoxide in Nitrogen Lot #55-F-XX (Nominal 5000 $\mu\text{mol/mol}$)
SRM 2660a	Total Oxides of Nitrogen (NO_x) in Air Lot 2660-C-XX (Nominal 100 $\mu\text{mol/mol}$)
SRM 2741a	Carbon Monoxide in Nitrogen Lot #60-C-XX (Nominal 13 % mol/mol)
SRM 3128	Lead (Pb) Standard Solution
SRM 3130a	Lutetium (Lu) Standard Solution
SRM 3148a	Scandium (Sc) Standard Solution
SRM 3149	Selenium (Se) Standard Solution
SRM 3157a	Terbium (Tb) Standard Solution
SRM 3190	Aqueous Electrolytic Conductivity
SRM 3191	Aqueous Electrolytic Conductivity
SRM 3287	Blueberry (Fruit)
SRM 4226D	Nickel-63 Radioactivity Standard
RM 8535a	VSMOW2 Vienna Standard Mean Ocean Water

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 99b Soda Feldspar

Editorial changes

SRM 674b X-Ray Powder Diffraction Intensity Set

Editorial changes

SRM 706a Polystyrene

New expiration date: 26 August 2015

SRM 870 Column Performance Test Mixture of Liquid Chromatography

New expiration date: 30 September 2016

Editorial changes

SRM 951a Boric Acid Isotopic Standard

Editorial changes

SRM 968e Fat Soluble Vitamins, Carotenoids, and Cholesterol in Human Serum

Editorial changes

SRM 1003c Glass Beads - Particle Size Distribution

Editorial changes

SRM 1004b Glass Beads - Particle Size Distribution

Editorial changes

SRM 1363b Coating Thickness Standard (Nonmagnetic Coating on Steel)

Editorial changes

SRM 1474a Polyethylene Resin

New expiration date: 01 January 2019

Editorial changes

SRM 1476a Branched Polyethylene Standard

New expiration date: 01 January 2019

Editorial changes

Revisions (continued)

SRM 1665b Propane in Air (Nominal 3 $\mu\text{mol/mol}$)**Lot #85-I-XX**

New expiration date: 01 July 2019

Editorial changes

SRM 1674b Carbon Monoxide in Nitrogen (Nominal 7 % mol/mol)**Lot #7-G-XX**

New expiration date: 26 April 2019

Editorial changes

SRM 1694a Sulfur Dioxide in Nitrogen (Nominal 100 $\mu\text{mol/mol}$)**Lot #95-J-XX**

New expiration date: 11 December 2015

SRM 1696a Sulfur Dioxide in Nitrogen (Nominal 3500 $\mu\text{mol/mol}$)**Lot #90-D-XX**

New expiration date : 07 May 2018

Editorial changes

SRM 1800b Eighteen Non-Methane Hydrocarbon Compounds in Nitrogen

New expiration date: 18 August 2016

Editorial changes

SRM 1944 New York/New Jersey Waterway Sediment

Editorial changes

SRM 2585 Organic Contaminants in House Dust

Editorial changes

SRM 2617 Carbon Dioxide in Nitrogen (Nominal 500 $\mu\text{mol/mol}$)**Lot #26-A-XX**

New expiration date: 17 May 2018

Editorial changes

SRM 2619a Carbon Dioxide in Nitrogen (Nominal 0.5 % mol.mol)**Lot #30-F-XX**

New expiration date: 29 April 2019

Editorial changes

SRM 2621a Carbon Dioxide in Nitrogen (Nominal 1.5 % mol/mol)**Lot #32-D-XX**

New expiration date: 25 July 2019

Editorial changes

SRM 2622a Carbon Dioxide in Nitrogen (Nominal 2 % mol/mol)**Lot #33-E-xx**

New expiration date : 27 April 2019

Editorial changes

Revisions (continued)

SRM 2623a Carbon Dioxide in Nitrogen (Nominal 2.5 % mol/mol)**Lot #34-C-XX**

New expiration date: 03 June 2018

Editorial changes

SRM 2624a Carbon Dioxide in Nitrogen (Nominal 3.0 % mol/mol)**Lot #35-D-XX**

New expiration date: 02 June 2018

Editorial changes

SRM 2629a Nitric Oxide in Nitrogen (Nominal 20 µmol/mol)**Lot #50-G-XX**

New expiration date: 01 February 2014

Editorial changes

SRM 2630 Nitric Oxide in Nitrogen (Nominal 1500 µmol/mol)**Lot #46-E-XX**

New expiration date: 30 April 2018

Editorial changes

SRM 2641a Carbon Monoxide in Nitrogen (Nominal 4 % mol/mol)**Lot #52-D-XX**

New expiration date: 15 July 2019

Editorial changes

SRM 2642a Carbon Monoxide in Nitrogen (Nominal 8 % mol/mol)**Lot #51-D-XX**

New expiration date: 15 July 2019

Editorial changes

SRM 2646a Propane in Nitrogen (Nominal 1000 µmol/mol)

New expiration date: 04 March 2019

Editorial changes

SRM 2670a Toxic Elements in Urine (Freeze-Dried)

New expiration date: 31 December 2019

Editorial changes

SRM 2772 B100 Biodiesel (Soy-Based)

Addition of values

Editorial changes

SRM 2773 B100 Biodiesel (Animal-Based)

Addition of values

Editorial changes

Revisions (continued)

SRM 2782 Industrial Sludge

Editorial changes

SRM 2783 Air Particulate on Filter Media

New expiration date: 01 September 2021

Editorial changes

SRM 3123a Holmium (Ho) Standard Solution

Editorial changes

SRM 3124a Indium (In) Standard Solution

Editorial changes

SRM 3126a Iron (Fe) Standard Solution

Editorial changes

SRM 3127a Lanthanum (La) Standard Solution

Editorial changes

SRM 3131a Magnesium (Mg) Standard Solution

Editorial changes

SRM 3135a Neodymium (Nd) Standard Solution

Editorial changes

SRM 3139a Phosphorus (P) Standard Solution

Editorial changes

SRM 3141a Potassium (K) Standard Solution

Editorial changes

SRM 3142a Praseodymium (Pr) Standard Solution

Editorial changes

SRM 3145a Rubidium (Rb) Standard Solution

Editorial changes

SRM 3147a Samarium (Sm) Standard Solution

Editorial changes

SRM 3152a Sodium (Na) Standard Solution

Editorial changes

SRM 3153a Strontium (Sr) Standard Solution

Editorial changes

SRM 3160a Thulium (Tm) Standard Solution

Editorial changes

Revisions (continued)

SRM 3161a Tin (Sn) Standard Solution

Editorial changes

SRM 3165 Vanadium (V) Standard Solution

Editorial changes

SRM 3167a Yttrium (Y) Standard Solution

Editorial changes

SRM 3168a Zinc (Zn) Standard Solution

Editorial changes

SRM 3280 Multivitamin/Multielement Tablets

Editorial changes

RM 8546 NBS 38 Silicon and Oxygen Isotopes in Silica Sand

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>

Our new January 2012 Standard Reference Materials® Catalog/CD will soon be available

NIST SRM 2011/2012 Exhibit Schedule



Material Research Society Fall Meeting (MRS)

November 28 – December 2, 2011
Hynes Convention Center
Boston, MA

36th Intl Conf & Exposition on Advanced Ceramics & Composites (IACC)

January 22 – 27, 2012
Hilton Dayton Beach Resort & Ocean Center
Daytona, FL

Energy & Environment Conference 2012 (EUEC)

January 30 – February 1, 2012
Phoenix Convention Center
Phoenix, AZ

Amer. Academy for Forensic Science (AAFS)

February 20 – 25, 2012
Atlanta Marriott Marquis
Atlanta, GA

The Minerals, Metals, and Material Society (TMS 2012)

March 11 – 15, 2012
Walt Disney Swan & Dolphin Resort
Orlando, FL

The Pittsburgh Conference (PITTCON)

March 12 – 15, 2012
Orange County Convention Center
Orlando, FL

MSC/ITS Conference

March 19 – 23, 2012
Disney Convention Center
Anaheim, CA

American Chemical Society Spring Meeting

March 25 – 29, 2012
San Diego Convention Center
San Diego, CA

Materials Research Society Spring Meeting (MRS)

April 9 – 13, 2012
Moscone West
San Francisco, CA

Analytica 2012

April 17 – 20, 2012
New Munich Trade Fair Center
Munich, Germany

37th Intl Technical Clearwater Clean Coal Conference

June 3 – 7, 2012
Sheraton Sand Key
Clearwater, FL

IFT - Food Expo

June 26 – 28, 2012
Las Vegas Convention Center
Las Vegas, NV

AACC Clinical Lab Expo

July 15 – 19, 2012
Los Angeles, CA

NCSLI Symposium

July 29 – August 2, 2012
Sacramento Convention Center
Sacramento, CA

American Chemical Society Fall Meeting

August 19 - 23, 2012
Pennsylvania Convention Center
Philadelphia, PA

AOAC International

September 30 – October 3, 2012
Planet Hollywood
Las Vegas, NV

MS&T Show

October 7 - 11, 2012
David L. Lawrence Conference Center
Pittsburgh, PA

Chem Show

November 2012
Jacob Javits Convention Center
New York City, NY

Material Research Society Fall Meeting (MRS)

November 26 – 30, 2012
Hynes Convention Center
Boston, MA

IMPORTANT MESSAGE about 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

NIST Measurement Services Websites of Interest

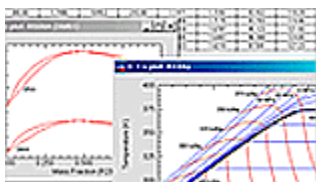
Standard Reference Materials



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>

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Calibrations Services
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