

July 2014

Editor: Regina R. Montgomery

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**IMPORTANT MESSAGE
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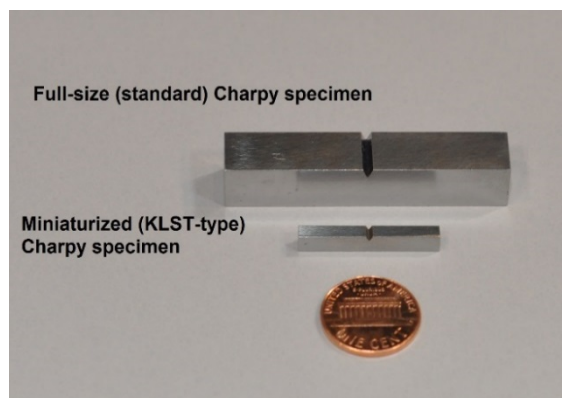
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New and Renewal NIST SRMs/RMs

NIST SRMs 2216, 2218, and 2219 Miniaturized Charpy V-Notch Impact Specimens

SRM 2216 Miniaturized Low-Energy Charpy V-Notch KLST Impact Specimen
SRM 2218 Miniaturized High-Energy Charpy V-Notch KLST Impact Specimen
SRM 2219 Miniaturized Super High-Energy Charpy V-Notch KLST Impact Specimen

NIST's Material Measurement Laboratory (MML) recently certified new Miniaturized Charpy V-Notch (MCVN) KLST Impact Specimen SRMs to verify the performance of small-scale impact testing machines used by industry and academia. Small-specimen testing is becoming ever more popular in cases where there are restrictions on material availability, irradiation, testing space, and other factors. One example is the nuclear industry, which currently fabricates MCVN specimens from larger samples of irradiated reactor vessel materials, allowing the materials to be returned to the reactor for further exposure periods. This ability to continue monitoring radiation embrittlement has proven critical in extending the life of the nation's nuclear plants. New applications for sub-sized specimens are also emerging in the pipeline industry, where certain materials are not amenable to fabrication of full-size Charpy specimens. These include testing of thin-wall pipes, welds, and heat-affected zones. Prior to NIST's development of these new miniaturized Charpy SRMs, users had no means of verifying the performance of their small-scale testing machines, leading to uncertainty when comparing results with historical data and data from other laboratories. The new NIST MCVN SRMs simultaneously verify force (at two levels) and energy (at three levels) at room temperature. They measure 3 mm x 4 mm x 27 mm and were fabricated from NIST's conventional full-size Charpy SRMs, which offer exceptional material uniformity. The three SRMs are characterized by three different levels of energy absorbed by the pendulum machine when breaking them, low energy, high energy, and super-high energy. KLST refers to the German "Kleinstprobe," which means "small specimen." This geometry was first proposed in the German DIN 50 115 standard in the 1970s. To certify these SRMs, NIST conducted comparison testing with laboratories from Germany, Holland, Belgium, Spain, the Czech Republic, Finland, and Hungary, the majority of which are connected with the nuclear industry.



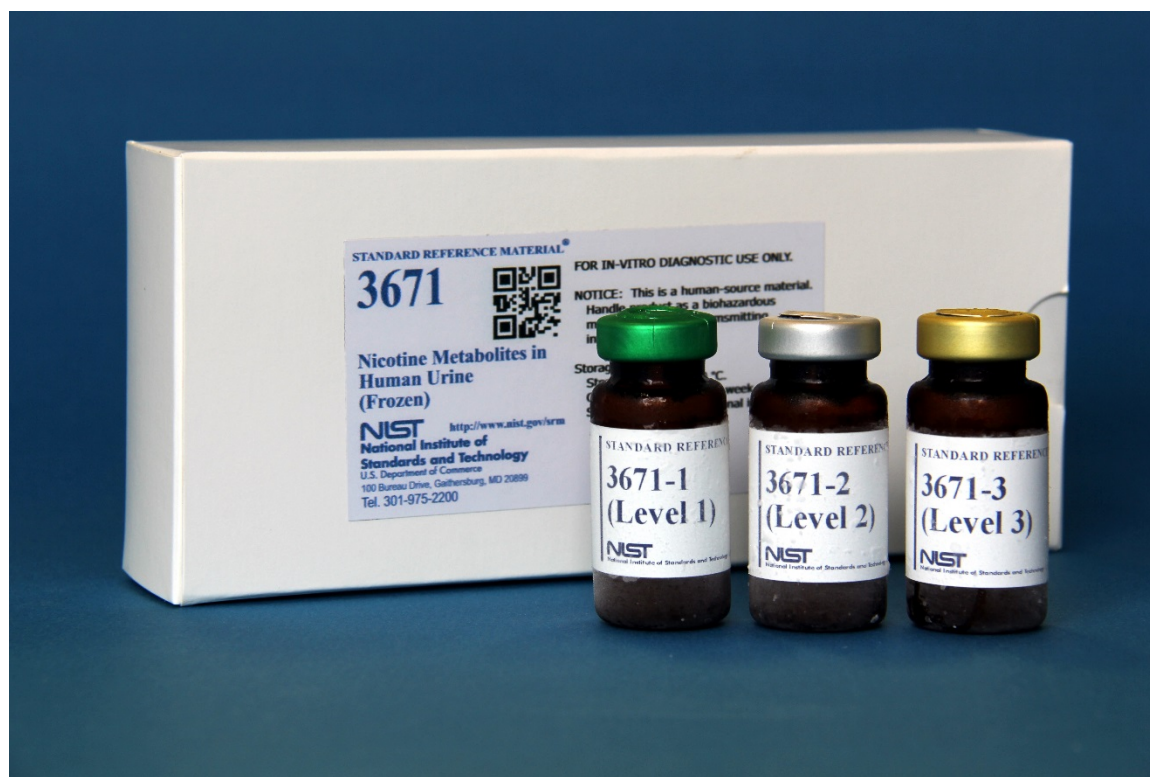
Technical Contact: Enrico Lucon
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NIST SRM 3671 Nicotine Metabolites in Human Urine (Frozen)

NIST's Chemical Sciences Division (CSD) in the Material Measurement Laboratory and the Centers for Disease Control and Prevention (CDC) Division of Laboratory Sciences began a collaborative effort in 2004 to develop Standard Reference Materials (SRMs) for organic contaminants in human fluids. One such material is SRM 3671 Nicotine Metabolites in Human Urine (Frozen), which has been developed for use in evaluating the accuracy of procedures for the determination of traditionally measured metabolites that are in human urine and are related to smoking.

SRM 3671 was prepared from normal human urine collected from three different populations: nonsmokers without environmental exposure to tobacco smoke, nonsmokers with exposure to "secondhand" smoke, and smokers who smoke at least one pack of cigarettes per day. Levels of nicotine and nicotine metabolites are reported for these three materials. Metabolites include cotinine, 3-hydroxycotinine, and their corresponding glucuronide conjugates. Interestingly, high levels of caffeine, theobromine, and ibuprofen were observed in the samples and levels of these common clinical markers were also characterized. SRM 3671 is a fresh-frozen material and the analytes are representative of actual levels of these metabolites rather than artificially fortified levels. Value assignment of SRM 3671 was based on the results from measurements at NIST using isotope dilution liquid chromatography with mass spectrometry (ID-LC/MS) and tandem MS (ID-LC/MS/MS), isotope dilution gas chromatography mass spectrometry (ID-GC/MS), and measurements from CDC using ID-LC/MS/MS methods.

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NIST SRM 3672 Organic Contaminants in Smokers' Urine (Frozen) and NIST SRM 3673 Organic Contaminants in Non-Smokers' Urine (Frozen)

In collaboration with the CDC Division of Laboratory Sciences, NIST has developed SRMs to help monitor the exposure of the human population to environmental contaminants. Over the past 10 years, a number of materials have been developed with fortified and unfortified levels of selected contaminants in human serum, milk, and urine matrices. Most recently, NIST and CDC have developed two fresh-frozen non-fortified human urine materials: SRMs 3672 Organic Contaminants in Smokers' Urine and SRM 3673 Organic Contaminants in Non-Smokers' Urine. Both materials provide certified values (mass fractions) for 11 hydroxylated polycyclic aromatic hydrocarbons (PAHs) and reference values (mass fractions) for metabolites of 11 phthalates, 8 phenols, 24 volatile organic compounds, and 7 other organic species, including cotinine, a significant metabolite of nicotine. The hydroxylated PAHs are the major metabolites of PAHs, which are themselves components of cigarette smoke. Since these materials are fresh-frozen and the analytes are naturally incurred, SRMs 3672 and 3673 offer representative examples of urine from smokers and non-smokers, respectively, that are commutable with respect to urine samples run in clinical laboratories. A unit of SRM 3672 and 3673 each consist of five bottles with each bottle containing ten milliliters of urine.

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Special Publication 260-181 The ABCs of Using Standard Reference Materials in the Analysis of Foods and Dietary Supplements: A Practical Guide

Several laws require that food and dietary supplement manufacturers analyze their products for various reasons, and NIST frequently receives questions about the appropriate use of Standard Reference Materials (SRMs) in these analyses. Since the mid-1970s, NIST has been producing food-matrix SRMs. The early materials were characterized solely for elements. In the 1990s, NIST began providing food-matrix SRMs with values assigned for vitamins, fatty acids, and other organic nutrients, and in 2006, we began providing SRMs for dietary supplement analysis. Recommendations and the statistical equations (and R code) necessary for use of these and other natural-matrix SRMs as quality assurance tools are discussed in NIST Special Publication (SP) 260-181: from selecting an appropriate material to validating analytical methods, characterizing in-house quality control materials, and establishing traceability. The SP is available free of charge from <http://www.nist.gov/srm/upload/SP260-181.pdf>.

Contact: Katherine E. Sharpless 301-975-3121
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ORDER NIST SRMs ONLINE

You can now order NIST SRMs through our online request system, which is continually updated. This system is efficient, user-friendly, and secure. Our improved search function finds keywords on SRM detail pages as well as words in titles. **PLEASE NOTE:** Purchase orders and credit cards may be used when ordering an SRM online. Also note that we are placing many historical archive certificates online for your convenience.

<https://www-s.nist.gov/srmors>

Please Register Your SRM Online!

Registering will ensure that you will be notified of any technical updates or developments.

http://www.nist.gov/srm_reg

Renewals

SRM 70b Potassium Feldspar

SRM 194a Ammonium Dihydrogen Phosphate

SRM 1546a Meat Homogenate

SRM 1693a Sulfur Dioxide in Nitrogen (Nominal Amount-of-Substance Fraction 50 $\mu\text{mol/mol}$) Lot #96-L-XX

SRM 3109a Calcium (Ca) Standard Solution, Lot #130213

SRM 3111a Cesium (Cs) Standard Solution, Lot #130228

SRM 3134 Molybdenum (Mo) Standard Solution, Lot #130418

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 Standard Reference Materials should ensure that they have the current certificates. You can print or view a copy of the current certificate at our website at <http://www.nist.gov/srm>, or contact the Office of Reference Materials at **phone** 301-975-2200, **fax** 301-926-4751, or **email** srminfo@nist.gov.

SRM 187e Sodium Tetraborate Decahydrate (Borax) pH Standard

New expiration date: 31 March 2019

SRM 927d Bovine Serum Albumin (7 % Solution)

New expiration date: 30 September 2016

SRM 965b Glucose in Frozen Human Serum

New expiration date: 31 December 2019

SRM 970 Ascorbic Acid in Frozen Human Serum

New expiration date: 30 June 2019

SRM 1508a Benzoyllecgonine (Cocaine Metabolite) in Freeze-Dried Urine

New expiration date: 31 December 2019

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

New expiration date: 22 April 2022

SRM 1849a Infant/Adult Nutritional Formula

Editorial changes

SRM 1882a Calcium Aluminate Cement

New expiration date: 01 August 2024

SRM 1963a Nominal 100 nm Diameter Polystyrene Spheres in Water

New expiration date: 15 May 2017

SRM 1964 Nominal 60 nm Diameter Polystyrene Spheres in Water

New expiration date: 15 May 2017

SRM 2035a Ultraviolet-Visible-Near-Infrared Wavelength/Wavenumber Transmission Standard

Technical changes

Editorial changes

SRM 2241 Relative Intensity Correction Standard for Raman Spectroscopy: 785 nm Excitation

Editorial changes

Revisions (continued)

SRM 2629a Nitric Oxide in Nitrogen (Nominal Amount-of-Substance Fraction 20 $\mu\text{mol/mol}$), Lot #50-G-XX

New expiration date: 11 April 2016

SRM 2721 Crude Oil (Light-Sour)

New expiration date: 31 December 2018

SRM 2722 Crude Oil (Heavy-Sweet)

New expiration date: 31 December 2018

SRM 3131a Magnesium (Mg) Standard Solution, Lot #050302

New expiration date: 01 February 2015

SRM 3180 Iodide Anion (I-) Standard Solution, Lot #110530

New expiration date: 30 May 2016

SRM 3182 Chloride Anion (Cl-) Standard Solution, Lot #060925

New expiration date: 31 March 2017

SRM 3184 Bromide Anion (Br-) Standard Solution, Lot #020701

New expiration date: 29 August 2016

SRM 3185 Nitrate Anion (NO₃-) Standard Solution, Lot #050517

New expiration date: 01 July 2016

SRM 3186 Phosphate Anion (PO₄ 3-) Standard Solution, Lot #090723

New expiration date : 23 July 2016

SRM 3250 *Serenoa repens* (Fruit)

New expiration date: 30 June 2019

SRM 3251 *Serenoa repens* Extract

New expiration date: 30 August 2019

SRM 8494 Wheat Straw Whole Biomass Feedstock

Editorial changes

NIST SRM 2014 Exhibit Schedule

AACC Clinical Lab Expo

July 29-31, 2014

Booth #2458

McCormick Place

Chicago, IL

American Chemical Society Fall Meeting

August 10-14, 2014

San Francisco Convention Center

San Francisco, CA

AOAC International

September 7-10, 2014

Boca Raton Resort & Club

Boca Raton, FL

MS&T'14 Materials Science & Technology Conference and Exhibition

October 27-31, 2014

David Lawrence Convention Center

Pittsburgh, PA

Material Research Society Fall Meeting

November 30 – December 5, 2014

Hynes Convention Center

Boston, MA



IMPORTANT MESSAGE about accessing the SRM website at <http://www.nist.gov/srm>

PLEASE NOTE: 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
- 4) Make sure that both SSL 3.0 and TLS 1.0 are checked

INTRODUCING OUR SRM MOBILE

Access our website on your mobile devices!
<https://www-s.nist.gov/m-srmors>



NIST Measurement Services Websites of Interest

Standard Reference Materials

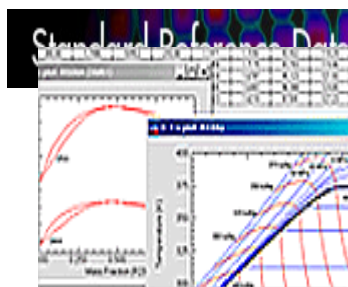


Standard Reference Materials

<http://www.nist.gov/srm>

Historical Archived Certificates/Reports of Investigation

<https://www-s.nist.gov/srmors/certArchive.cfm>



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 and services:

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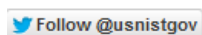
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