SRM SPOTLIGHT

July 2009 Editor: Regina R. Montgomery

Inside:

New NIST SRMs

NIST SRM 972 Vitamin D in Human Serum

The prevalence of vitamin D deficiency or insufficiency in the general population is an issue of concern. Vitamin D deficiency is associated with rickets in children and weak muscles and bones in adults. Testing for vitamin D deficiency has increased dramatically in the past few years, with clinical laboratories performing hundreds of thousands of vitamin D tests per year. The most widely used indicator of vitamin D levels is the measurement of a metabolite known as 25-hydroxyvitamin D [25(OH)D] in either serum or plasma. A number of studies have reported inconsistencies among the results of different techniques used to measure 25(OH)D. As a result, accurate diagnosis of vitamin D deficiency has remained problematic.

NIST has developed SRM 972 Vitamin D in Human Serum for use in evaluating the accuracy of procedures for the determination of vitamin D metabolites in human serum. This SRM was developed in collaboration with the National Institutes of Health (NIH) Office of Dietary Supplements (ODS). The SRM consists of frozen human serum with four different levels of 25(OH)D that will address the needs of various measurement communities. Level 1 of SRM 972 was prepared from "normal" human serum and has not been altered. Level 2 was prepared by diluting Level 1 with horse serum to achieve a lower 25(OH)D concentration. Level 3 contains "normal" human serum that has been spiked with 25-hydroxyvitamin D_2, and Level 4 contains "normal" human serum that has been spiked with 3-epi-25-hydroxyvitamin D_3. The SRM has certified and reference values for the metabolites 25(OH)D_2, 25(OH)D_3, and 3-epi-25(OH)D_3. The new SRM will provide a mechanism for in-vitro diagnostic (IVD) manufacturers and clinical laboratories to identify and address variations in 25(OH)D measurements.

SRM 972 Vitamin D in Human Serum

For more information, please visit these NIST SRM web links:
https://www-s.nist.gov/srmors/view_detail.cfm?srm=972

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

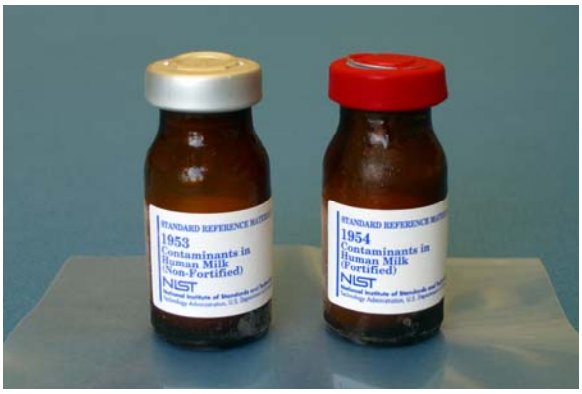
NIST SRM 1953 Organic Contaminants in Non-Fortified Human Milk
NIST SRM 1954 Organic Contaminants in Fortified Human Milk

The National Institute of Standards and Technology (NIST) is collaborating with the Centers for Disease Control and Prevention (CDC) to develop several new SRMs to meet expanding needs for measurement of organic contaminants in human body fluids (serum, milk, and urine) to support human exposure monitoring programs. For the development of the milk SRMs, which are frozen materials, two SRMs were prepared from one 100-liter pool of milk acquired from six milk banks located around the U.S. The pool was divided to produce the two SRMs: one portion of the material is a natural level (non-fortified) and the other portion is a fortified material. The solution used to fortify the serum (as well as two similarly produced serum SRMs, SRM 1957 and 1958) contained 172 selected chlorinated dioxins and furans, brominated dioxins and furans, pesticides, polychlorinated biphenyls (PCBs), brominated flame retardants, polychlorinated naphthalenes, phenols, and toxaphenes, and was added to provide concentrations in the milk approximately 5 to 10 times higher than median concentrations found in the U.S. population. The Certificates of Analysis for these two materials include certified and reference concentration values for selected PCB congeners, chlorinated pesticides, polybrominated diphenyl ether (PBDE) congeners, polychlorinated dibenzo-*p*-dioxin (PCDD) congeners, polychlorinated dibenzofuran (PCDF) congeners, and elements. Between one and five analytical methods performed at NIST, CDC, and/or in a small interlaboratory study were used for the value assignment of the concentrations.

These are the first human milk reference materials available and will be useful for laboratories developing methods in this area and for the intercomparison of data from human monitoring programs around the world.

For more information, please visit these NIST SRM web links:

https://www-s.nist.gov/srmors/view_detail.cfm?srm=1953
https://www-s.nist.gov/srmors/view_detail.cfm?srm=1954



SRM 1953 Organic Contaminants in Non-Fortified Human Milk
SRM 1954 Organic Contaminants in Fortified Milk

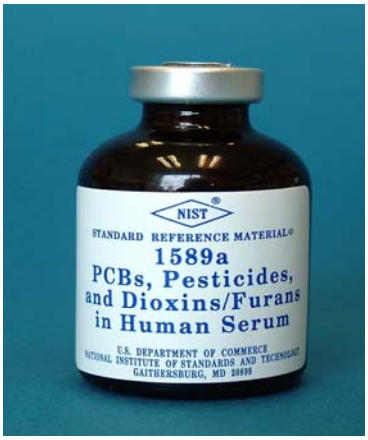
Technical Contacts: Michele Schantz and Lane Sander
Email: michele.schantz@nist.gov and lane.sander@nist.gov

NIST SRM 1957 Organic Contaminants in Non-Fortified Human Serum
NIST SRM 1958 Organic Contaminants in Fortified Human Serum

The National Institute of Standards and Technology (NIST) is collaborating with the Centers for Disease Control and Prevention (CDC) to develop several new SRMs to meet expanding needs for measurement of organic contaminants in human body fluids (serum, milk, and urine) to support human exposure monitoring programs. For the development of the serum SRMs, which are freeze-dried materials, two SRMs were prepared from one 200-liter pool of serum acquired from various blood banks located around the U.S: Wilmington and Greenville, NC; Jacksonville and Orlando, FL; Jonesboro, AR; Flagstaff, AZ; Gallup and Albuquerque, NM; Memphis, TN; Portland, ME; and Carbondale, IL. The pool was divided to produce the two SRMs: one portion of the material is a natural level (non-fortified) and the other portion is a fortified material. The solution used to fortify the serum (as well as two similarly produced milk SRMs, SRM 1953 and 1954) contained 172 selected chlorinated dioxins and furans, brominated dioxins and furans, pesticides, polychlorinated biphenyls (PCBs), brominated flame retardants, polychlorinated naphthalenes, phenols, and toxaphenes, and was added to provide concentrations in the serum approximately 5 to 10 times higher than median concentrations found in the U.S. population. The Certificates of Analysis for these two materials include certified and reference concentration values for selected PCB congeners, chlorinated pesticides, polybrominated diphenyl ether (PBDE) congeners, polychlorinated dibenzo-*p*-dioxin (PCDD) congeners, polychlorinated dibenzofuran (PCDF) congeners, and perfluorinated compounds (PFCs). Between one and five analytical methods performed at NIST, CDC, and/or in a small interlaboratory study were used for the value assignment of the concentrations. These materials replace SRM 1589a PCBs, Pesticides, PBDEs, and Dioxins/Furans in Human Serum and are the first materials with concentration values included for PFCs, an important class of emerging contaminants. SRM 1957 and 1958 will be useful for laboratories developing methods for contaminants in human serum and for the intercomparison of data from human monitoring programs around the world.

For more information, please visit these NIST SRM web links:

https://www-s.nist.gov/srmors/view_detail.cfm?srm=1957
https://www-s.nist.gov/srmors/view_detail.cfm?srm=1958



SRM 1957 Organic Contaminants in Non-Fortified Human Serum and SRM 1958 Organic Contaminants in Fortified Human Serum are replacing SRM 1589a.

Technical Contacts: Michele Schantz and Lane Sander
Email: michele.schantz@nist.gov and lane.sander@nist.gov

NIST SRM 2855 Additive Elements in Polyethylene

The National Institute of Standards and Technology (NIST) has developed a new Standard Reference Material (SRM) 2855 Additive Elements in Polyethylene to aid quality control in the virgin polymers industry. It is the first SRM for elemental analysis for the purpose of monitoring performance additives in polyolefins. SRM 2855 Additive Elements in Polyethylene is a set of three polyethylene blends certified by NIST for selected elements in common performance additives: Na, P, S, Ca, and Zn, plus elements in catalyst fines that contaminate polymers: Si, Ti and Cr. All three SRM materials are also known to be free of the restricted substances: brominated flame retardants, cadmium, mercury and lead. A unit of SRM 2855 consists of one bottle each of Level I Low Density Polyethylene, Level II High Density Polyethylene, and Level III High Density Polyethylene.

SRM 2855 Elements in Polyethylene

Performance additives impart many desirable properties to polymers, *viz*. oxidation stability, thermal stability, light stability, flame retardancy, brightness, clarity, scratch resistance, hydrophilicity, and more. The U.S. plastic additives industry is estimated to be worth over $5 billion, and it supports the larger virgin polymers industry. For cost control and environmental reasons, additive usage must be tightly controlled. One control tool is elemental analysis to monitor additive dosage by quantifying the elements in the finished polymers. SRM 2855 was developed in collaboration with ASTM International D20.70 Subcommittee on Analytical Methods for Plastics. Subcommittee D20.70 maintains Standard D 6247 for X-ray fluorescence spectrometric analysis of additive elements in plastic. SRM 2855 has been used to validate D 6247 in an interlaboratory study that includes other test methods based on inductively coupled plasma optical emission spectrometry and instrumental neutron activation analysis.

For more information, please visit these NIST SRM web links:

https://www-s.nist.gov/srmors/view_detail.cfm?srm=2855

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

NIST RM 8395 Tissue Engineering Reference, Scaffold
NIST RM 8396 Tissue Engineering Reference, Scaffold
NIST RM 8397 Tissue Engineering Reference, Scaffold

These RMs are the first Reference Materials for Tissue Engineering

A Polymers Division team has developed the first Reference Material (RM) for tissue engineering: a series of well-characterized 3D tissue scaffolds numbered 8395, 8396 and 8397 with differing porosities. Customers will use these RMs as calibration standards during characterization of tissue engineering scaffold devices to enable inter-lab comparison of measurements. The design team consisted of Jirun Sun, Francis Wang, John Tesk, Marcus Cicerone, Carl Simon, Andrew Darling (Drexel University) and Wei Sun (Drexel University).

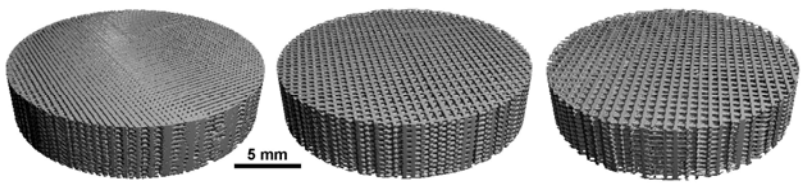
RMs 8395, 8396, 8397 Tissue Engineering Reference, Scaffold Standards

The reference scaffolds were made by a freeform fabrication approach (precision extrusion deposition) because this technique affords precise control of scaffold structure. Poly(ε-caprolactone) was used to fabricate the scaffolds because it is stable during storage and has been cleared by the FDA for use in tissue engineering implants. The scaffold structural parameters of strut diameter, strut spacing and porosity have been characterized. The targeted strut diameter was 200 µm for all three RMs. However, the targeted strut spacing was varied as 200 µm for 8395, 300 µm for 8396 and 450 µm for 8397, resulting in porosities of 47%, 60% and 69%, respectively. These parameters were selected because they span the common range of pore sizes typically required for tissue engineering applications. The release of these RMs culminate a multi-year effort involving input from FDA, NIH, ASTM and many collaborators. Team members have regularly attended ASTM meetings and Dr. Simon is Chair of Working Group WK6507 "Reference Scaffolds for Tissue Engineering" which falls under committee "F04 Medical and Surgical Materials and Devices".

For more information, please visit these NIST SRM web links:

https://www-s.nist.gov/srmors/view_detail.cfm?srm=8395
https://www-s.nist.gov/srmors/view_detail.cfm?srm=8396
https://www-s.nist.gov/srmors/view_detail.cfm?srm=8397

Technical Contact: Carl Simon
Email: carl.simon@nist.gov
Technical Contact: Carol Laumeier
Email: carol.laumeier@nist.gov



Renewals

SRM 189c Potassium Tetroxalate Dihydrate pH Buffer

SRM 1577c Bovine Liver

SRM 1649b Urban Dust

SRM 1666b Propane in Air Lot# 84-J-XX

SRM 1764a Low Alloy Steel

SRM 1880b Portland Cement

SRM 2092 Low-Energy Impact Specimen

SRM 2096 High-Energy Impact Specimen

SRM 2580 Powdered Paint (Nominal 4% Lead)

SRM 2709a San Joaquin Soil

SRM 2710a Montana Soil I

SRM 3120a Germanium Standard Solution

SRM 3137 Niobium Standard Solution

SRM 3155 Tantalum Standard Solution

SRM 3163 Tungsten Standard Solution

SRM 3181 Sulfate Anion Standard Solution

SRM 3190 Electrolytic Conductivity Standard Solutions

SRM 3191 Aqueous Electrolytic Conductivity

SRM 3198 Electrolytic Conductivity Standard Solutions

SRM 3250 Serenoa repens (Fruit)

SRM 3251 Serenoa repens Extract

SRM 3274 Botanical Oils Containing Omega-3 and Omega-6 Fatty Acids

Revisions

Certificate Revisions—Are You Using These Materials?

This is a list of our most recent certificate revisions. Users of NIST SRMs should ensure that they have the most recent certificates. NIST updates certificates for a variety of reasons, such as to extend the expiration date or to include additional information gained from stability testing. If you do not have the most recent certificate for your material, you can print or view a copy from the website at:
http://**www.nist.gov/srm** or contact SRM at:
Phone: 301-975-2200 **Fax**: 301-926-4751 **Email**: srminfo@nist.gov

SRM 17f Sucrose Optical Rotation
Editorial Changes

SRM 187e Sodium Tetraborate (Borax), pH
New Expiration Date : 31 March 2014
Editorial Changes

SRM 723d Tris Acidimetric Standard
New Expiration Date : 01 March 2011

SRM 911c Cholesterol
Editorial Changes

SRM 966 Toxic Metals in Bovine Blood
Technical Changes

SRM 1548a Typical Diet
New Expiration Date : 30 April 2016
Editorial Changes

SRM 1549 Non-Fat Milk Powder
Editorial Changes

SRM 1643e Trace Elements in Water
Information Value
Editorial Changes

SRM 1684b Nitric Oxide in Nitrogen Lot #44-S-XX
New Expiration Date : 01 June 2016

SRM 2243 Relative Intensity Connection Standard for Raman Spectroscopy : 488 nm and 514.5 Excitation
New Expiration Date : 01 January 2014
Editorial Changes

Revisions (continued)

SRM 2394 Heteroplasmic Mitochondrial DNA Mutation Detection
New Expiration Date : 31 July 2014
Editorial Changes

SRM 2570 Lead Paint Film (White)
New Expiration Date : 01 July 2020

SRM 2571 Lead Paint Film (Yellow)
New Expiration Date : 01 July 2020

SRM 2572 Lead Paint Film (Orange)
New Expiration Date : 01 July 2020

SRM 2573 Lead Paint Film (Red)
New Expiration Date : 01 July 2020

SRM 2574 Lead Paint Film (Gold)
New Expiration Date : 01 July 2020

SRM 2575 Lead Paint Film (Green)
New Expiration Date : 01 July 2020

SRM 2576 Lead Paint Film (Blue)
New Expiration Date : 01 July 2020

SRM 2579a Lead Paint Films for Portable X-Ray Fluorescence Analyzers
New Expiration Date : 01 July 2020

SRM 2580 Powdered Paint Nominal 4% Lead
Editorial Changes

SRM 2581 Powdered Paint Nominal 0.5% Lead
Editorial Changes

SRM 2582 Powdered Paint Nominal 200 mg/kg Lead
Editorial Changes

SRM 2571 Lead Paint Film (Yellow)
New Expiration Date : 01 July 2020

SRM 2589 Powdered Paint Nominal 10% Lead
Editorial Changes

Revisions (continued)

SRM 3113 Cobalt Standard Solution
New Expiration Date : 11 May 2013
Editorial Changes

SRM 3140 Platinum Standard Solution
New Expiration Date : 27 July 2013
Editorial Changes

SRM 3143 Rhenium Standard Solution
New Expiration Date : 01 September 2013
Editorial Changes

SRM 3159 Thorium Standard Solution
New Expiration Date: 30 November 2009

SRM 3167a Yttrium Standard Solution
New Expiration Date**:** 01 June 2012
Editorial Changes

ORDER NIST SRMS ONLINE

You can now order NIST SRMs through our new online ordering system, which is constantly being 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 picks up keywords on the detail page along with the words in the title of each SRM.

In addition, we are in the midst of a project to add numerous certificate references for each SRM online. Please also note we are adding many historical archive certificates online for your convenience.

https://srmors.nist.gov

Please Register Your Certificate Online!

Users of NIST SRMs should ensure that they have the most recent certificates.

http://www.nist.gov/srd/srmregform.htm

NIST SRM 2009 Exhibit Schedule

AACC Clinical Lab Expo
July 19-23, 2009
McCormick Convention Center
Chicago, IL

NCSL Symposium
July 26-30, 2009
San Antonio Convention Center
San Antonio, TX

American Chemistry Society ACS
August 16-20, 2009
Washington DC Convention Center
Washington, DC

Association of Official Chemists AOAC
September 13-16, 2009
Philadelphia Marriott Downtown
Philadelphia, PA

MS&T Show
October 25-29, 2009
David L. Lawrence Convention Center
Pittsburgh, PA

Chem Show
November 17-19, 2009
Jacob Javits Convention Ctr
New York City, NY

Materials Research Society Fall Meeting MRS
November 30 – December 4, 2009
Hynes Convention Center
Boston, MA

IMPORTANT MESSAGE when accessing the SRM Website: 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.

If you are using Mozilla Firefox

1) You must have the most current version – 3.0.5
2) You must enable SSL 3.0
3) You must enable TLS 1.0

To enable SSL 3.0 and TLS 1.0
1) Go to Tools – Options - Advanced
2) Click the encryption tab
3) Under Protocols, ensure that both boxes are checked

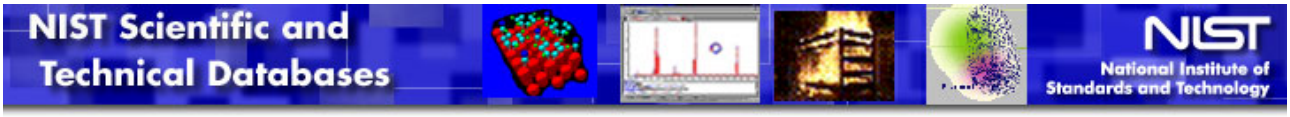
If you are using Internet Explorer

1) You must have the most current version – IE 6.0 or IE 7.0
2) You must enable SSL 3.0
3) You must enable TLS 1.0

To enable SSL 3.0 and TLS 1.0
1) Go to Tools – Internet Options - Advanced
2) Scroll down to security
3) Ensure that both SSL 3.0 and TLS 1.0 are checked

Other NIST Measurement Services Websites of Interest

Standard Reference Materials – Historical Archived Certificates/Reports of Investigation
http://ts.nist.gov/MeasurementServices/ReferenceMaterials/archived_certificates.cfm



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

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

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