

JULY 2017

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**Editor:**  
Regina R. Montgomery

**NIST SRM 635a Portland Cement (Blended with Slag)  
NIST SRM 1881b Portland Cement (Blended with Fly Ash)**

For many years, the cement industry has been expanding the compositions of hydraulic cement to encompass alternative pozzolanic materials, including several environmentally troublesome materials like slag and fly ash. Some contain 30 % fly ash; some contain 40 % slag; and some contain even more of either material. Concrete made from high slag cement is generally accepted to have greater resistance to sulfates in the environment. Concrete made with high levels of fly ash is used in massive structures to promote early strengthening and to control temperature rise during setting.

In response, NIST has replaced SRM 1881a, which contained 5% of a mix of fly ash and slag, with two new SRMs. SRM 635a is Type 1S-40, meaning it contains slag at a mass fraction of 40%. SRM 1881b is Type GUb30F, meaning it contains 30% fly ash interground with the clinker. This brings the suite of NIST SRMs for chemical metrology of cement to 14 compositions. NIST cement SRMs are used by cement labs worldwide when they must qualify their test methods and analysts under ASTM International C114 *Standard Test Methods for Chemical Analysis of Hydraulic Cement* that requires at least six NIST cement SRMs for validating the accuracy of results.



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[https://www-s.nist.gov/srmors/view\\_detail.cfm?srm=635a](https://www-s.nist.gov/srmors/view_detail.cfm?srm=635a)  
[https://www-s.nist.gov/srmors/view\\_detail.cfm?srm=1881b](https://www-s.nist.gov/srmors/view_detail.cfm?srm=1881b)

## NIST SRM 2484 Multiwall Carbon Nanotubes (Raw Soot)



Multiwall carbon nanotubes applications have reached a level of commercial significance in industry and are now being produced on the scale of hundreds of metric tons per year. The attractive electrical and thermal conductivity and impressive mechanical strength are being leveraged to make strides in light weighting of composite materials and EMI (electrical magnetic interference) shielding applications. Produced multiwall carbon nanotubes can vary widely by manufacturer, and even batch-to-batch from a single manufacturer. Post-processing can modify the material quality further, having an impact on important material characteristics such as catalyst impurities and the

physical and chemical properties of the tubes, as well as the number of walls and length. Recent regulations and reporting requirements emphasize the need for a certified reference material to characterize the nanomaterials in a complete fashion. SRM 2484 Multiwall Carbon Nanotubes (Raw Soot) was developed to address this need for chemical and structural characterization.

SRM 2484 Multiwall Carbon Nanotubes (Raw Soot) was specifically chosen for the quality and uniformity of the samples from unit-to-unit. Each unit of SRM 2484 contains 6 g of a homogeneous raw multiwall carbon nanotube soot that has been chemically characterized, along with extensive morphology characterization. Each unit is characterized with the highest accuracy for cobalt, with additional information on iron, thorium, and aluminum content, which are the major elements in the catalyst. Extensive structural information was achieved through electron microscopy, to obtain data for length, inner and outer diameter, and the number of walls.

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[https://www-s.nist.gov/srmors/view\\_detail.cfm?srm=2484](https://www-s.nist.gov/srmors/view_detail.cfm?srm=2484)

## NIST SRM 3232 Kelp Powder (*Thallus laminariae*)

Seaweed is a good source of mineral nutrients, vitamins, and other beneficial bioactive compounds. The consumption of seaweeds has been linked to a lower incidence of cancer, hyperlipidemia, and coronary heart disease based on epidemiological studies comparing Japanese and Western diets. Recently, various seaweed supplements have been marketed to exploit the reported health benefits. NIST in collaboration with the National Institutes of Health Office of Dietary Supplements (NIH-ODS) developed Standard Reference Material (SRM) 3232 Kelp Powder (*Thallus laminariae*) to meet the dietary supplement measurements needs for compliance with the Dietary Supplement Health and Education Act of 1994 (DSHEA) and the current Good Manufacturing Practices (cGMPs). SRM 3232 is intended for quality assurance and method validation in the measurement of nutritional and toxic elements, vitamin K<sub>1</sub>, arsenic species, and proximates in kelp and similar edible seaweeds. A unit of SRM 3232 consists of three packets each containing approximately 5 g of kelp powder sealed in an aluminized polyethylene bag with silica dryer.



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[https://www-s.nist.gov/srmors/view\\_detail.cfm?srm=3232](https://www-s.nist.gov/srmors/view_detail.cfm?srm=3232)

## NIST SRM 3235 Soy Milk

Soy-containing foods and supplements are widely distributed in the U.S., with soy-based foods such as tofu and meat and dairy alternatives reaching over \$5 billion in annual sales. Soy is rich in isoflavones, a class of phytoestrogens linked to bone health, as well as reductions in LDL cholesterol, menopausal symptoms, and incidence of cardiovascular disease and breast cancer. Soybeans are processed into high-protein commercial products that offer gluten-free alternatives to wheat flour and are used as nutritional ingredients in many foods to enhance protein content or as emulsifiers or texturizers. Soybeans are also processed into soy milk by soaking and grinding the soybeans in water. Soy milk is a popular substitute for dairy milk since it is free of cholesterol and lactose, low in saturated fat, and is a low-calorie source of protein.

NIST has prepared a suite of soy materials in collaboration with the Office of Dietary Supplements at the National Institutes of Health for use in quality control and/or method validation or verification studies for isoflavones and other compounds of interest. NIST SRM 3234 Soy Flour was released in 2012 and has values assigned for isoflavones, proximates, vitamins, elements, and amino acids. NIST SRM 3236 Soy Protein Isolate, NIST SRM 3237 Soy Protein Concentrate, and NIST SRM 3238 Soy-Containing Solid Oral Dosage Form are available with certified and reference values assigned for the six-major soy isoflavones. The certificates also include detailed method information used in the assignment of these values as well as representative chromatograms.

NIST SRM 3235 Soy Milk is the newest in the soy suite, and has been value assigned for nutritional elements, vitamins, proximates, fatty acids, and amino acids. The material was prepared from a commercially available soy milk product and a unit of NIST SRM 3235 consists of 10 ampoules, each containing approximately 10 mL of soy milk.



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[https://www-s.nist.gov/srmors/view\\_detail.cfm?srm=3235](https://www-s.nist.gov/srmors/view_detail.cfm?srm=3235)



## NIST RM 8610 Mercury Isotopes in UM-Almaden Mono-Elemental Secondary Standard

There is increasing interest in the analytical chemistry and environmental communities in using mercury isotopic fingerprinting to identify mercury sources and to better understand the biogeochemical cycling of mercury in the environment. As this field has grown, the need for isotopic mercury standards has become more evident. A material known as UM-Almaden has been the material of choice to use as a second-source inorganic mercury standard to validate isotopic mercury measurements made by multi-collector inductively coupled plasma mass spectrometry. This solution was sourced from cinnabar ore from the mercury mines in Almaden, Spain. Prior to this effort, this material was maintained and distributed by Dr. Joel Blum's lab at the University of Michigan. With the growth of the mercury isotope community and increasing demand for appropriate isotopic standards, NIST and the Blum lab agreed to create a NIST reference material from the UM-Almaden stock to transfer this service, allow a broader and more systematic distribution of this material, and conduct a formal assignment of values and uncertainties. Measurement were made by NIST, University of Michigan Ann Arbor, MI, University of Pau/IPREM Pau, France, GET Toulouse, France, and Trent University Petersborough, Canada.



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[https://www-s.nist.gov/srmors/view\\_detail.cfm?srn=8610](https://www-s.nist.gov/srmors/view_detail.cfm?srn=8610)

## Renewal SRMs/RMs

<b>SRM 141e</b>	Acetanilide
<b>SRM 635a</b>	Portland Cement (Blended with Slag)
<b>SRM 1881b</b>	Portland Cement (Blended with Fly Ash)
<b>SRM 3110</b>	Cerium (Ce) Standard Solution
<b>SRM 3133</b>	Mercury (Hg) Standard Solution
<b>SRM 4965a</b>	Radium-226 Radioactivity Standard

## Certificate Revisions

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. Certificates are the official source for values and expiration dates. 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 <https://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](mailto:srminfo@nist.gov)

<b>SRM 16f Basic Open-Hearth Steel, 1 % Carbon (chip form)</b> Editorial changes	<b>SRM 2274 Polychlorinated Biphenyl Congeners in 2,2,4-Trimethylpentane</b> Editorial changes	<b>SRM 2972a 25-Hydroxyvitamin D Calibration Solutions</b> New expiration date: 31 August 2022
<b>SRM 143d Cystine (L-Cystine)</b> Editorial changes	<b>SRM 2298 Sulfur in Gasoline (High Octane)</b> New expiration date: 31 December 2021	<b>SRM 3169 Zirconium (Zr) Standard Solution</b> New expiration date: 31 December 2021
<b>SRM 351a Sodium Carbonate (Acidimetric Standard)</b> New expiration date: 01 April 2022	<b>SRM 2299 Sulfur in Gasoline (Reformulated)</b> New expiration date: 31 December 2021	<b>SRM 3250 Saw Palmetto (<i>Serenoa repens</i>) Fruit</b> Editorial changes
<b>SRM 1493 Polychlorinated Biphenyl Congeners in 2,2,4-Trimethylpentane</b> New expiration date: 30 September 2036	<b>SRM 2377 Fatty Acid Methyl Esters in 2,2,4-Trimethylpentane</b> Editorial changes	<b>SRM 3251 Saw Palmetto (<i>Serenoa repens</i>) Extract</b> Editorial changes
<b>SRM 1932 Fluorescein Solution</b> New expiration date: 30 June 2022	<b>SRM 2745 Carbon Dioxide in Nitrogen (Nominal Amount-of-Substance Fraction 16 % mol/mol) Lot 2765-A-XX</b> New expiration date: 08 April 2021	<b>SRM 4226d Nickel-63 Radioactivity Standard</b> Editorial changes
<b>SRM 1944 New York/New Jersey Waterway Sediment</b> New expiration date: 31 March 2027	<b>SRM 2765 Propane in Air (Nominal Amount-of-Substance Fraction 100 nmol/mol) Lot 9-X-XX</b> New expiration date: 13 January 2021	<b>RM 8642a FDA Saxitoxin Dihydrochloride Solution</b> Editorial changes

## NIST 2017 SRM EXHIBIT SCHEDULE

### **Clinical Lab Expo AACC**

Booth #911

July 30 - August 3, 2017

San Diego Convention Center

San Diego, CA

### **American Chemical Society Fall Meeting ACS**

Booth #2111-2113

August 20-24, 2017

Washington DC Convention Center

Washington, DC



### **131<sup>st</sup> Annual Meeting & Exposition AOAC**

September 24-27, 2017

Marriott Atlanta Marquis

Atlanta, GA

## **ORDER NIST SRMs ONLINE**

You can 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.

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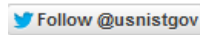
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## NIST Measurement Services Websites of Interest

### Standard Reference Materials



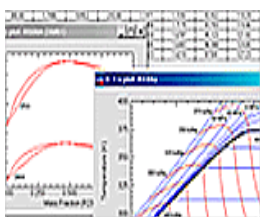
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