104.10 - Light Stable Isotopic Materials (gas, liquid and solid forms)

These RMs are for calibration of isotope-ratio mass spectrometers and associated sample preparation systems. They are distributed by NIST on behalf of the International Atomic Energy Agency (IAEA).

The isotopic compositions are given in parts per thousand difference from isotope-ratio standards-Hydrogen and oxygen: Vienna Standard Mean Ocean Water (VSMOW), Carbon: Vienna PeeDee Belemnite (VPDB), Nitrogen: atmospheric N_2 (Air), Silicon: NBS28 Silica Sand (optical), and Sulfur: Vienna Canyon Diablo Troilite (VCDT). In RM 8545 (LSVEC) is also expressed as an absolute isotopic ratio.

For further information see: SP260-149

PLEASE NOTE: The tables are presented to facilitate comparisons among a family of materials to help customers select the best SRM for their needs. For specific values and uncertainties, the certificate is the only official source.

			(see Certificate of Analysis for uncertainties and other details)										
SRM	**Description**	**Unit Size**	**$\delta^{13}C_{VPDB}$ × 1000**	**$\delta^{15}N_{Air}$ × 1000**	**$\Delta^{17}O_{VSMOW}$**	**$\delta^{18}O_{VPDB}$ × 1000**	**$\delta^{18}O_{VSMOW}$ × 1000**	**$\delta^{2}H_{VSMOW}$ × 1000**	**$\delta^{30}Si_{NBS28}$ × 1000**	**$\delta^{34}S_{VCDT}$ x 1000**	**$\delta 11B_{SRM951}$ x 1000**	**$^{6}Li/^{7}Li$**
8301	Boron Isotopes in Marine Carbonate (Simulated Coral and Foraminifera Solutions)	6 x 4 mL									*+24.17(Coral)* *+14.51(Foram*	
8529	IAEA-S-3 (Sulfur Isotopes in Silver Sulfide)	1 bottle x 0.5g								*-32.49*		
8535a	VSMOW2 Vienna Standard Mean Ocean Water(Hydrogen and Oxyen Isotopes in Water)	20 mL										
8536	GISP-Water	20 mL					*-24.78 Ref [2]*	*-189.7 Ref [2]*				
8537	SLAP Standard Light Antarctic Precipitation (Hydrogen and Oxygen Isotopes in Water)	20 mL					*-55.5* Ref [1]*	*-428* Ref [1]*				
8539	NBS22 Oil (Carbon and Hydrogen Isotopes in Oil)	1 mL	*-30.02 Ref [5]*					*-117.2 Ref [3]*				
8540	IAEA-CH-7 (Carbon and Hydrogen Isotopes in Polyethylene Foil)	3.5 g	*-32.14 Ref [5]*					*-99.2 Ref [2]*				
8541	USGS24 Graphite (Carbon Isotopes in Graphite)	0.8 g	*-16.05 Ref [5]*									
8542	IAEA-CH-6 Sucrose (Carbon Isotopes in Sucrose)	1 g	*-10.45 Ref [5]*									
8544	NBS 19 Limestone (Carbon and Oxygen Isotopes in Carbonate)	0.4 g	*+1.95* Ref [3]*			*-2.2* Ref [3]*	*+28.65 Ref [15]*					
8545	LSVEC (Lithium Isotopes in Lithium Carbonate)	0.4 g										*0.08215** Ref [4]*
8546	NBS28 (Silicon and Oxygen Isotopes in Silica Sand)	0.4 g					*+9.58 Ref [2]*		*0* Ref [12]*			
8547	IAEA-N-1 (Nitrogen Isotopes in Ammonium Sulfate)	0.5 g		*+0.43^ Ref [7]*								
8548	IAEA-N-2 (Nitrogen Isotopes in Ammonium Sulfate)	0.5 g		*+20.41 Ref [7]*								
8550	USGS25 (Nitrogen Isotopes in Ammonium Sulfate)	0.8 g		*-30.41 Ref [7]*								
8551	USGS26 (Nitrogen Isotopes in Ammonium Sulfate)	0.8 g		*+53.75 Ref [7]*								
8552	NSVEC (Nitrogen Isotopes in Gaseous Nitrogen)	300 umol		*-2.78 Ref [7]*								
8553	IAEA-S-4 (Soufre De Lacq) (Sulfur Isotopes in Elemental Sulfur)	0.5 g								*+16.86 Ref [10]*		
8554	IAEA-S-1 (Sulfur Isotopes in Silver Sulfide)	0.5 g								*-0.30* Ref [11]*		
8555	IAEA-S-2 (Sulfur Isotopes in Silver Sulfide)	0.5 g								*+22.62 Ref [12]*		
8557	NBS127 (Sulfur and Oxygen Isotopes in Barium Sulfate)	0.5 g					*8.59 Ref [8]*			*21.12 Ref [12]*		
8558	USGS32 Nitrogen and Oxygen Isotopes in Nitrate	0.9 g		*+180^Ref [7]*			*+25.7 Ref[8]*					
8562	CO_2-^{13}C-enriched, Paleomarine Origin (Carbon Dioxide)	set (2)	*-3.72 Ref [5]*			*-8.43 Ref [14]*						
8563	CO_2-^{13}C-depleted, Petrochemical Origin (Carbon Dioxide)	set (2)	*-41.59 Ref [5]*			*-23.61 Ref [14]*						
8564	CO_2-Biogenic, Modern Biomass Origin (Carbon Dioxide)	set (2)	*-10.45 Ref [5]*			*+0.06 Ref [14]*						
8568	USGS34 Nitrogen and Oxygen Isotopes in Nitrate	0.9 g		*-1.8 Ref [8]*	*-0.1*		*-27.9 Ref [8]*					
8569	USGS35 Nitrogen and Oxygen Isotopes in Nitrate	0.9 g		*+2.7 Ref [8]*	*+21.6 Ref [17]*		*+57.5 Ref [8]*					
8574	L-glutamic Acid USGS41 (Heavy Carbon and Nitrogen Isotopes in L-glutamic Acid)	0.5 g	*+37.63 Ref [12]*	*+47.57 Ref [1,2]*								

- Certified values are normal font
- Non-certified or reference values are italicized
- Non-certified values in parentheses are for information only

* Exact values defining the delta scale
^ Interim consensus values used for scale normalization
**Absolute isotope amount ratio

Certified values are normal font.
Reference values are italized.
Values in parentheses are for Information only.

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