NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

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SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2232a
SRM Name: Indium for DSC Temperature and Enthalpy Calibration
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is primarily intended for use in the temperature and enthalpy calibrations of differential scanning calorimeters (DSCs), differential thermal analyzers (DTAs), and similar instruments. A unit of SRM 2232a consists of an approximately 1 g ingot of indium metal sealed in plastic under an inert atmosphere.

Company Information

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Standard Reference Materials Program
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2. HAZARDS IDENTIFICATION

Classification

Physical Hazard: Not classified.
Health Hazard: Not classified.

Label Elements
Symbol

Signal Word
Not applicable.

Hazard Statement(s)
Not applicable.

Precautionary Statement(s)
Not applicable.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Indium

Other Designations: Indium metal; indium element

Components are listed in compliance with OSHA's 29 CFR 1910.1200; for the actual values see the NIST Certificate of Analysis.

Non-Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Indium	7440-74-6	231-180-0	100

4. First Aid Measures

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Generally the product does not irritate the skin.

Eye Contact: Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion: If a large amount is swallowed, get medical attention.

Most Important Symptoms/Effects, Acute and Delayed: No further relevant information available.

Indication of any immediate medical attention and special treatment needed, if necessary: No further relevant information available.

5. Fire Fighting Measures

Fire and Explosion Hazards: Negligible fire hazard. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:
Suitable: Special powder for metal fires.
Unsuitable: Water.

Specific Hazards Arising from the Chemical: Indium oxide.

Special Protective Equipment and Precautions for Fire-Fighters: Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

Methods and Materials for Containment and Clean up: Pick up mechanically.

7. Handling and Storage

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

Storage: Keep container tightly sealed. Store in cool, dry place in tightly closed containers.

8. Exposure Controls and Personal Protection

Exposure Limits:

Indium
NIOSH (REL): 0.1mg/m^3
ACGIH (TLV): 0.1mg/m^3

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: Not required.

Eye/Face Protection: Safety glasses.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties	
Appearance (physical state, color, etc.)	Solid, Silvery-white
Molecular Formula	In
Molar Mass (g/mol)	114.818
Odor	odorless
Odor threshold (mg/m^3)	not available
pH	not available
Evaporation rate	not available
Melting point/freezing point	156.6 ºC (314 ºF)
Relative Density as specific gravity (water = 1)	7.31 g/cm^3 at 20 ºC (solid)
Vapor Pressure (mmHg)	0 hPa
Vapor Density (air = 1)	not available
Viscosity	not available
Solubility(ies)	insoluble in water
Partition coefficient (n-octanol/water)	not available
Thermal Stability Properties	
Autoignition Temperature	not applicable
Thermal Decomposition	not applicable
Initial boiling point and boiling range	2072 ºC (3762 ºF)
Explosive Limits, LEL (Volume %)	not applicable
Explosive Limits, UEL (Volume %)	not applicable
Flash Point	not applicable
Flammability (solid, gas)	not applicable

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: __X__ Stable _____ Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Decomposition will not occur if used and stored according to specifications..

Incompatible Materials: Acids and oxidizing materials.

Fire/Explosion Information: See Section 5, “Fire Fighting Measures”.

Hazardous Decomposition: Metal oxide fume, Indium oxide.

Hazardous Polymerization: _____ Will Occur __X__ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: _____ Inhalation __X__ Skin _____ Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: May cause irritation.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: May cause irritation.

Skin Contact: May cause irritation.

Eye Contact: May cause irritation.

Ingestion: No effects known.

Numerical Measures of Toxicity

Acute Toxicity: Not classified; no data available.

Skin Corrosion/Irritation: Not classified.

Serious Eye Damage/Eye Irritation: Not classified.

Respiratory Sensitization: Not classified; no data available.

Skin Sensitization: Not classified; no data available.

Germ Cell Mutagenicity: Not classified; no data available.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen _____ Yes __X__ No
Indium is not listed by NTP, IARC or OSHA as carcinogens/potential carcinogens.

Mutagenic: Not classified.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity, Single Exposure: Not classified; no data available.

Specific Target Organ Toxicity, Repeated Exposure: Not classified; no data available.

Aspiration Hazard: No data available.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No
CHRONIC HEALTH:	No
FIRE:	No
REACTIVE:	No
PRESSURE:	No

State Regulations: Not listed under California Proposition 65.

U.S. TSCA Inventory: Listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations: WHMIS Information is not provided for this material.

16. OTHER INFORMATION

Issue Date: 01 October 2024

Sources: American Elements, Vendor SDS *Indium*, 16 May 2018.

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration, 50 %	STEL	Short Term Exposure Limit
LD50	Lethal Dose, 50 %	STOT	Specific Target Organ Toxicity
LEL	Lower Explosive Limit	TLm	Threshold Limit, median
MSDS	Material Safety Data Sheet	TLV	Threshold Limit Value
NIOSH	National Institute for Occupational Safety and Health	TPQ	Threshold Planning Quantity
NIST	National Institute of Standards and Technology	TSCA	Toxic Substances Control Act
n.o.s.	Not Otherwise Specified	TWA	Time Weighted Average
		UEL	Upper Explosive Limit
		WHMIS	Workplace Hazardous Materials Information System

Disclaimer: The NIST SDS information is specific to the NIST product and is believed to be correct, based upon our current knowledge. The SDS may not necessarily be all inclusive and should be used only as a guide. NIST does not guarantee the accuracy or completeness of this information. The only official source for specific values and uncertainties is the certificate or report.

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; e-mail srmmsds@nist.gov; or via the Internet at https://www.nist.gov/srm.