

**Section 1: Identification of the substance/mixture and of the company/undertaking**

**-1 Product Identifier**

Indium, CAS No. 7440-74-6

**-2 Relevant identified uses of substance or mixture and uses advised against**

Indium metal is used in the production of Indium Tin Oxide (ITO) as the coating source for the flat panel display device, and is also used in the brazing material and low melting point alloys. Indium is available in various forms like ingot, foil, wires and granules. Uses advised against: None

**-3 Details of Supplier of the Safety Data Sheet**

**Manufacturer and Supplier**

Nippon Rare Metal, Inc.

Address: 2-15-1, Nakayama, Midori-ku, Yokohama 226-0019, Japan

**-4 Emergency call:**

Phone: #81-45-931-4841 (weekdays, office hours 8:00 to 17:00 JST, UTC +9 hours, Language: English/Japanese), Fax: #81-45-932-8401, e-mail: [info@nrm-inc.co.jp](mailto:info@nrm-inc.co.jp)

**Section 2: Hazards Identification**

**-1 Classification of the substance or mixture**

Classification according to Regulation (EC) No. 1272/2008 :

Acute toxicity (inhalation, dermal and oral): Category 4

Skin corrosion: Category 2

Eye irritant: Category 2A

Specific target organ toxicity/single exposure: Category 3

Reports of Carcinogenicity: NTP:NO IARC:NO OSHA:NO (See *Section 11. Toxicological Information*)

**-2 Label element**



**Signal Word: Warning**

**Hazard statement(s)**

H303 May be harmful if swallowed

H315 Causes skin irritation

H319 Causes serious eye irritation

H335 May cause respiratory irritation

**Precautionary statement(s)**

P261 Avoid breathing dust/fume/gas/mist/vapors/spray

P270 Do not eat, drink or smoke when using this product

P273 Avoid release to the environment

P280 Wear protective gloves/protective clothing/eye protection/face protection

P362 Take off contaminated clothing and wash before reuse

P302 +P352 IF ON SKIN: Wash with plenty of soap and water

P304 + 341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

P305 + 351 IF IN EYES: Rinse continuously with water for several minutes (15 minutes)

### **-3 Other hazards**

Eye contact: Contact with metal alloy or fume may cause irritation. Wear safety glasses and face shield to protect.

Ingestion: may cause irritation.

Inhalation: inhalation of fume or dust may cause local irritation to the respiratory system.

Flammability: Indium dust may be flammable. Keep ventilation system running in the working environment where Indium dust is produced.

### **Section 3: Information on ingredients**

#### **Substances**

CAS No : 7440-74-6

Chemical formula: In

EINECS No : 231-180-0

### **Section 4: First Aid measures**

#### **-1 Description of first aid measures**

Eye : Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation persists.

Skin : Remove contaminated clothing. Wash affected area with soap and water. Wash clothing before reuse. If irritation persists, obtain medical attention.

Ingestion : If patient is conscious, only induce vomiting as directed by trained personnel. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Inhalation : Remove to fresh air. If not breathing, give artificial respiration or oxygen by trained personnel. Seek immediate medical attention.

It is advised for the first aid personnel to wear an appropriate personal protective equipment (PPE). Refer to the Section 6-1 for details of PPE.

#### **-2 Most important symptoms and effects, both acute and delayed**

Skin contact may cause irritation.

Eye exposure may cause serious irritation.

Burns require immediate attention.

Inhalation may cause respiratory irritation.

#### **-3 Indication of any immediate medical attention and special treatment needed**

No special treatment information is available on this substance. Review data provided in this document to understand the hazards when working with this product.

### **Section 5: Fire fighting measures**

#### **-1 Extinguishing media**

Use any means of extinction appropriate for surrounding fire conditions, such as water spray, carbon dioxide, dry chemical or foam.

#### **-2 Special hazards arising from the substances or mixture**

Product may produce toxic indium fumes when it is in fire.

#### **-3 Advice for firefighter**

Product has low melting point (156°C). Therefore, if possible move this material from fire and/or cool material exposed to flame in order to prevent molten pools of Indium. Do not use direct water streams on fire where molten metal is present. Fire fighters should be fully trained and wear full protective clothing including an approved and self-contained breathing apparatus.

## Section 6: Accidental Release Measures

### -1 Personal precautions, protective equipment and emergency procedures

Fine particle protective clothing, rubber-made gloves and a NIOSH approved or CE marked air-purifying respirator with particular cartridge are recommended for any persons responding to an accidental release. Goggles may be useful in some cases to prevent eye contact with Indium fume. Avoid conditions that create dust or fume. Do not sweep dry solids.

### -2 Environmental precautions.

Adequate ventilation should be available. Keep away from water and soil to store. Indium scrap can be recoverable. When disposing, follow the regulations. Refer to Section 13, Disposal Considerations for proper way of disposal in Europe.

### -3 Methods and material for containment and cleaning up

Spills/leaks : Using a spatula, scoop up spills and place in a plastic or glass jar and tightly cap. Remove traces of paste residue using cloth rags or paper moistened with ethyl or isopropyl alcohol. Dispose contaminated cloth rags or paper towels following all Federal, State and Local regulations. In the EU countries, please refer to the Special Waste Regulations. Material may have reclaim value.

### -4 Reference to other sections: See Section 8 for exposure levels

## Section 7: Handling and Storage

### -1 Precautions for safe handling

Keep containers tightly closed when not in use. Use care to avoid spills. Wear appropriate personal protective equipment when working or handling this product. Always thoroughly wash your hands after handling this product. DO NOT touch or rub eyes until hands are washed.

### -2 Conditions for safe storage, including any incompatibilities

Store product in tightly capped original containers in a cool, dry area. Refer to product label for specific storage temperature requirements. Rotate stock to ensure use before expiration date on the label. Keep clean environment in the storage area to avoid flammable Indium dust to accumulate.

### -3 Specific end use(s) : various

## Section 8: Exposure controls/personal protection

### -1 Control parameters

Component	Country	TLV- TWA (mg/m3)	STEL (mg/m3)	NIOSH-REL (mg/m3)
Indium	UK	0.1	0.3	
	Belgium	0.1	-	
	Spain	0.1	-	
	Portugal	0.1	-	
	Finland	0.1	-	
	Denmark	0.1	-	
	Austria	0.1	0.2	
	Switzerland	0.1	-	
	Norway	0.1	-	
	Ireland	0.1	0.3	
	China	0.1	0.3	
USA	0.1		0.1	

TLV- TWA : Threshold Limit Values - Time Weighted Average

STEL: Short Term Exposure Limit

NIOSH : The National Agency for Occupational Safety and Health

REL: Recommended Exposure Limits

Measurement method: in accordance with ACGIH (American Conference of Governmental Industrial Hygienists), TLV-TWA standard.

## **-2 Exposure control**

**Engineering Controls** : Use only production equipment (stencil printers and re-flow furnances) with adequate ventilation and other safety features specifically designed for use with product. Avoid inhalation of particulate/fume/dust. Control concentration of all components so that exposure levels are not exceeded.

### **Personal protection:**

Eyes: Chemical safety glasses/goggles.

Respirator: A NIOSH approved or EU compliant CE marked air-purifying respirator with a fume/organic chemical cartridge is recommended under certain circumstances (i.e. when re-flowing manually on a plate instead of a ventilated re-flow furnace) where airborne concentrations are expected to be elevated or exceed exposure limits.

Skin: Compatible chemical resistant gloves.

Other: Lab coat, eyewash fountain in work area. Avoid use of contact lenses in high fume areas.

Work/Hygienic Maintain good housekeeping. Clean up spills immediately.

Practices: Good personnel hygiene is essential. Avoid eating, smoking or drinking in the work area. Wash hands thoroughly with soap and water immediately upon leaving the work area.

## **Section 9: Physical and Chemical Properties**

### **-1 Information on basic physical and chemical properties**

Appearance and Odor: Soft silvery white metal, gray powder, no odor

Solubility in Water: insoluble

Melting Point: 156.6°C

Boiling Point: 2080°C

Specific Gravity: 7.31 (H<sub>2</sub>O=1)

Flammability: not applicable

Vapor Pressure: <0.01mmHg@25°C

Flammable limit: non-flammable

Vapor Density: (air=1) Not applicable

Decomposition temp: not applicable

Molecular Weight: 114.82

## **Section 10: Stability and Reactivity**

**-1 Reactivity:** stable

**-2 Chemical stability:** stable

**-3 Possibility of hazardous reactions :** not established

**-4 Conditions to avoid:** not established

**-5 Incompatible materials:** Avoid contact with strong acid, bases or oxidizing agents. Mixture with Sulphur ignites when heated. Reacts with halogens, selenium, tellurium, arsenic or phosphorus on heating.

**-6 Hazardous Decomposition:** Harmful toxic fumes may form at elevated temperatures. Particle size metal fume can be inhaled and deposited within the human body, which increases respiratory hazard risk.

## **Section 11: Toxicological Information**

### **-1 Information on toxicological effect**

General information available on the toxic properties of indium in humans is limited.

Acute :

Skin/eye: Indium metal is not irritating to the eyes or skin other than by direct abrasive action of metal particles on eye or skin tissue. Soluble indium salts are very irritating to eyes.

Inhalation/Ingestion: Inhalation of indium fume or dust may cause irritation and damage to the respiratory tract.

Chronic: Prolonged or repeated exposure to indium fume or dust may cause irritation and damage to the lung.

Carcinogenicity is not listed by any of the following bodies: NTP(National Toxicity Program), OSHA(US Occupational Safety & Health Administration), IARC (UN International Agency for Research on Cancer) and European Union

### ***Section 12: Ecological Information***

Indium metal is highly insoluble, and presents minimal ecological risk. However, its processing or exposure in the environment lead to the increase of indium in more bioavailable compound forms.

As there is limited information on the fate and effects of indium compounds, care should be taken to prevent releases to the environment.

### ***Section 13: Disposal Considerations***

Waste Disposal Method: Scrap metal alloy usually has value. Contact a commercial reclaimer for recycling. Otherwise, dispose of in accordance with the applicable regulations. In Europe, follow the Waste Management Regulation (2008/98/EC) and RoHS (Restriction of Hazardous Substances, 2011/65/EU).

### ***Section 14: Transport information***

-1 UN number: no proper shipping number available

-2 UN proper shipping name: none

-3 Transport hazard class(es): none

-4 Packing group: none

-5 Environmental hazards: none

-6 Special precautions for user: none

-7 Transport in bulk : none

Non hazardous under shipping regulations.

### ***Section 15: Regulatory Information***

**-1 Safety, health and environmental regulations/legislation specific for the substance or mixture :**

The information in this Safety Data Sheet meets the requirements of the United States Occupational Safety and Health Act and regulations promulgated hereunder (29 CFR 1910.1200 ET. SEQ.).

This Safety Data Sheet has been developed using EC1907/2006 amended as of 20<sup>th</sup> May, 2010 EU No. 453/2010 and information as stated under the regulation EC No. 1272/2008 CLP regulation.

The information in this Safety Data Sheet meets the requirements of the EU under Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (CHIP 2) Regulation 6.

This product has been classified in accordance with the hazard criteria of the Commission Directive 91/155/EEC and EH40.

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulation(CPR).

WHMIS: D2B – Materials Causing Other Toxic Effects (skin irritation/skin sensitization)

This product has been classified in accordance with the guidelines set by the Dept of Industrial Health of the Republic of Singapore.

This product has been classified in accordance with Mexican regulations NOM-018-STPS-2000 and NOM-010-STPS-1999.

This product has been classified using the Chinese Occupational Limit for Hazardous Agents in the Workplace, GBZ2-2002.

For compliance with EU Directive 2002/95/EC, Restriction of Hazardous Substances (RoHS), see

Alloy Table.

California PROP 65(Safe Drinking Water Standard):

**-2 Chemical safety assessment: not performed.**

### **Section 16. Additional Information**

EC Classification, Packaging and Labeling Requirements:

Symbol and Hazard Classification of Product:

Risk phrase:

R20/22 Harmful by inhalation and if swallowed

Safety Phrases:

S20/21 When using do not eat, drink or smoke

S23 Do not breathe fumes/gas/vapor/spray

S24/25 Avoid contact with skin and eyes

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

S28 After contact with skin, wash immediately with plenty of soap and water

S62 If swallowed, do not induce vomiting seek medical advice immediately and show container or label

Revision history : revised on July 10, 2015

#### **Abbreviations :**

CAS number: The Chemical Abstracts Service number

EINECS: The European Inventory of Existing Commercial Chemical Substance

NTP: National Toxicity Program IARC: UN International Agency for Research on Cancer

OSHA: US Occupational Safety & Health Administration NIOSH : The National Agency for Occupational Safety and Health

EU: European Union

#### **Key Literature references and Source of data**

MSDS Europe website (<http://www.msds-europe.com/>)

Guidance on the compilation of safety data sheets - Version 2.1 February 2014 by ECHA (European Chemical Agency)

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