



Material Safety Data Sheet

1. CHEMICAL PRODUCTS AND COMPANY IDENTIFICATION

PRODUCT NAME : Indium Phosphide Wafers

CHEMICAL NAME : Indium Phosphide

FORMULA : InP

RECOMMENDED USE OF THE CHEMICAL AND RESTRICTIONS ON USE

: No data available

Manufacture

JX Nippon Mining & Metals Corporation, Isohara Works (Emergency Contact)

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2. HAZARD IDENTIFICATION

GHS Classification

Physical And Chemical Hazard Class

Explosives : Not applicable

Flammable Gases : Not applicable

Flammable Aerosols : Not applicable

Oxidizing Gases : Not applicable

Gases Under Pressure : Not applicable

Flammable Liquids : Not applicable

Flammable Solids : No data available

Self-Reactive Substances And Mixtures : Not applicable

Pyrophoric Liquids : Not applicable

Pyrophoric Solids : No data available

Self-Heating Substances And Mixtures : No data available

Substances And Mixtures Which, In Contact With Water, Emit Flammable Gases

: Not Classified

Oxidizing Liquids : Not applicable

Oxidizing Solids : Not applicable

Organic Peroxides : Not applicable

Corrosive to Metals : No data available

Health Hazard Class

Acute Toxicity(Oral)	: Not Classified
Acute Toxicity(Skin)	: No data available
Acute Toxicity(Inhalation:Gas)	: Not applicable
Acute Toxicity(Inhalation:Fume)	: No data available
Acute Toxicity(Inhalation:Dust,Mist)	: No data available
Skin Corrosion/Irritation	: No data available
Serious Eye Damage/Eye Irritation	: No data available
Respiratory Sensitization	: No data available
Skin Sensitizer	: No data available
Germ Cell Mutagenicity	: No data available
Carcinogenicity	: Class 1B
Reproductive Toxicity	: No data available
Specific Target Organ Systemic Toxicity Single Exposure	: No data available
Specific Target Organ Systemic Toxicity Repeat Exposure	: Class 1 (Respiratory, Hematopoietic) & Class 2 (Liver)
Aspiration Hazard	: No data available

Environmental Hazard Class

Hazardous To The Aquatic Environment(Acute)	: No data available
Hazardous To The Aquatic Environment(Chronic)	: No data available

GHS Label Elements



Symbol	: Health Hazard
Signal Word	: Danger

Hazard statement

May cause cancer.

Cause damage to organs (Respiratory, Hematopoietic) through prolonged or repeated exposure.

May cause damage to organs (Liver) through prolonged or repeated exposure.

Precautionary statements (Prevention)

Obtain special instructions before use

Don't handle until all safety precautions have been read and understood

Wear protective gloves/ clothing/ eye protection/face protection

Do not breathe dust/ fume/ gas/ mist/ vapor/ spray.

Wash hands thoroughly after handling.

Don't eat ,drink or smoke when using this product.

(Response)

If exposed: Get medical attention/ advice

Get medical attention/ advice if you feel unwell.

(Storage)

Store locked up

(Disposal)

Dispose of contents / container to accordance with local/ regional/ national/ international regulations.

Country/Local Community :No data available.

Other hazard and toxicity information :No data available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT : Indium Phosphide

CAS NUMBER : 22398-80-7

EC NUMBER (EINECS) : 244-959-5

PERCENTAGE : 100.0

Impurities or the stabilization additive which contributes to a classification :

No data available

Concentration or range of concentration:No data available

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration

Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

No data available

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Phosphorous oxides, Indium/indium oxides

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

For personal protection see section 8.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

No data available

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end use(s)

No data available

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

ACGIH (TWA) 0.1mg/m³ (as In)

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166

Skin protection

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Handle with gloves.

Body Protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- | | |
|---------------------------------|---------------------|
| a) Appearance Form | : Pieces |
| b) Odour | : No data available |
| c) Odour Threshold | : No data available |
| d) pH | : No data available |
| e) Melting point/freezing point | : 1.070 °C |

- f) Initial boiling point and boiling range : No data available
- g) Flash point : No data available
- h) Evaporation rate : No data available
- i) Flammability (solid, gas) : No data available
- j) Upper/lower flammability or explosive limits: No data available
- k) Vapour pressure : No data available
- l) Vapour density : No data available
- m) Relative density : No data available
- n) Water solubility : No data available
- o) Partition coefficient: noctanol/water : No data available
- p) Auto-ignition temperature : No data available
- q) Decomposition temperature : No data available
- r) Viscosity : No data available
- s) Explosive properties : No data available
- t) Oxidizing properties : No data available

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Water

10.6 Hazardous decomposition products

Hazardous decomposition products - Phosphorus trihydride (phosphine)

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

RTECS Data: Intratracheal (rat); LD: >100mg/kg. Oral (mouse); LD: >5gm/kg. Intraperitoneal (mouse); LD: >5gm/kg. Intratracheal (hamster); TDLo: 48mg/kg/8W-

I.Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

Carcinogenicity

Limited evidence of a carcinogenic effect.

IARC: 2A - Group 2A: Probably carcinogenic to humans (Indium phosphide)

Reproductive toxicity

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

Class 1 (Respiratory, Hematopoietic) and Class 2 (Liver) based on inhalational exposure test (14weeks, Rat and mouse, NTP TR499(2001)).

Aspiration hazard

No data available

Additional Information

No data available

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATION

13.1 Waste treatment methods

Product

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: No IMDG Marine pollutant: No IATA: No

14.6 Special precautions for user

No data available

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

TSCA: Listed in the TSCA inventory.

SARA (Title 313): Title compound not listed.

15.2 Chemical Safety Assessment

No data available

16. OTHER INFORMATION

The information contained herein is based on the present state of our knowledge. It does not represent a guarantee of the properties of the product. Safety precautions in this document covers normal handling. In case of special handling, please handle the product with regard to the appropriate safety precautions.

Revision History

- Rev.1 : Updated Section 11
- Rev.2 : Updated Company information
- Rev.3 : Company name change
- Rev.4 : Updataed according to GHS
- Rev.5 : Company name change
- Rev.6 : Add reference information and target concentration.
- Rev.7 : Add hazard identification.
- Rev.8 : Add fire fighting measure
- Rev.9 : 16th Dec. 2013 Updataed according to GHS