



INDIUM CA Group

Chemwatch: 32278

Version No: 4.1.15.10

Safety Data Sheet according to WHS Regulations (Hazardous Chemicals) Amendment 2020 and ADG requirements

Chemwatch Hazard Alert Code: 3

Issue Date: 27/06/2017

Print Date: 30/08/2021

S.GHS.AUS.EN

SECTION 1 Identification of the substance / mixture and of the company / undertaking

Product Identifier

Product name	INDIUM
Chemical Name	indium
Synonyms	In
Proper shipping name	METAL POWDER, FLAMMABLE, N.O.S. (contains indium)
Chemical formula	In
Other means of identification	Not Available
CAS number	7440-74-6

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Thin film on surface of other metals; bearing alloys; dental alloys; nuclear reactor control rods as an Ag-In-Cd alloy; semiconductor research; radiation detector; electroplated coatings on silver-plated steel aircraft bearings. [~Intermediate ~]
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Details of the supplier of the safety data sheet

Registered company name	CA Group
Address	32 Industrial Avenue Thomastown VIC 3074 Australia
Telephone	+61 3 8301 7100
Fax	+61 3 9359 4076
Website	www.cagroup.com.au
Email	jmarchese@cagroup.com.au

Emergency telephone number

Association / Organisation	(03) 8301 7100
Emergency telephone numbers	(03) 8301 7107 (Business hours 9am – 5pm)
Other emergency telephone numbers	0428 904 506 (After Hours)

SECTION 2 Hazards identification

Classification of the substance or mixture

HAZARDOUS CHEMICAL. DANGEROUS GOODS. According to the WHS Regulations and the ADG Code.

ChemWatch Hazard Ratings

	Min	Max
Flammability	3	
Toxicity	1	
Body Contact	1	
Reactivity	2	
Chronic	0	

0 = Minimum
1 = Low
2 = Moderate
3 = High
4 = Extreme

Poisons Schedule	Not Applicable
Classification [1]	Flammable Solids Category 1, Serious Eye Damage/Eye Irritation Category 2B
Legend:	1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

Label elements

INDIUM

Hazard pictogram(s)	
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Signal word	Danger
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Hazard statement(s)

H228	Flammable solid.
H320	Causes eye irritation.

Precautionary statement(s) Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.
P264	Wash all exposed external body areas thoroughly after handling.
P280	Wear protective gloves and protective clothing.

Precautionary statement(s) Response

P370+P378	In case of fire: Use alcohol resistant foam or normal protein foam to extinguish.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313	If eye irritation persists: Get medical advice/attention.

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

SECTION 3 Composition / information on ingredients

Substances

CAS No	%[weight]	Name
7440-74-6	>98	indium

Legend: 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 4. Classification drawn from C&L;
* EU IOELVs available

Mixtures

See section above for composition of Substances

SECTION 4 First aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: - Wash out immediately with fresh running water. - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. - Seek medical attention without delay; if pain persists or recurs seek medical attention. - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. DO NOT attempt to remove particles attached to or embedded in eye. - Lay victim down, on stretcher if available and pad BOTH eyes, make sure dressing does not press on the injured eye by placing thick pads under dressing, above and below the eye. - Seek urgent medical assistance, or transport to hospital.
Skin Contact	If skin or hair contact occurs: - Flush skin and hair with running water (and soap if available). - Seek medical attention in event of irritation.
Inhalation	- If fumes or combustion products are inhaled remove from contaminated area. - Lay patient down. Keep warm and rested. - Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. - Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. - Transport to hospital, or doctor.
Ingestion	If swallowed do NOT induce vomiting. - If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. - Observe the patient carefully. - Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. - Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. - Seek medical advice.

Indication of any immediate medical attention and special treatment needed

Copper, magnesium, aluminium, antimony, iron, manganese, nickel, zinc (and their compounds) in welding, brazing, galvanising or smelting operations all give rise to thermally

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produced particulates of smaller dimension than may be produced if the metals are divided mechanically. Where insufficient ventilation or respiratory protection is available these particulates may produce "metal fume fever" in workers from an acute or long term exposure.

- Onset occurs in 4-6 hours generally on the evening following exposure. Tolerance develops in workers but may be lost over the weekend. (Monday Morning Fever)
- Pulmonary function tests may indicate reduced lung volumes, small airway obstruction and decreased carbon monoxide diffusing capacity but these abnormalities resolve after several months.
- Although mildly elevated urinary levels of heavy metal may occur they do not correlate with clinical effects.
- The general approach to treatment is recognition of the disease, supportive care and prevention of exposure.
- Seriously symptomatic patients should receive chest x-rays, have arterial blood gases determined and be observed for the development of tracheobronchitis and pulmonary edema.

[Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 Firefighting measures

Extinguishing media

Metal dust fires need to be smothered with sand, inert dry powders.

DO NOT USE WATER, CO2 or FOAM.

- Use DRY sand, graphite powder, dry sodium chloride based extinguishers, G-1 or Met L-X to smother fire.
- Confining or smothering material is preferable to applying water as chemical reaction may produce flammable and explosive hydrogen gas.
- Chemical reaction with CO2 may produce flammable and explosive methane.
- If impossible to extinguish, withdraw, protect surroundings and allow fire to burn itself out.
- DO NOT** use halogenated fire extinguishing agents.

Special hazards arising from the substrate or mixture

Fire Incompatibility	- Reacts with acids producing flammable / explosive hydrogen (H2) gas - Keep dry NOTE: May develop pressure in containers; open carefully. Vent periodically.
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Advice for firefighters

Fire Fighting	- Alert Fire Brigade and tell them location and nature of hazard. - Wear breathing apparatus plus protective gloves. - Prevent, by any means available, spillage from entering drains or water course. - Fight fire from a safe distance, with adequate cover. - If safe, switch off electrical equipment until vapour fire hazard removed. - Use water delivered as a fine spray to control fire and cool adjacent area. - Avoid spraying water onto liquid pools.
Fire/Explosion Hazard	DO NOT disturb burning dust. Explosion may result if dust is stirred into a cloud, by providing oxygen to a large surface of hot metal. DO NOT use water or foam as generation of explosive hydrogen may result. With the exception of the metals that burn in contact with air or water (for example, sodium), masses of combustible metals do not represent unusual fire risks because they have the ability to conduct heat away from hot spots so efficiently that the heat of combustion cannot be maintained - this means that it will require a lot of heat to ignite a mass of combustible metal. Generally, metal fire risks exist when sawdust, machine shavings and other metal 'fines' are present. Metal powders, while generally regarded as non-combustible: - May burn when metal is finely divided and energy input is high. - May react explosively with water. Decomposition may produce toxic fumes of: metal oxides
HAZCHEM	4Y

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	- Remove all ignition sources. DO NOT touch or walk through spilled material. - Clean up all spills immediately. - Avoid contact with skin and eyes. - Prevent dust cloud. - With clean shovel (preferably non-sparking) place material into clean, dry container and cover loosely. - Move containers from spill area.
Major Spills	- Clear area of personnel and move upwind. - Alert Fire Brigade and tell them location and nature of hazard. DO NOT touch or walk through spilled material. - Control personal contact with the substance, by using protective equipment. - Prevent, by any means available, spillage from entering drains or water course. - No smoking, naked lights or ignition sources. - Increase ventilation.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

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Safe handling	- Avoid all personal contact, including inhalation. - Wear protective clothing when risk of overexposure occurs. - Use in a well-ventilated area. - Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. DO NOT allow material to contact humans, exposed food or food utensils. - Avoid smoking, naked lights or ignition sources.
Other information	FOR MINOR QUANTITIES: - Store in an indoor fireproof cabinet or in a room of noncombustible construction. - Provide adequate portable fire-extinguishers in or near the storage area. FOR PACKAGE STORAGE: - Store in original containers in approved flame-proof area. - No smoking, naked lights, heat or ignition sources. DO NOT store in pits, depressions, basements or areas where vapours may be trapped. - Keep containers securely sealed. - Store away from incompatible materials in a cool, dry, well ventilated area.

Conditions for safe storage, including any incompatibilities

Suitable container	CARE: Packing of high density product in light weight metal or plastic packages may result in container collapse with product release - Heavy gauge metal packages / Heavy gauge metal drums For low viscosity materials and solids: Drums and jericans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C): - Removable head packaging and - cans with friction closures may be used. - Where combination packages are used, there must be sufficient inert absorbent material to absorb completely any leakage that may occur, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic. All combination packages for Packing group I and II must contain cushioning material.
Storage incompatibility	- Many metals may incandesce, react violently, ignite or react explosively upon addition of concentrated nitric acid. Metals exhibit varying degrees of activity. Reaction is reduced in the massive form (sheet, rod, or drop), compared with finely divided forms. The less active metals will not burn in air but: - can react exothermically with oxidising acids to form noxious gases. - catalyse polymerisation and other reactions, particularly when finely divided - react with halogenated hydrocarbons (for example, copper dissolves when heated in carbon tetrachloride), sometimes forming explosive compounds. - Many metals in elemental form react exothermically with compounds having active hydrogen atoms (such as acids and water) to form flammable hydrogen gas and caustic products. - Elemental metals may react with azo/diazo compounds to form explosive products. - Some elemental metals form explosive products with halogenated hydrocarbons. - Reacts with acids producing flammable / explosive hydrogen (H₂) gas - Keep dry - Reacts slowly with water. CAUTION contamination with moisture will liberate explosive hydrogen gas, causing pressure build up in sealed containers. - Reacts violently with caustic soda, other alkalis - generating heat, highly flammable hydrogen gas. - If alkali is dry, heat generated may ignite hydrogen - if alkali is in solution may cause violent foaming - Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride. - These trifluorides are hypergolic oxidisers. They ignite on contact (without external source of heat or ignition) with recognised fuels - contact with these materials, following an ambient or slightly elevated temperature, is often violent and may produce ignition. - The state of subdivision may affect the results. Avoid strong acids and sulfur. A mixture of indium and sulfur ignites, with incandescence, on heating. Indium reacts vigorously with mercury(II) bromide at 350 deg C. A mixture of acetonitrile, dinitrogen tetraoxide and indium exploded when shaken. Indium-catalysed oxidation of acetonitrile is suspected

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Australia Exposure Standards	indium	Indium & compounds (as In)	0.1 mg/m3	Not Available	Not Available	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
indium	0.3 mg/m3	3.3 mg/m3	20 mg/m3

Ingredient	Original IDLH	Revised IDLH
indium	Not Available	Not Available

Exposure controls

Appropriate engineering controls	For large scale or continuous use: - Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems - Provide dust collectors with explosion vents Metal dusts must be collected at the source of generation as they are potentially explosive. - Avoid ignition sources. - Good housekeeping practices must be maintained. - Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
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	- Do not use compressed air to remove settled materials from floors, beams or equipment - Vacuum cleaners, of flame-proof design, should be used to minimise dust accumulation. - Use non-sparking handling equipment, tools and natural bristle brushes. Cover and reseal partially empty containers.
Personal protection	
Eye and face protection	- Safety glasses with side shields. - Chemical goggles. - Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable.
Skin protection	See Hand protection below
Hands/feet protection	The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended. - Protective gloves eg. Leather gloves or gloves with Leather facing - Wear physical protective gloves, e.g. leather. - Wear safety footwear.
Body protection	See Other protection below
Other protection	- Overalls. - Eyewash unit. - Barrier cream. - Skin cleansing cream. - Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. - For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). - Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot and shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:2000 & 149:001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	- -	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Shiny ductile, silver-white metal with bluish tinge; does not mix with water. Soluble in mineral acids. Stable at room temperatures but oxidises at higher temperatures. Softer than lead and leaves a mark on paper. Crystallises and is diamagnetic. Hardness (Mohs) = 1.2 Data following for finely divided material.		
Physical state	Divided Solid	Relative density (Water = 1)	7.31
Odour	Not Available	Partition coefficient n-octanol / water	Not Available

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Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Applicable	Decomposition temperature	Not Applicable
Melting point / freezing point (°C)	156	Viscosity (cSt)	Not Applicable
Initial boiling point and boiling range (°C)	2075	Molecular weight (g/mol)	114.82
Flash point (°C)	Not Applicable	Taste	Not Available
Evaporation rate	Not Applicable	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Applicable
Vapour pressure (kPa)	Not Applicable	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (%)	Not Applicable
Vapour density (Air = 1)	Not Applicable	VOC g/L	Not Available

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▶ Presence of heat source and ignition source ▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled. If prior damage to the circulatory or nervous systems has occurred or if kidney damage has been sustained, proper screenings should be conducted on individuals who may be exposed to further risk if handling and use of the material result in excessive exposures. Exposure to indium compounds leads to tooth decay, joint and bone pain, disorders in the nervous and gastrointestinal systems, heart pains and general debility. Swelling of the lungs is common although scarring is rarely seen. The inhalation of small particles of metal oxide results in sudden thirst, a sweet, metallic foul taste, throat irritation, cough, dry mucous membranes, tiredness and general unwellness. Headache, nausea and vomiting, fever or chills, restlessness, sweating, diarrhoea, excessive urination and prostration may also occur.
Ingestion	Indium is poorly absorbed from the gut, but accumulation in the liver occurs when indium compounds are injected. Symptoms of indium poisoning include loss of appetite, nose-bleed, paralysis of limbs, rapid breathing, twitching, convulsions and tissue death of the liver and kidneys.
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	There is some evidence to suggest that this material can cause eye irritation and damage in some persons. Contact with the eye by metal dusts may cause mechanical abrasion or foreign body penetration of the eyeball.
Chronic	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Chronic indium intoxication leads to weight loss, poor growth and extensive necrotic damage to the liver and kidneys. Indium can impede protein synthesis, thereby affecting numerous essential physiological processes, including detoxification of organic cancer causing substances. Intravenous indium chloride may be toxic to the kidney and liver. Damage to the brain, heart, adrenals, spleen and blood may also result from chronic exposures. Metallic dusts generated by the industrial process give rise to a number of potential health problems. The larger particles, above 5 micron, are nose and throat irritants.

indium	TOXICITY	IRRITATION
	Oral(Rat) LD50; >2000 mg/kg ^[1]	Eye: no adverse effect observed (not irritating) ^[1]
		Skin: no adverse effect observed (not irritating) ^[1]
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

INDIUM	No significant acute toxicological data identified in literature search.
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INDIUM

Acute Toxicity	✗	Carcinogenicity	✗
Skin Irritation/Corrosion	✗	Reproductivity	✗
Serious Eye Damage/Irritation	✓	STOT - Single Exposure	✗
Respiratory or Skin sensitisation	✗	STOT - Repeated Exposure	✗
Mutagenicity	✗	Aspiration Hazard	✗

Legend: ✗ – Data either not available or does not fill the criteria for classification
✓ – Data available to make classification

SECTION 12 Ecological information

Toxicity

	Endpoint	Test Duration (hr)	Species	Value	Source
indium	NOEC(ECx)	48h	Crustacea	0.13mg/l	2
	EC50	72h	Algae or other aquatic plants	63.151mg/L	2
	LC50	96h	Fish	19.519mg/l	2
	EC50	48h	Crustacea	1.31mg/l	2
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

Indium is used in LCD-displays, batteries and electronics. The most important route of dispersal to the environment is through solid waste and residuals from waste incineration. No data is currently available on the environmental toxicity of indium, and, consequently, the possible environmental impacts of indium cannot be assessed. However, due to the low consumption of indium and the low concentrations found in waste, the actual risk of adverse effects on environment and health is considered to be low.

There is little information on the environmental properties of indium, however, it is expected to have similar environmental properties to gallium.

Distribution of indium in the soil between particle-bound and mobile forms of the element is not known. Indium is probably found as hydroxides, whose solubility depends on the pH.

DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. A Hierarchy of Controls seems to be common - the user should investigate: ▶ Reduction ▶ Reuse ▶ Recycling ▶ Disposal (if all else fails) This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate. In most instances the supplier of the material should be consulted. ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▶ Where in doubt contact the responsible authority. ▶ Recycle wherever possible. ▶ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ▶ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material) ▶ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.
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SECTION 14 Transport information

Labels Required

INDIUM

	
Marine Pollutant	NO
HAZCHEM	4Y

Land transport (ADG)

UN number	3089
UN proper shipping name	METAL POWDER, FLAMMABLE, N.O.S. (contains indium)
Transport hazard class(es)	Class 4.1 Subrisk Not Applicable
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Special provisions Not Applicable Limited quantity 1 kg

Air transport (ICAO-IATA / DGR)

UN number	3089
UN proper shipping name	Metal powder, flammable, n.o.s. (contains indium)
Transport hazard class(es)	ICAO/IATA Class 4.1 ICAO / IATA Subrisk Not Applicable ERG Code 3L
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Special provisions A3 A803 Cargo Only Packing Instructions 448 Cargo Only Maximum Qty / Pack 50 kg Passenger and Cargo Packing Instructions 445 Passenger and Cargo Maximum Qty / Pack 15 kg Passenger and Cargo Limited Quantity Packing Instructions Y441 Passenger and Cargo Limited Maximum Qty / Pack 5 kg

Sea transport (IMDG-Code / GGVSee)

UN number	3089
UN proper shipping name	METAL POWDER, FLAMMABLE, N.O.S. (contains indium)
Transport hazard class(es)	IMDG Class 4.1 IMDG Subrisk Not Applicable
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	EMS Number F-G , S-G Special provisions Not Applicable Limited Quantities 1 kg

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
indium	Not Available

Transport in bulk in accordance with the ICG Code

Product name	Ship Type
indium	Not Available

SECTION 15 Regulatory information

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INDIUM

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

indium is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (indium)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (indium)
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - FBEPH	Yes
Legend:	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 Other information

Revision Date	27/06/2017
Initial Date	Not Available

SDS Version Summary

Version	Date of Update	Sections Updated
4.1.1.1	27/06/2017	Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Acute Health (swallowed), Advice to Doctor, Chronic Health, Classification, Disposal, Engineering Control, Environmental, Fire Fighter (extinguishing media), Fire Fighter (fire/explosion hazard), Fire Fighter (fire fighting), Fire Fighter (fire incompatibility), First Aid (eye), First Aid (inhaled), First Aid (skin), First Aid (swallowed), Handling Procedure, Instability Condition, Personal Protection (other), Personal Protection (Respirator), Personal Protection (eye), Personal Protection (hands/feet), Physical Properties, Spills (major), Spills (minor), Storage (storage incompatibility), Storage (storage requirement), Storage (suitable container), Use
4.1.2.1	26/04/2021	Regulation Change
4.1.3.1	03/05/2021	Regulation Change
4.1.4.1	06/05/2021	Regulation Change
4.1.5.1	10/05/2021	Regulation Change
4.1.5.2	30/05/2021	Template Change
4.1.5.3	04/06/2021	Template Change
4.1.5.4	05/06/2021	Template Change
4.1.6.4	07/06/2021	Regulation Change
4.1.6.5	09/06/2021	Template Change
4.1.6.6	11/06/2021	Template Change
4.1.6.7	15/06/2021	Template Change
4.1.7.7	17/06/2021	Regulation Change
4.1.8.7	21/06/2021	Regulation Change
4.1.8.8	05/07/2021	Template Change
4.1.9.8	14/07/2021	Regulation Change
4.1.10.8	19/07/2021	Regulation Change
4.1.10.9	01/08/2021	Template Change
4.1.11.9	02/08/2021	Regulation Change
4.1.12.9	05/08/2021	Regulation Change
4.1.13.9	09/08/2021	Regulation Change
4.1.14.9	23/08/2021	Regulation Change
4.1.15.9	26/08/2021	Regulation Change
4.1.15.10	29/08/2021	Template Change

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit.
IDLH: Immediately Dangerous to Life or Health Concentrations
ES: Exposure Standard
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index
AIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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