Material Safety Data Sheet

5N PLUS

INDIUM

This Safety Data Sheet complies with EC Directives 91/155 and 1272/2008

SECTION 1. IDENTIFICATION OF THE SUBSTANCE AND THE COMPANY

Product name	Indium
Chemical formula	In
Synonym	None
EC # (European Chemical Substance)	231-180-0
CAS # (Chemical Abstracts Service)	7440-74-6
Use of the substance	Electronic and semiconductor application
Supplier/manufacturer	Firebird Technologies Inc., a division of 5N Plus Inc. 9200 Industrial Road Trail, British-Columbia Canada V1R 4X7
Contact information	Maxime Cossette, 5N Plus Inc.
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Website	www.5nplus.com

SECTION 2. HAZARDS IDENTIFICATION

Physical state	Solid (ingots, pieces)
Colour	Grey (shiny)
Risk status	Slightly hazardous
Emergency overview	Slightly hazardous
Routes of entry	Ingestion, inhalation
Potential acute health effects	
Eyes	None known
Skin	None known
Inhalation	May cause irritation of the respiratory tract
Ingestion	May cause irritation of gastrointestinal tract
Potential chronic health effects	May have effects on kidneys , resulting in kidney impairment.

For toxicological information, see Section 11

SECTION 3. COMPOSITION OF/INFORMATION REGARDING CONSTITUENTS

Name	Symbol	CAS #	EC #	IUPAC Name	Percentage (%)	Classification
Indium	In	7440-74-6	231-180-0	None	100	Not classified

SECTION 4. FIRST AID

Eye contact	Check for and remove any contact lenses. In the event of contact with eyes, rinse immediately with plenty of water. Get medical attention.
Skin contact	In case of contact, wash affected area with soap and large amounts of water. Remove and wash any contaminated clothing. Dust may provoke skin irritation.
Inhalation	If inhaled, move to fresh air. Get immediate medical attention.
Ingestion	Rare in industry. If the person is unconscious, do not give anything to drink or induce vomiting. Get immediate medical attention.
Note to attending physician	There is no specific antidote. Please contact poison center.

SECTION 5. FIRE FIGHTING MEASURES

Flammability of the product	Flammable in the form of dust when exposed to heat or flame.
Products of combustion	May evolve metal oxides fumes above melting point.
Extinguishing media	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	None known
Special exposure hazards	Irritating fumes can form in the event of fire.
Special protective equipment for firefighters	Firefighters should wear self-contained breathing apparatus (SCBA).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions Safety glasses and impervious gloves. Wear at least a P2 type particle filter respirator if the airborne concentrations are above the exposure limit. If the airborne concentrations are unknown, wear approved self-contained breathing apparatus.

Environmental precautions Avoid dispersal of spilled material. Prevent runoff and contact with soil, waterways, drains or sewers.

Methods for cleaning-up Vacuum the spilled material with an appropriate Class H Vacuum and place in an appropriate container for disposal in a safe place. Avoid creating dusty conditions and prevent wind dispersal.

SECTION 7. HANDLING AND STORAGE

Handling Avoid contact with skin. Wear protective eyewear and, in the event of insufficient ventilation, a suitable breathing apparatus. Do not eat, drink, or smoke during work. Wash hands, forearms and face thoroughly after handling this product and before eating, smoking or using the lavatory.

Storage Keep in tightly closed containers. Keep in a dry and well ventilated area away from strong oxidants, strong acids and sulfur.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits values

Product Name	8-hour total weight average (TWA) permissible exposure limit (PEL)	Short Term Exposure Limits (STELs)
Indium	**AUSTRIA :** 0.1 mg/m³ inhalable aerosol (as In) **BELGIUM:** 0.1 mg/m^3 (as In) **CANADA-QUEBEC:** 0.1 mg/m^3 (as In) **DENMARK :** 0.1 mg/m^3 (as In) **SPAIN :** 0.1 mg/m^3 (as In) **SWEDEN :** 0.1 mg/m³ (as In) **SWITZERLAND :** 0.1 mg/m³ inhalable aerosol (as In) **USA – NIOSH :** 0.01 mg/m³ inhalable aerosol (as In) **UNITED KINGDOM :** 0.1 mg/m³ inhalable aerosol (as In)	**AUSTRIA :** 0.2 mg/m^3 inhalable aerosol (as In) **DENMARK :** 0.2 mg/m^3 (as In) **UNITED KINGDOM :** 0.1 mg/m^3 (as In)

Occupational exposure controls

Environmental exposure controls Use only in well ventilated areas. If handling generates dust, fumes, gases, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Eye protection Safety glasses

Skin protection The choice of skin protection gear will depend on the nature of the work to perform.

Respiratory protection If there is a risk of exceeding exposure limits, wear at least a P2 type particle filter respirator.

Hand protection Natural rubber (latex)

Personal safety equipment pictograms

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Soft metal
Odor Odorless
Color Silvery-white metal with bluish tinge
Molecular weight 114.82
Molecular formula In
Melting point 156.60°C
pH Not applicable
Boiling point 2072°C
Flash point Not applicable
Flammability Not flammable
Oxidizing properties Not applicable
Vapor pressure < 1 mm/Hg @ 25°C
Relative density 7.31 g/cm^3
Solubility
Water solubility Insoluble
Fat solubility Insoluble
Partition coefficient Not available
Viscosity Not applicable

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid Keep away from strong oxidants, strong acids and sulfur.
Materials to avoid Reacts with halogens, sulfur, selenium, tellurium, arsenic, phosphorus on heating.
Hazardous decomposition products Irritating metallic fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

Toxicological data

Product/ingredient name	Test	Result	Route/Species
Indium	LD50	> 2,000 mg/kg	Oral / Rat
Indium	LDLo	10mg/kg	Subcutaneous / Mouse

Acute effects

Eyes None known
Skin None known
Ingestion Nausea. Vomiting.
Inhalation Cough. Shortness of breath. Sore throat.

Potential chronic health effects

Carcinogenicity Not applicable
Mutagenicity Not applicable
Teratogenic effects Not applicable

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity data

Product/ingredient name	Species	Period	Test (LC50)
Indium	Hyalella azteca	7 days	> 1 mg/L

Environmental precautions Observe environmental regulations in place.
Breakdown products This product is insoluble in water
Toxicity of biodegradation products Not available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and prevent runoff and contact with soil, waterways, drains or sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements.

SECTION 14. TRANSPORTATION INFORMATION

Regulatory information	Proper shipping name	Class	UN Number	PG	Labeling
UN/IMDG/IATA Class	Not classified	Not classified	Not classified	Not classified	Not classified
ADR/RID Class	Not classified	Not classified	Not classified	Not classified	Not classified
GGVSE	Not classified	Not classified	Not classified	Not classified	Not classified

SECTION 15. REGULATORY INFORMATION

EU Regulation *This chemical substance is classified as follow according to the criteria of the EC Directive 1272/2008*
Hazard Statements No classification

SECTION 16. OTHER INFORMATION

References Directive 91/155/EEC
European Commission's Joint Research Centre Databases
EPA Ecotox Databases

Glossary **LCLo:** Indicates the lowest concentration of the chemical that is lethal to the exposed animals.
LC50: Indicates the concentration of the chemical that is lethal to 50% of the exposed animals.

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Version 1

Publication date	November 25, 2010
Date of previous version	New
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