1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Cobalt Chunk

Manufacturer or supplier's details

Supplier :
SHELL EASTERN CHEMICALS (S)
A REGISTERED BUSINESS OF SHELL EASTERN TRADING (PTE) LTD (UEN:198902087C)
9 North Buona Vista Drive , #07-01
The Metropolis Tower 1
Singapore 138588
Singapore

Telephone :
Telefax :
Contact for Safety Data Sheet :

Emergency telephone number :

Recommended use of the chemical and restrictions on use

Recommended use : Spent Catalyst

Restrictions on use :
This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Solid
Colour	black
Odour	mild

GHS Classification

:

Self-heating substances and mixtures : Category 1
Acute toxicity (Inhalation) : Category 2
Skin corrosion : Category 1A
Acute toxicity (Oral) : Category 4
Carcinogenicity : Category 1A
Germ cell mutagenicity : Category 2
Reproductive toxicity : Category 1A

Specific target organ toxicity - repeated exposure (Inhalation)	:	Category 1 (Lungs)
Skin sensitisation	:	Category 1
Respiratory sensitisation	:	Category 1
Specific target organ toxicity - single exposure (Inhalation)	:	Category 3 (respiratory tract irritation)
Short-term (acute) aquatic hazard	:	Category 1
Long-term (chronic) aquatic hazard	:	Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :

PHYSICAL HAZARDS:
H251 Self-heating: may catch fire.
HEALTH HAZARDS:
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H302 Harmful if swallowed.
H350 May cause cancer if swallowed.
H341 Suspected of causing genetic defects.
H360 May damage fertility or the unborn child.
H372 Causes damage to the central nervous system through prolonged or repeated exposure.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
ENVIRONMENTAL HAZARDS:
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention:
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of water and soap.

Storage:
P402 Store in a dry place.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards which do not result in classification

This material is a static accumulator.Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.Contact with dust can cause mechanical irritation or drying of the skin.Dust or small particles may abrade skin and irritate eyes.

Health Hazards	Inhalation: Skin: Contact with dust can cause mechanical irritation or drying of the skin. Eyes: Causes serious eye irritation. Ingestion:

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
cobalt	7440-48-4	Acute Tox.4; H302 Acute Tox.1; H330 Eye Irrit.2; H319 Resp. Sens.1B; H334 Skin Sens.1; H317 Repr.1B; H360 Carc.1B; H350	>= 0 - <= 95
cobalt oxide	1307-96-6	Carc.1B; H350 Repr.1B; H360F Resp. Sens.1B; H334 Skin Sens.1; H317 Acute Tox.2; H330 Acute Tox.3; H301 Aquatic Chronic1; H410	>= 0 - <= 95
Tricobalt tetraoxide	1308-06-1	Resp. Sens.1; H334 Aquatic Chronic3; H412	>= 0 - <= 95
Alcohols, C9-15	97552-90-4	Skin Irrit.3; H316 Eye Irrit.2A; H319 Asp. Tox.2; H305 Aquatic Acute1; H400 Aquatic Chronic2; H411	5 - 10
Resin acids and Rosin acids, potassium salts	61790-50-9	Skin Sens.1; H317	>= 0 - <= 5

For explanation of abbreviations see section 16.

4. FIRST-AID MEASURES

General advice	:	Treat symptomatically. DO NOT DELAY. Keep victim calm. Obtain medical treatment immediately.
If inhaled	:	Call emergency number for your location / facility. Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to the nearest medical facility.
In case of skin contact	:	Call emergency number for your location / facility. Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes. Transport to the nearest medical facility for additional treatment. All burns should receive medical attention. Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Transport to the nearest medical facility for additional treatment.
If swallowed	:	Do not induce vomiting. If victim is alert, rinse mouth and drink 1/2 to 1 glass of water to help dilute the material. Do not give liquids to a drowsy, convulsing, or unconscious person. Transport to nearest medical facility for additional treatment. If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Rinse mouth.
Most important symptoms and effects, both acute and delayed	:	Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Respiratory sensitisation signs and symptoms are asthma-like and may include difficulty breathing, sneezing, wheezing and/or collapse due to inability to breath. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Skin irritation signs and symptoms may include a burning

sensation, redness, or swelling.
Ingestion may result in nausea, vomiting and/or diarrhoea.
Corrosive to skin.
Contact with the skin can cause chemical burns, redness, swelling, and tissue damage.
Swallowing of corrosive chemicals may cause immediate pain and burning in the mouth, throat, and stomach followed by vomiting and diarrhea.

Burns and tearing of the esophagus and stomach are possible.
Corrosive to eyes.
Contact can cause severe eye damage including chemical burns, pain, clouding of the eye surface, inflammation of the eye, and may result in permanent loss of vision.

Skin sensitisation (allergic skin reaction) signs and symptoms may include itching and/or a rash.

Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.

Notes to physician : Treat symptomatically.
IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!
Call a doctor or poison control center for guidance.
If skin sensitisation has developed and a causal relationship has been confirmed, further exposure should not be allowed.
Artificial respiration and/or oxygen may be necessary.
Exposed persons may be kept under medical observation for at least 48 hours because delayed effects may occur.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use water in a jet.

Specific hazards during firefighting : Spontaneous heating and ignition can occur with very large quantities.

Clear fire area of all non-emergency personnel.
Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.
Unidentified organic and inorganic compounds.

Specific extinguishing : Contain residual material at affected sites to prevent material

methods		from entering drains (sewers), ditches, and waterways. At temperatures above 43.3°C (110°F), in the presence of air/oxygen, sulfur dioxide (a toxic and corrosive compound) can be emitted. If the catalyst is wetted, the heat of adsorption can be adequate to heat up adjacent dry catalyst above 43.3°C (110°F) and initiate this oxidation of sulfur to sulfur dioxide. The heat generated in this oxidation can cause a self-heating effect in a large volume of catalyst, with enough heat generated for possible ignition of nearby combustible materials. In each case, highly toxic, corrosive sulfur oxides, primarily sulfur dioxide, will be emitted. May form nickel carbonyl (ACGIH TLV = 0.05 mg/m3), a very toxic and potentially lethal gas, on contact with carbon monoxide.
Special protective equipment for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469). In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation. Avoid breathing dust.
Environmental precautions	:	Take measures to minimise the effects on groundwater. Contain residual material at affected sites to prevent material from entering drains (sewers), ditches, and waterways. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Methods and materials for containment and cleaning up	:	Prevent from spreading or entering into drains, ditches or rivers by using sand, earth, or other appropriate barriers. Pick up and arrange disposal without creating dust. Knock down dust with water spray jet.

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
See Chapter 13 for information on disposal.
Observe all relevant local and international regulations.
Remove contaminated clothing.
Evacuate the area of all non-essential personnel.
Avoid contact with skin, eyes and clothing.
Ventilate contaminated area thoroughly.

Additional advice	:	Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet. Local authorities should be advised if significant spillages

cannot be contained.

7. HANDLING AND STORAGE

Handling

General Precautions : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Prevent spillages.
Ensure that all local regulations regarding handling and storage facilities are followed.

Advice on safe handling : Handle under an Inert Atmosphere
Use Dry Ice or Nitrogen for Inert Blanketing
Avoid prolonged or repeated contact with skin.
When using do not eat or drink.
Earth all equipment.
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.
Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges.
These activities may lead to static discharge e.g. spark formation.

Avoidance of contact : Strong oxidizing agents
Strong acids and strong bases

Product Transfer : Handle under an Inert Atmosphere Keep containers closed when not in use. Refer to guidance under Handling section.

Storage

Other data : Drum and small container storage:
Drums should be stacked to a maximum of 3 high.
Use properly labeled and closable containers.
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Packaging material : Suitable material: For containers and container linings, use materials specifically approved for use with this product.
Unsuitable material: Compatibility should be checked with the manufacturer.

Specific use(s) : Not applicable.

American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
cobalt	7440-48-4	TWA (dust and fume)	0.1 mg/m3	OSHA Z-1
cobalt		TWA (Thoracic particulate matter)	0.005 mg/m3	ACGIH
cobalt		TWA (Inhalable particulate matter)	0.02 mg/m3	ACGIH
cobalt oxide	1307-96-6	PC-TWA	0.05 mg/m3	CN OEL
	Further information: G2B - Possibly carcinogenic to humans, Sensitizing			
cobalt oxide		PC-STEL	0.1 mg/m3	CN OEL
	Further information: G2B - Possibly carcinogenic to humans, Sensitizing			
cobalt oxide	1307-96-6	TWA (Inhalable particulate matter)	0.02 mg/m3	ACGIH
Tricobalt tetraoxide	1308-06-1	TWA (Inhalable particulate matter)	0.02 mg/m3	ACGIH

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.
Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
GBZ 159 Specifications of air sampling for hazardous substances monitoring in the workplace.
GBZ/T 160 Determination of toxic substances in the air of workplace.

GBZ/T 192 Determination of dust in the air of workplace.
GBZ/T 300 Determination of toxic substances in the air of workplace

Engineering measures : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:
Use sealed systems as far as possible.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.
Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned.
Practice good housekeeping.
Define procedures for safe handling and maintenance of controls.
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Personal protective equipment

Protective measures

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory protection : Select a filter suitable for particulates.

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
All respiratory protection equipment and use must be in accordance with local regulations.

Hand protection
Remarks : 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 moisturizer is recommended. Suitability and

durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material.

Select gloves tested to a relevant standard (e.g. Europe EN374, US F739). When handling heated product wear heat resistant gloves. When prolonged or frequent repeated contact occurs, Nitrile gloves may be suitable. (Breakthrough time of > 240 minutes.) For incidental contact/splash protection Neoprene, PVC gloves may be suitable.

Eye protection : Wear goggles for use against liquids and gas, combined with face shield with chin guard.

Skin and body protection : Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood, chemical resistant knee length boots and chemical resistant gloves. Otherwise use chemical resistant apron and gauntlets.

Hygiene measures : Ensure that all local regulations regarding handling and storage facilities are followed.

American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

Environmental exposure controls

General advice : Take appropriate measures to fulfill the requirements of relevant environmental protection legislation. Avoid contamination of the environment by following advice given in Section 6. If necessary, prevent undissolved material from being discharged to waste water. Waste water should be treated in a municipal or industrial waste water treatment plant before discharge to surface water.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Solid

Colour : black

Odour	:	mild
Freezing point	:	Data not available
Boiling point	:	Data not available
Flash point	:	> 93.33 °C / 199.99 °F
Flammability (solid, gas)	:	Data not available
Flammability (liquids)	:	Combustible liquid.
Vapour pressure	:	Data not available
Density	:	Data not available
Auto-ignition temperature	:	Data not available
Decomposition temperature	:	Data not available
Viscosity, kinematic	:	Data not available
Explosive properties	:	Classification Code: Not classified

10. STABILITY AND REACTIVITY

Reactivity	:	Reduced catalyst, especially when warm, reacts with oxygen on contact with air. Could ignite flammable materials. Contact with carbon monoxide under certain conditions can form very toxic and potentially lethal nickel carbonyl. Self-heating: may catch fire.
Chemical stability	:	Stable under normal conditions of use.
Possibility of hazardous reactions	:	No hazardous reaction is expected when handled and stored according to provisions
Conditions to avoid	:	Direct sources of heat.
Incompatible materials	:	Strong oxidizing agents Strong acids and strong bases
Hazardous decomposition products	:	Hazardous decomposition products are not expected to form during normal storage.

11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on product data, a knowledge of the components and the toxicology of similar products.Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual

component(s).

Exposure routes : Skin and eye contact are the primary routes of exposure although exposure may occur through inhalation or following accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity : LD50 Rat: > 300 - 2,000 mg/kg
Remarks: Harmful if swallowed.

Acute inhalation toxicity : LC 50 Rat: >0,05 - <=0,5 mg/l
Exposure time: 4 h
Remarks: Fatal if inhaled.

Acute dermal toxicity :
Remarks: Low toxicity
LD50 >2000 mg/kg

Components:

cobalt oxide:
Acute oral toxicity :
Remarks: Toxic if swallowed.

Acute inhalation toxicity : Remarks: Fatal if inhaled.

Skin corrosion/irritation

Product:

Remarks: Causes severe burns.

Serious eye damage/eye irritation

Product:

Remarks: Causes serious eye damage.

Respiratory or skin sensitisation

Product:

Remarks: May cause sensitisation by skin contact.
May cause sensitisation by inhalation.

Components:

cobalt oxide:
Remarks: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity

Product:

: Remarks: Mutagenic; positive in in-vivo and in-vitro assays.

Germ cell mutagenicity-Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Product:

Remarks: Known human carcinogen.

Carcinogenicity - Assessment : Category 1A

Components:

cobalt oxide:

Remarks: May cause cancer.

Material	GHS/CLP Carcinogenicity Classification
cobalt	Carcinogenicity Category 1B
cobalt oxide	Carcinogenicity Category 1B
Tricobalt tetraoxide	No carcinogenicity classification.
Alcohols, C9-15	No carcinogenicity classification.
Resin acids and Rosin acids, potassium salts	No carcinogenicity classification.

Material	Other Carcinogenicity Classification
cobalt	IARC: Group 2A: Probably carcinogenic to humans
cobalt oxide	IARC: Group 2B: Possibly carcinogenic to humans

Reproductive toxicity

Product:

: Remarks: May impair fertility., May cause harm to the unborn child.

Reproductive toxicity - Assessment : Category 1A

Components:

cobalt oxide:

:

Remarks: May damage fertility.

STOT - single exposure

Product:

Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system.

STOT - repeated exposure

Product:

Exposure routes: Inhalation
Target Organs: Lungs, Respiratory system
Remarks: Causes damage to organs through prolonged or repeated exposure.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

12. ECOLOGICAL INFORMATION

Basis for assessment : Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Ecotoxicity

Product:

Toxicity to fish (Acute toxicity) :
Remarks: LL/EL/IL50 < 1 mg/l
Very toxic.

Toxicity to crustacean (Acute toxicity) :
Remarks: LL/EL/IL50 < 1 mg/l
Very toxic.

Toxicity to algae/aquatic plants (Acute toxicity) :
Remarks: LL/EL/IL50 < 1 mg/l
Very toxic.

Toxicity to fish (Chronic toxicity)	:	Remarks: Very toxic with long lasting effects: NOEC/NOEL <= 0.01 mg/l
Toxicity to crustacean (Chronic toxicity)	:	Remarks: Very toxic with long lasting effects: NOEC/NOEL <= 0.01 mg/l
Toxicity to microorganisms (Acute toxicity)	:	Remarks: LL/EL/IL50 < 1 mg/l Very toxic.

Components:
cobalt oxide :

M-Factor (Short-term (acute) aquatic hazard)	:	10
M-Factor (Long-term (chronic) aquatic hazard)	:	1

Alcohols, C9-15 :

M-Factor (Short-term (acute) aquatic hazard)	:	1

Persistence and degradability

Product:

Biodegradability	:	Remarks: no data available

Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: Contains components with the potential to bioaccumulate.

Mobility in soil

Product:

Mobility	:	Remarks: Large volumes may penetrate soil and could contaminate groundwater., Adsorption to solid soil phase is possible., Sinks in water.

Other adverse effects

no data available

Product:

Additional ecological information	:	Films formed on water may affect oxygen transfer and damage organisms.

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal

methods in compliance with applicable regulations.
Do not dispose into the environment, in drains or in water courses.

Contaminated packaging : Send to drum recoverer or metal reclaimer.
Do not pollute the soil, water or environment with the waste container.
Comply with any local recovery or waste disposal regulations.

Local legislation
Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

National Regulations

International Regulations

ADR

UN number	:	3190
Proper shipping name	:	SELF-HEATING SOLID, INORGANIC, N.O.S.
Class	:	4.2
Packing group	:	III
Labels	:	4.2
Hazard Identification Number	:	40
Environmentally hazardous	:	no

IATA-DGR

UN/ID No.	:	UN 3190
Proper shipping name	:	SELF-HEATING SOLID, INORGANIC, N.O.S.
Class	:	4.2
Packing group	:	III

IMDG-Code

UN number	:	UN 3190
Proper shipping name	:	SELF-HEATING SOLID, INORGANIC, N.O.S.
Class	:	4.2
Packing group	:	III
Labels	:	4.2
Marine pollutant	:	no

Maritime transport in bulk according to IMO instruments

MARPOL Annex 1 rules apply for bulk shipments by sea.

Special precautions for user

Not applicable

15. REGULATORY INFORMATION

National regulatory information

Regulations on Safety Management of Hazardous Chemicals

16. OTHER INFORMATION

Full text of H-Statements

H301	Toxic if swallowed.
H302	Harmful if swallowed.
H305	May be harmful if swallowed and enters airways.
H316	Causes mild skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H360F	May damage fertility.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	Acute toxicity
Aquatic Acute	Short-term (acute) aquatic hazard
Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Repr.	Reproductive toxicity
Resp. Sens.	Respiratory sensitisation
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation

Abbreviations and Acronyms

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -

International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

Other information	:	Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

CN / EN