

SODIUM

ChemWatch Review SDS

Chemwatch Hazard Alert Code: 4

Chemwatch: 1428
 Version No: 2.1.1.1
 Safety Data Sheet

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 S.GHS.CAN.EN

SECTION 1 IDENTIFICATION

Product Identifier

| | |
|--------------------------------------|--|
| Product name | SODIUM |
| Chemical Name | sodium |
| Synonyms | Na, natrium, sodium (metal) in paraffin, sodium metal, sodium, lumps, under petroleum, sodium, metal, sodium, metallic |
| Proper shipping name | SODIUM |
| Chemical formula | Na |
| Other means of identification | Not Available |
| CAS number | 7440-23-5 |

Recommended use of the chemical and restrictions on use

| | |
|---------------------------------|---|
| Relevant identified uses | Operators should be trained in procedures for safe use of this material. Manufacture of tetraethyl and tetramethyl lead, sodium peroxide and sodium hydride, titanium reduction, polymerisation catalyst for synthetic rubber, laboratory reagent and coolant in nuclear reactors. Also used in electric power cables (encased in polyethylene), non-glare lighting for highways, radioactive forms in tracer studies for medicine and as heat transfer agent in solar powered electric generators. |
|---------------------------------|---|

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

| | |
|--------------------------------|---------------|
| Registered company name | Not Available |
| Address | Not Available |
| Telephone | Not Available |
| Fax | Not Available |
| Website | Not Available |
| Email | Not Available |

Emergency phone number

| | |
|--|---------------|
| Association / Organisation | Not Available |
| Emergency telephone numbers | Not Available |
| Other emergency telephone numbers | Not Available |

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

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CANADIAN WHMIS SYMBOLS



CANADIAN WHMIS CLASSIFICATION

| Ingredient | CAS number | Classification Description | Classification Code |
|------------|------------|---|---------------------|
| Sodium | 7440-23-5 | Reactive Flammable Material, Corrosive Material | B6, E |

Classification Emit Flammable Gases with Water Category 1, Skin Corrosion/Irritation Category 1B, Serious Eye Damage Category 1

Label elements

| GHS label elements |
|--------------------|
| |

SIGNAL WORD DANGER

Hazard statement(s)

| | |
|-------------|--|
| H260 | In contact with water releases flammable gases which may ignite spontaneously. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

| | |
|------------------|--|
| P231+P232 | Handle and store contents under inert gas/ Protect from moisture. |
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P223 | Do not allow contact with water. |

Precautionary statement(s) Response

| | |
|-----------------------|--|
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. |
| P302+P335+P334 | IF ON SKIN: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages]. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

Precautionary statement(s) Storage

| | |
|------------------|--|
| P405 | Store locked up. |
| P402+P404 | Store in a dry place. Store in a closed container. |

Precautionary statement(s) Disposal

| | |
|-------------|---|
| P501 | Dispose of contents/container in accordance with local regulations. |
|-------------|---|

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

| CAS No | %[weight] | Name |
|-----------|-----------|---------------|
| 7440-23-5 | 100 | <u>Sodium</u> |

Mixtures

See section above for composition of Substances

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SECTION 4 FIRST-AID MEASURES

Description of first aid measures

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|---------------------|--|
| Eye Contact | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> ▶ Immediately hold eyelids apart and flush the eye continuously with 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. ▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. ▶ Transport to hospital or doctor without delay. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. |
| Skin Contact | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> ▶ Immediately flush body and clothes with large amounts of water, using safety shower if available. ▶ Quickly remove all contaminated clothing, including footwear. ▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. ▶ Transport to hospital, or doctor. |
| Inhalation | <ul style="list-style-type: none"> ▶ 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 | <ul style="list-style-type: none"> ▶ For advice, contact a Poisons Information Centre or a doctor at once. ▶ Urgent hospital treatment is likely to be needed. ▶ 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. ▶ Transport to hospital or doctor without delay. |

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing media

DO NOT USE WATER, CO2 OR FOAM ON SUBSTANCE ITSELF

For **SMALL FIRES**:

- ▶ Dry chemical, soda ash or lime.

For **LARGE FIRES**:

- ▶ DRY sand, dry chemical, soda ash;
- ▶ OR withdraw and allow fire to burn itself out.

Special hazards arising from the substrate or mixture

| | |
|-----------------------------|---|
| Fire Incompatibility | <ul style="list-style-type: none"> ▶ Segregate from alcohol, water. ▶ NOTE: May develop pressure in containers; open carefully. Vent periodically. ▶ Keep dry |
|-----------------------------|---|

Special protective equipment and precautions for fire-fighters

| | |
|------------------------------|---|
| Fire Fighting | <ul style="list-style-type: none"> ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ May be violently or explosively reactive. ▶ Wear full protective clothing plus breathing apparatus. ▶ Prevent, by any means available, spillage from entering drains or water course. |
| Fire/Explosion Hazard | <p>Combustion products include; metal oxides Ignites spontaneously in air or oxygen Solid in contact with water or moisture liberates flammable hydrogen gas with sufficient heat to cause ignition or explosion Burns violently accompanied by explosions, which can cause spattering of material Decomposes to form toxic fumes of the oxide, which can react with moisture or steam to produce heat, the corrosive hydroxide and flammable hydrogen gas.</p> |

SECTION 6 ACCIDENTAL RELEASE MEASURES

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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 | <ul style="list-style-type: none"> ▶ Material from spill may be contaminated with water resulting in generation of gas which subsequently may pressure closed containers. ▶ Hold spill material in vented containers only and plan for prompt disposal ▶ Eliminate all ignition sources. ▶ Cover with DRY earth, sand or other non-combustible material. ▶ Then cover with plastic sheet to minimise spreading and to prevent exposure to rain or other sources of water. ▶ Use clean, non-sparking tools to collect absorbed material and place into loosely-covered metal or plastic containers ready for disposal. |
| Major Spills | <ul style="list-style-type: none"> ▶ Clear area of personnel and move upwind. ▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Eliminate all ignition sources (no smoking, flares, sparks or flames) ▶ Stop leak if safe to do so; prevent entry into waterways, drains or confined spaces. ▶ May be violently or explosively reactive. |

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

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

| | |
|--------------------------|--|
| Safe handling | <ul style="list-style-type: none"> ▶ Avoid all personal contact, including inhalation. ▶ Wear protective clothing when risk of overexposure occurs. ▶ Use in a well-ventilated area. ▶ Avoid contact with moisture. |
| Other information | <p>For sodium metal:</p> <ul style="list-style-type: none"> ▶ Store in an airtight container under an inert atmosphere such as nitrogen or argon (not carbon dioxide), or in naphtha or another similar liquid hydrocarbon, such as coal oil or kerosene. Never store under halogenated hydrocarbons such as Freon or methylene chloride ▶ Storage area should be warm and dry to prevent moisture condensation <p>▶ For laboratory quantities. Supplied in a sealed glass container with sodium under dry kerosene.</p> <p>▶ For industrial quantities.</p> <p>KEEP DRY! Packages must be protected from water ingress.</p> <p>FOR MINOR QUANTITIES:</p> <ul style="list-style-type: none"> ▶ Store in an indoor fireproof cabinet or in a room of noncombustible construction and ▶ provide adequate portable fire-extinguishers in or near the storage area. <p>FOR PACKAGE STORAGE:</p> <ul style="list-style-type: none"> ▶ Store in original containers in approved flame-proof area. ▶ No smoking, naked lights, heat or ignition sources. |

Conditions for safe storage, including any incompatibilities

| | |
|--------------------------------|---|
| Suitable container | <p>DO NOT repack. Use only containers as originally supplied by manufacturer</p> <ul style="list-style-type: none"> ▶ Storage containers must be hermetically sealed; the product must be stored under an inert, dry gas. <p>For low viscosity materials and solids: Drums and jerricans 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.</p> <p>For materials with a viscosity of at least 2680 cSt. (23 deg. C):</p> <ul style="list-style-type: none"> ▶ Removable head packaging and ▶ cans with friction closures may be used. |
| Storage incompatibility | <p>Sodium:</p> <ul style="list-style-type: none"> ▶ is an extremely flammable solid which evolves sodium oxide at its autoignition temperature ▶ produces unstable peroxides on exposure to moist air and/ or may spontaneously ignite ▶ reacts violently with water, forming flammable hydrogen gas, sodium hydroxide, heat, often with fire ▶ is a powerful reducing agent ▶ reacts violently with oxidisers, acids, antimony chloride, carbon dioxide, carbon monoxide, carbon tetrachloride, chlorobenzene, copper oxide, diazomethane, dibromomethylborane, haloids, halogens, halogenated hydrocarbons (such as chlorinated solvents), heavy metal oxides, hexachlorocyclopentadiene, hydrazine hydrate, iodine monochloride, iodine pentafluoride, iron bromide, lead dioxide, maleic anhydride, manganese chloride, methyl chloride, methyl iodide, nitrous oxide, nitrosyl fluoride, nitrotoluene, nitril fluoride, oxygen difluoride, phosgene, phosphorus, phosphorus pentachloride, phosphorus trichloride, seleninyl bromide, silver bromide, silver chloride, silver fluoride, silver oxide, silver iodide, sodium |

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- ▶ peroxide, sulfur, tetrachloroethane, trichloroethylene, vanadium oxytrichloride, and many other substances
- ▶ forms explosive mixtures with many substances including aluminium bromide, ammonium nitrate, arsenic iodide, ferric chloride, nitrotoluene, sodium nitrate
- ▶ is incompatible with many substances including boron trifluoride, chromic acid, cobalt bromide, cobalt chloride, mercury oxide, thionyl chloride, titanium dioxide, Teflon, , volatile hydrocarbons such as petroleum ether
- ▶ reacts violently with most common fire extinguishers

NOTE:

- ▶ Separate from all other materials and ensure the metal remains moisture free
- ▶ Store under inert gas or liquid hydrocarbon
- ▶ Mixtures of sodium with a wide range of halogenated alkane solvents are metastable and capable of initiation to explosion by shock or impact - generally the sensitivity to initiation and the force of the explosion increases with the degree of halogen substitution. Any aliphatic halocarbon (except fully fluorinated alkanes) may be expected to behave in this manner
- ▶ Sodium dispersions reduce metal halides exothermically
- ▶ Sodium and carbon dioxide are normally unreactive till red heat is attained but mixtures of the two solids are impact-sensitive and explode violently. Carbon dioxide is unsuitable as an extinguishant for the burning metal alone as the intensity of combustion is increased by replacing air with carbon dioxide (72.7% oxygen content). However it has been used successfully to extinguish solvent fires where sodium is present since it fails to ignite because of the blanketing effect of solvent vapour.
- ▶ Metals and their oxides or salts may react violently with chlorine trifluoride and bromine trifluoride.
- ▶ These trifluorides are hypergolic oxidisers. They ignites 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 any contamination of this material as it is very reactive and any contamination is potentially hazardous
- ▶ Segregate from alcohol, water.
- ▶ **NOTE:** May develop pressure in containers; open carefully. Vent periodically.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA


Not Available

EMERGENCY LIMITS

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|------------|---------------|----------|-----------|-----------|
| Sodium | Sodium | 13 mg/m3 | 140 mg/m3 | 870 mg/m3 |

| Ingredient | Original IDLH | Revised IDLH |
|------------|---------------|---------------|
| Sodium | Not Available | Not Available |

Exposure controls

| | |
|---|--|
| Appropriate engineering controls | Local exhaust systems must be designed to provide a minimum capture velocity at the fume source away from the worker of 0.5 metre/sec. |
| Personal protection |  |
| Eye and face protection | <ul style="list-style-type: none"> ▶ Chemical goggles. ▶ Full face shield may be required for supplementary but never for primary protection of eyes. ▶ 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. |
| Skin protection | See Hand protection below |
| Hands/feet protection | <ul style="list-style-type: none"> ▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber <p>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.</p> <p>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.</p> <p>Suitability and durability of glove type is dependent on usage.</p> <ul style="list-style-type: none"> ▶ Layered protective clothing gives added protection from burns, e.g. elbow length mitts (which are oversize for easy removal) over fitting gloves. ▶ Where possible design should minimise manual handling. ▶ Because of fire hazard, do not use rubber or plastic protective clothing which will melt compounding burn injury. |

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| | <ul style="list-style-type: none"> ▶ All protective clothing must be kept warm and dry, to prevent condensation of atmospheric moisture. |
| Body protection | See Other protection below |
| Other protection | <p>For industrial quantities:</p> <ul style="list-style-type: none"> ▶ Hard hat with brim. ▶ Layered protective clothing gives added protection from burns, consider supply of fire resistant underwear, trousers, heavy duty shoes. ▶ Overalls. ▶ Eyewash unit. ▶ Barrier cream. ▶ Skin cleansing cream. <p>Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.</p> <p>For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).</p> <p>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 an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds.</p> |
| Thermal hazards | Not Available |

Respiratory protection

Particulate. (AS/NZS 1716 & 1715, EN 143:000 & 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.
- ▶ 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 | Odourless, soft, silver-white metal oxidising (to grey) rapidly in air. Wax-like at room temperature, brittle at low temperatures. Violently decomposes water on contact with evolution of flammable hydrogen gas to form sodium hydroxide. Insoluble in benzene, kerosene and naphtha. | | |
| Physical state | Divided Solid | Relative density (Water = 1) | 0.97 |
| Odour | Not Available | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | 100 |
| pH (as supplied) | Not Applicable | Decomposition temperature | Not Available |
| Melting point / freezing point (°C) | 97.6 | Viscosity (cSt) | Not Applicable |

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|---|------------------|---|----------------|
| Initial boiling point and boiling range (°C) | 892 | Molecular weight (g/mol) | 22.99 |
| 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 Applicable | Surface Tension (dyn/cm or mN/m) | Not Applicable |
| Lower Explosive Limit (%) | Not Applicable | Volatile Component (%vol) | Not Applicable |
| Vapour pressure (kPa) | Not Applicable | Gas group | Not Available |
| Solubility in water (g/L) | Reacts Violently | pH as a solution (1%) | 14 |
| Vapour density (Air = 1) | Not Applicable | VOC g/L | Not Available |

SECTION 10 STABILITY AND REACTIVITY

| | |
|---|---|
| Reactivity | See section 7 |
| Chemical stability | <ul style="list-style-type: none"> ▶ Presence of heat source and ignition source Unstable in the presence of incompatible materials ▶ Presence of air ▶ May heat spontaneously ▶ Identify and remove sources of ignition and heating. ▶ Incompatible material, especially oxidisers, and/or other sources of oxygen may produce unstable product(s). ▶ Avoid sources of water contamination (e.g. rain water, moisture, high humidity). ▶ Avoid contact with oxygenated solvents/ reagents such as alcohols. |
| 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 | <p>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.</p> <p>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.</p> <p>The material has NOT been classified by EC Directives or other classification systems as "harmful by inhalation" nor has it been designated as "irritating to the respiratory system". This is because of the lack of corroborating animal or human evidence.</p> <p>Not normally a hazard due to non-volatile nature of product</p> <p> Burning sodium gives sodium oxide which reacts instantly with air moisture to give sodium hydroxide fume. Fumes are an intense irritant to the eyes and respiratory mucosa causing burns as well as choking and difficult breathing.</p> |
| Ingestion | <p>The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.</p> <p>The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.</p> <p> On ingestion, the material will react immediately with saliva to cause serious burns and possible local combustion and even explosion of hydrogen in the mouth or esophagus.</p> |
| Skin Contact | <p>The material can produce chemical burns following direct contact with the skin.</p> <p>Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>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.</p> <p> Sodium causes second and third-degree burns on short contact with the skin, especially moist skin. If sodium ignites, very deep burns and tissue destruction will occur.</p> |

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| Eye | The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage. | |
| Chronic | Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis, caused by particles less than 0.5 micron penetrating and remaining in the lung. | |
| Sodium | TOXICITY Not Available | IRRITATION Not Available |
| 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 | |

| | |
|---------------|--|
| SODIUM | Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. No significant acute toxicological data identified in literature search. |
|---------------|--|

| | | | |
|--|---|---------------------------------|---|
| 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 available but does not fill the criteria for classification
✓ – Data required to make classification available
☐ – Data Not Available to make classification

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

| Ingredient | Endpoint | Test Duration (hr) | Species | Value | Source |
|----------------|--|--------------------|-----------|----------|--------|
| Sodium | EC50 | 48 | Crustacea | 1640mg/L | 4 |
| Sodium | EC50 | 504 | Crustacea | 1020mg/L | 4 |
| Legend: | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 - 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 | | | | |

For Metal:

Atmospheric Fate - Metal-containing inorganic substances generally have negligible vapour pressure and are not expected to partition to air.

Environmental Fate: Environmental processes, such as oxidation, the presence of acids or bases and microbiological processes, may transform insoluble metals to more soluble ionic forms. Environmental processes may enhance bioavailability and may also be important in changing solubilities.

Aquatic/Terrestrial Fate: When released to dry soil, most metals will exhibit limited mobility and remain in the upper layer; some will leach locally into ground water and/ or surface water ecosystems when soaked by rain or melt ice. A metal ion is considered infinitely persistent because it cannot degrade further.

DO NOT discharge into sewer or waterways.

Persistence and degradability

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| 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 | <p>For small quantities:</p> <ul style="list-style-type: none"> ▶ Cautiously add the material to dry butanol in an appropriate solvent. ▶ Reaction may be vigorous and exothermic. ▶ Large volumes of flammable hydrogen may be generated and venting procedures should be conducted in a flame-proof environment. ▶ Neutralise the solution with aqueous acid, filter and burn the liquid portion in an approved incinerator. <p>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.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> ▶ Reduction ▶ Reuse ▶ Recycling ▶ Disposal (if all else fails) <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use.</p> <p>For disposal of small quantities (up to 5-10 g) of sodium metal immerse in isopropanol, which may contain up to 2% of water to increase the rate of reaction</p> <p>For quantities up to 50 g burn in a heavy metal dish using a gas flame with suitable arrangements for dispersion or absorption of the alkali particulate smoke so produced</p> <ul style="list-style-type: none"> ▶ 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 licenced to accept chemical and / or pharmaceutical wastes or Incineration in a licenced apparatus (after admixture with suitable combustible material) ▶ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed. ▶ Recycle where possible. ▶ Consult State Land Waste Management Authority for disposal. ▶ Bury residue and dispose of containers/ packaging in authorised landfill. |
|-------------------------------------|--|

SECTION 14 TRANSPORT INFORMATION

Labels Required

| | |
|---|----|
|  | |
| Marine Pollutant | NO |

Land transport (TDG)

| | |
|--------------------------------|--------|
| UN number | 1428 |
| UN proper shipping name | SODIUM |

SODIUM

| | | |
|-------------------------------------|--|----------------|
| Transport hazard class(es) | Class | 4.3 |
| | Subrisk | Not Applicable |
| Packing group | I | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | Special provisions | Not Applicable |
| | Explosive Limit and Limited Quantity Index | 0 |
| | ERAP Index | 1 000 |

Air transport (ICAO-IATA / DGR)

| | | |
|-------------------------------------|---|----------------|
| UN number | 1428 | |
| UN proper shipping name | Sodium | |
| Transport hazard class(es) | ICAO/IATA Class | 4.3 |
| | ICAO / IATA Subrisk | Not Applicable |
| | ERG Code | 4W |
| Packing group | I | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | Special provisions | A1 |
| | Cargo Only Packing Instructions | 487 |
| | Cargo Only Maximum Qty / Pack | 15 kg |
| | Passenger and Cargo Packing Instructions | Forbidden |
| | Passenger and Cargo Maximum Qty / Pack | Forbidden |
| | Passenger and Cargo Limited Quantity Packing Instructions | Forbidden |
| | Passenger and Cargo Limited Maximum Qty / Pack | Forbidden |

Sea transport (IMDG-Code / GGVSee)

| | | |
|-------------------------------------|--------------------|----------------|
| UN number | 1428 | |
| UN proper shipping name | SODIUM | |
| Transport hazard class(es) | IMDG Class | 4.3 |
| | IMDG Subrisk | Not Applicable |
| Packing group | I | |
| Environmental hazard | Not Applicable | |
| Special precautions for user | EMS Number | F-G, S-N |
| | Special provisions | Not Applicable |
| | Limited Quantities | 0 |

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

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

SODIUM(7440-23-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Canada Categorization decisions for all DSL substances
Canada Domestic Substances List (DSL)

International Air Transport Association (IATA) Dangerous Goods Regulations
- Prohibited List Passenger and Cargo Aircraft

| National Inventory | Status |
|--------------------|--------|
|--------------------|--------|

Continued...

SODIUM

| | |
|-------------------------------|--|
| Australia - AICS | Y |
| Canada - DSL | Y |
| Canada - NDSL | N (Sodium) |
| China - IECSC | Y |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | N (Sodium) |
| Korea - KECI | Y |
| New Zealand - NZIoC | Y |
| Philippines - PICCS | Y |
| USA - TSCA | Y |
| Legend: | <i>Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)</i> |

SECTION 16 OTHER INFORMATION

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.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net

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
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

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