



## Cobalt ICP Standard

### Novachem Pty Ltd

Version No: 1.1

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

Chemwatch Hazard Alert Code: 4

Issue Date: 11/07/2023

Print Date: 11/07/2023

S.GHS.AUS.EN

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

##### Product Identifier

|                               |  |
|-------------------------------|--|
| Product name                  | Cobalt ICP Standard  |
| Synonyms                      | Not Available  |
| Proper shipping name          | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (contains nitric acid) |
| Other means of identification | ICP-14N-1  |

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

|                          |  |
|--------------------------|--|
| Relevant identified uses | Laboratory Chemical Reference Material |
|--------------------------|--|

##### Details of the manufacturer or supplier of the safety data sheet

|                         |  |  |
|-------------------------|--|--|
| Registered company name | Novachem Pty Ltd   | Novachem Pty Ltd   |
| Address                 | 25 Crissane Road, Heidelberg West Victoria 3081 Australia    | 25 Crissane Road, Heidelberg West Victoria 3081 Australia    |
| Telephone               | +61384151255   | +61384151255   |
| Fax                     | +61386250088   | +61386250088   |
| Website                 | <a href="http://www.novachem.com.au">www.novachem.com.au</a> | <a href="http://www.novachem.com.au">www.novachem.com.au</a> |
| Email                   | novachem@novachem.com.au                                     | novachem@novachem.com.au                                     |

##### Emergency telephone number

|                                   |                                      |                                      |
|-----------------------------------|--------------------------------------|--------------------------------------|
| Association / Organisation        | Victorian Poisons Information Centre | Victorian Poisons Information Centre |
| Emergency telephone numbers       | 13 11 26                             | 13 11 26                             |
| Other emergency telephone numbers | Not Available                        | Not Available                        |

#### SECTION 2 Hazards identification

##### Classification of the substance or mixture

|                    |  |
|--------------------|--|
| Poisons Schedule   | Not Applicable   |
| Classification [1] | Corrosive to Metals Category 1, Acute Toxicity (Oral) Category 4, Skin Corrosion/Irritation Category 1A, Serious Eye Damage/Eye Irritation Category 1, Acute Toxicity (Inhalation) Category 3, Carcinogenicity Category 1A |
| Legend:            | 1. Classified by Chemwatch; 2. Classification drawn from HCIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI  |

##### Label elements

|                     |        |
|---------------------|--------|
| Hazard pictogram(s) |        |
| Signal word         | Danger |

##### Hazard statement(s)

|      |  |
|------|--|
| H290 | May be corrosive to metals.              |
| H302 | Harmful if swallowed.                    |
| H314 | Causes severe skin burns and eye damage. |
| H331 | Toxic if inhaled.                        |
| H350 | May cause cancer.                        |

## Cobalt ICP Standard

## Precautionary statement(s) Prevention

|      |   |
|------|---|
| P201 | Obtain special instructions before use.                         |
| P260 | Do not breathe mist/vapours/spray.                              |
| P264 | Wash all exposed external body areas thoroughly after handling. |
| P271 | Use only outdoors or in a well-ventilated area.                 |

## Precautionary statement(s) Response

|                |  |
|----------------|--|
| P301+P330+P331 | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.   |
| 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. |
| P308+P313      | IF exposed or concerned: Get medical advice/ attention.  |

## Precautionary statement(s) Storage

|           |  |
|-----------|--|
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |
| P405      | Store locked up.   |

## Precautionary statement(s) Disposal

|      |  |
|------|--|
| P501 | Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation. |
|------|--|

## SECTION 3 Composition / information on ingredients

## Substances

See section below for composition of Mixtures

## Mixtures

| CAS No         | %[weight]  | Name               |
|----------------|--|--------------------|
| 7440-48-4      | 0.1  | <u>cobalt</u>      |
| 7697-37-2      | 2  | <u>nitric acid</u> |
| 7732-18-5      | 97.9   | <u>water</u>       |
| <b>Legend:</b> | 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 |                    |

## SECTION 4 First aid measures

## Description of first aid measures

|                     |   |
|---------------------|---|
| <b>Eye Contact</b>  | <p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ 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.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>  |
| <b>Skin Contact</b> | <p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately flush body and clothes with large amounts of water, using safety shower if available.</li> <li>▶ Quickly remove all contaminated clothing, including footwear.</li> <li>▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.</li> <li>▶ Transport to hospital, or doctor.</li> </ul>  |
| <b>Inhalation</b>   | <ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ 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.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> <li>▶ Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.</li> <li>▶ Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).</li> <li>▶ As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.</li> <li>▶ Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.</li> </ul> <p><b>This must definitely be left to a doctor or person authorised by him/her.</b><br/>(ICSC13719)</p> |
| <b>Ingestion</b>    | <ul style="list-style-type: none"> <li>▶ For advice, contact a Poisons Information Centre or a doctor at once.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Transport to hospital or doctor without delay.</li> </ul>  |

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**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

For acute or short term repeated exposures to strong acids:

- ▶ Airway problems may arise from laryngeal edema and inhalation exposure. Treat with 100% oxygen initially.
- ▶ Respiratory distress may require cricothyroidotomy if endotracheal intubation is contraindicated by excessive swelling
- ▶ Intravenous lines should be established immediately in all cases where there is evidence of circulatory compromise.
- ▶ Strong acids produce a coagulation necrosis characterised by formation of a coagulum (eschar) as a result of the desiccating action of the acid on proteins in specific tissues.

INGESTION:

- ▶ Immediate dilution (milk or water) within 30 minutes post ingestion is recommended.
- ▶ **DO NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.**
- ▶ Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Limit fluids to one or two glasses in an adult.
- ▶ Charcoal has no place in acid management.
- ▶ Some authors suggest the use of lavage within 1 hour of ingestion.

SKIN:

- ▶ Skin lesions require copious saline irrigation. Treat chemical burns as thermal burns with non-adherent gauze and wrapping.
- ▶ Deep second-degree burns may benefit from topical silver sulfadiazine.

EYE:

- ▶ Eye injuries require retraction of the eyelids to ensure thorough irrigation of the conjunctival cul-de-sacs. Irrigation should last at least 20-30 minutes. **DO NOT use neutralising agents or any other additives.** Several litres of saline are required.
- ▶ Cycloplegic drops, (1% cyclopentolate for short-term use or 5% homatropine for longer term use) antibiotic drops, vasoconstrictive agents or artificial tears may be indicated dependent on the severity of the injury.
- ▶ Steroid eye drops should only be administered with the approval of a consulting ophthalmologist).

[Ellenhorn and Barceloux: Medical Toxicology]

**SECTION 5 Firefighting measures****Extinguishing media**

- ▶ There is no restriction on the type of extinguisher which may be used.
- ▶ Use extinguishing media suitable for surrounding area.

**Special hazards arising from the substrate or mixture**

|                             |             |
|-----------------------------|-------------|
| <b>Fire Incompatibility</b> | None known. |
|-----------------------------|-------------|

**Advice for firefighters**

|                              |   |
|------------------------------|---|
| <b>Fire Fighting</b>         | <ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Use fire fighting procedures suitable for surrounding area.</li> </ul> |
| <b>Fire/Explosion Hazard</b> | <ul style="list-style-type: none"> <li>▶ Non combustible.</li> <li>▶ Not considered to be a significant fire risk.</li> <li>▶ Acids may react with metals to produce hydrogen, a highly flammable and explosive gas.</li> <li>▶ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> </ul>   |
| <b>HAZCHEM</b>               | 2X  |

**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**

|                     |  |
|---------------------|--|
| <b>Minor Spills</b> | <ul style="list-style-type: none"> <li>▶ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.</li> <li>▶ Check regularly for spills and leaks.</li> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid breathing vapours and contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Contain and absorb spill with sand, earth, inert material or vermiculite.</li> </ul> |
| <b>Major Spills</b> | <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear full body protective clothing with breathing apparatus.</li> <li>▶ Prevent, by all means available, spillage from entering drains or water courses.</li> </ul>  |

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

**SECTION 7 Handling and storage****Precautions for safe handling**

|                      |   |
|----------------------|---|
| <b>Safe handling</b> | <ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> </ul> |
|----------------------|---|

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|                   |  |
|-------------------|--|
|                   | <ul style="list-style-type: none"> <li>Use in a well-ventilated area.</li> <li><b>WARNING: To avoid violent reaction, ALWAYS add material to water and NEVER water to material.</b></li> </ul>   |
| Other information | <ul style="list-style-type: none"> <li>Store in original containers.</li> <li>Keep containers securely sealed.</li> <li>Store in a cool, dry, well-ventilated area.</li> <li>Store away from incompatible materials and foodstuff containers.</li> </ul> |

## Conditions for safe storage, including any incompatibilities

|                         |   |
|-------------------------|---|
| Suitable container      | <ul style="list-style-type: none"> <li><b>DO NOT use aluminium or galvanised containers</b></li> <li>Check regularly for spills and leaks</li> <li>Lined metal can, lined metal pail/ can.</li> <li>Plastic pail.</li> <li>Polyliner drum.</li> <li>Packing as recommended by manufacturer.</li> </ul> <p>For low viscosity materials</p> <ul style="list-style-type: none"> <li>Drums and jerricans must be of the non-removable head type.</li> <li>Where a can is to be used as an inner package, the can must have a screwed enclosure.</li> </ul> <p>For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):</p> <ul style="list-style-type: none"> <li>Removable head packaging;</li> <li>Cans with friction closures and</li> <li>low pressure tubes and cartridges may be used.</li> </ul> |
| Storage incompatibility | <ul style="list-style-type: none"> <li>Inorganic acids are generally soluble in water with the release of hydrogen ions. The resulting solutions have pH's of less than 7.0.</li> <li>Inorganic acids neutralise chemical bases (for example: amines and inorganic hydroxides) to form salts - neutralisation can generate dangerously large amounts of heat in small spaces.</li> <li>The dissolution of inorganic acids in water or the dilution of their concentrated solutions with additional water may generate significant heat.</li> </ul>  |

## 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 | cobalt      | Cobalt, metal dust & fume (as Co) | 0.05 mg/m <sup>3</sup>        | Not Available                | Not Available | Not Available |
| Australia Exposure Standards | nitric acid | Nitric acid                       | 2 ppm / 5.2 mg/m <sup>3</sup> | 10 mg/m <sup>3</sup> / 4 ppm | Not Available | Not Available |

## Emergency Limits

| Ingredient  | TEEL-1                 | TEEL-2              | TEEL-3               |
|-------------|------------------------|---------------------|----------------------|
| cobalt      | 0.18 mg/m <sup>3</sup> | 2 mg/m <sup>3</sup> | 20 mg/m <sup>3</sup> |
| nitric acid | Not Available          | Not Available       | Not Available        |

| Ingredient  | Original IDLH        | Revised IDLH  |
|-------------|----------------------|---------------|
| cobalt      | 20 mg/m <sup>3</sup> | Not Available |
| nitric acid | 25 ppm               | Not Available |
| water       | Not Available        | Not Available |

## Exposure controls

|   |  |
|---|--|
| Appropriate engineering controls                                      | <p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p>  |
| Individual protection measures, such as personal protective equipment |   |
| Eye and face protection   | <ul style="list-style-type: none"> <li>Safety glasses with unperforated side shields may be used where continuous eye protection is desirable, as in laboratories; spectacles are not sufficient where complete eye protection is needed such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure.</li> <li>Chemical goggles. Whenever there is a danger of the material coming in contact with the eyes; goggles must be properly fitted. [AS/NZS 1337.1, EN166 or national equivalent]</li> <li>Full face shield (20 cm, 8 in minimum) may be required for supplementary but never for primary protection of eyes; these afford face protection.</li> </ul> |
| Skin protection   | See Hand protection below  |
| Hands/feet protection   | <ul style="list-style-type: none"> <li>Elbow length PVC gloves</li> <li>When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.</li> </ul>  |

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|                         |   |
|-------------------------|---|
|                         | <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>▶ The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.</li> <li>▶ Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li> </ul>   |
| <b>Body protection</b>  | See Other protection below  |
| <b>Other protection</b> | <ul style="list-style-type: none"> <li>▶ Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]</li> <li>▶ Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent]</li> <li>▶ Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.</li> <li>▶ Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.</li> <li>▶ Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.</li> <li>▶ Overalls.</li> <li>▶ PVC Apron.</li> <li>▶ PVC protective suit may be required if exposure severe.</li> <li>▶ Eyewash unit.</li> </ul> |

## Recommended material(s)

## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

**"Forsberg Clothing Performance Index"**.

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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| Material         | CPI |
|------------------|-----|
| BUTYL            | A   |
| NEOPRENE         | A   |
| HYPALON          | C   |
| NATURAL RUBBER   | C   |
| NATURAL+NEOPRENE | C   |
| NEOPRENE/NATURAL | C   |
| NITRILE+PVC      | C   |
| PE/EVAL/PE       | C   |
| PVA              | C   |
| PVC              | C   |
| SARANEX-23       | C   |
| VITON            | C   |

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

## Respiratory protection

Type E-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

| Required Minimum Protection Factor | Half-Face Respirator | Full-Face Respirator | Powered Air Respirator  |
|------------------------------------|----------------------|----------------------|-------------------------|
| up to 10 x ES                      | E-AUS P2             | -                    | E-PAPR-AUS / Class 1 P2 |
| up to 50 x ES                      | -                    | E-AUS / Class 1 P2   | -                       |
| up to 100 x ES                     | -                    | E-2 P2               | E-PAPR-2 P2 ^           |

^ - Full-face

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(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

## SECTION 9 Physical and chemical properties

## Information on basic physical and chemical properties

|  |               |  |               |
|--|---------------|--|---------------|
| <b>Appearance</b>                          | Clear liquid  |  |               |
| <b>Physical state</b>                      | Liquid        | <b>Relative density (Water = 1)</b>            | 1.02          |
| <b>Odour</b>                               | Not Available | <b>Partition coefficient n-octanol / water</b> | Not Available |
| <b>Odour threshold</b>                     | Not Available | <b>Auto-ignition temperature (°C)</b>          | Not Available |
| <b>pH (as supplied)</b>                    | <2.0          | <b>Decomposition temperature (°C)</b>          | Not Available |
| <b>Melting point / freezing point (°C)</b> | Not Available | <b>Viscosity (cSt)</b>                         | Not Available |

Continued...

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|  |               |                                  |               |
|--|---------------|----------------------------------|---------------|
| Initial boiling point and boiling range (°C) | 83            | Molecular weight (g/mol)         | Not Available |
| Flash point (°C)                             | Not Available | Taste                            | Not Available |
| Evaporation rate                             | Not Available | Explosive properties             | Not Available |
| Flammability                                 | Not Available | Oxidising properties             | Not Available |
| Upper Explosive Limit (%)                    | Not Available | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%)                    | Not Available | Volatile Component (%vol)        | Not Available |
| Vapour pressure (kPa)                        | 2.47          | Gas group                        | Not Available |
| Solubility in water                          | Miscible      | pH as a solution (1%)            | Not Available |
| Vapour density (Air = 1)                     | 0.62          | VOC g/L                          | Not Available |

## SECTION 10 Stability and reactivity

|                                    |   |
|------------------------------------|---|
| Reactivity                         | See section 7                                   |
| Chemical stability                 | ▶ Contact with alkaline material liberates heat |
| 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      | Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage. Corrosive acids can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage. There may be dizziness, headache, nausea and weakness.   |
| Ingestion    | Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Ingestion of acidic corrosives may produce burns around and in the mouth, the throat and oesophagus. Immediate pain and difficulties in swallowing and speaking may also be evident.   |
| Skin Contact | Skin contact with acidic corrosives may result in pain and burns; these may be deep with distinct edges and may heal slowly with the formation of scar tissue. Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Open cuts, abraded or irritated skin should not be exposed to this material. 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          | Direct eye contact with acid corrosives may produce pain, tears, sensitivity to light and burns. Mild burns of the epithelia generally recover rapidly and completely. If applied to the eyes, this material causes severe eye damage. Irritation of the eyes may produce a heavy secretion of tears (lachrymation).   |
| Chronic      | Repeated or prolonged exposure to acids may result in the erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs. Studies show that inhaling this substance for over a long period (e.g. in an occupational setting) may increase the risk of cancer. Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems. Long-term exposure to respiratory irritants may result in airways disease, involving difficulty breathing and related whole-body problems. Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. There is sufficient evidence to suggest that this material directly causes cancer in humans. Ample evidence from experiments exists that there is a suspicion this material directly reduces fertility. |

|                     |  |  |
|---------------------|--|--|
| Cobalt ICP Standard | <b>TOXICITY</b>  | <b>IRRITATION</b>  |
|                     | Not Available  | Not Available  |
| cobalt              | <b>TOXICITY</b>  | <b>IRRITATION</b>  |
|                     | dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup><br>Inhalation(Rat) LC50: <=0.05 mg/4h <sup>[1]</sup> | Eye: adverse effect observed (irritating) <sup>[1]</sup><br>Skin: no adverse effect observed (not irritating) <sup>[1]</sup> |

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|                |   |  |
|----------------|---|--|
|                | Oral (Rat) LD50: ~550 mg/kg <sup>[1]</sup>  |  |
| nitric acid    | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|                | Inhalation(Rat) LC50: 0.13 mg/L4h <sup>[2]</sup>  | Eye: adverse effect observed (irritating) <sup>[1]</sup><br>Skin: adverse effect observed (corrosive) <sup>[1]</sup> |
| water          | <b>TOXICITY</b>   | <b>IRRITATION</b>  |
|                | Oral (Rat) LD50: >90000 mg/kg <sup>[2]</sup>  | Not Available  |
| <b>Legend:</b> | 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 |  |

|  |  |
|--|--|
| <b>COBALT</b>                                | <b>WARNING:</b> This substance has been classified by the IARC as Group 2B: Possibly Carcinogenic to Humans.   |
| <b>NITRIC ACID</b>                           | Oral (?) LD50: 50-500 mg/kg * [Various Manufacturers]<br>The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.<br>The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.<br>The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.   |
| <b>WATER</b>                                 | No significant acute toxicological data identified in literature search.   |
| <b>Cobalt ICP Standard &amp; NITRIC ACID</b> | Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.<br>For acid mists, aerosols, vapours<br>Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).  |
| <b>Cobalt ICP Standard &amp; COBALT</b>      | Allergic reactions involving the respiratory tract are usually due to interactions between IgE antibodies and allergens and occur rapidly. Allergic potential of the allergen and period of exposure often determine the severity of symptoms. Some people may be genetically more prone than others, and exposure to other irritants may aggravate symptoms. Allergy causing activity is due to interactions with proteins.<br>Attention should be paid to atopic diathesis, characterised by increased susceptibility to nasal inflammation, asthma and eczema.<br>Exogenous allergic alveolitis is induced essentially by allergen specific immune-complexes of the IgG type; cell-mediated reactions (T lymphocytes) may be involved. Such allergy is of the delayed type with onset up to four hours following exposure.<br>The following information refers to contact allergens as a group and may not be specific to this product.<br>Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. |

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

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

## SECTION 12 Ecological information

## Toxicity

| Cobalt ICP Standard | Endpoint  | Test Duration (hr) | Species                       | Value          | Source        |
|---------------------|-----------|--------------------|-------------------------------|----------------|---------------|
|                     |           | Not Available      | Not Available                 | Not Available  | Not Available |
| cobalt              | Endpoint  | Test Duration (hr) | Species                       | Value          | Source        |
|                     | EC50      | 72h                | Algae or other aquatic plants | 0.029mg/L      | 2             |
|                     | EC50      | 48h                | Crustacea                     | 0.241mg/L      | 2             |
|                     | EC50      | 96h                | Algae or other aquatic plants | 23.8mg/l       | 2             |
|                     | LC50      | 96h                | Fish                          | 0.8mg/l        | 2             |
|                     | NOEC(ECx) | 72h                | Algae or other aquatic plants | 0.01-0.015mg/l | 1             |
| nitric acid         | Endpoint  | Test Duration (hr) | Species                       | Value          | Source        |
|                     | EC50      | 48h                | Crustacea                     | 490mg/l        | 2             |
|                     | LC50      | 96h                | Fish                          | 102.24mg/L     | 4             |
|                     | EC50(ECx) | 96h                | Crustacea                     | 39mg/l         | 2             |

Continued...

## Cobalt ICP Standard

|                | Endpoint   | Test Duration (hr) | Species       | Value         | Source        |
|----------------|--|--------------------|---------------|---------------|---------------|
| water          | Not Available  | Not Available      | Not Available | Not Available | Not Available |
| <b>Legend:</b> | Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 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 |                    |               |               |               |

**Ecotoxicity:**

The tolerance of water organisms towards pH margin and variation is diverse. Recommended pH values for test species listed in OECD guidelines are between 6.0 and almost 9.

Acute testing with fish showed 96h-LC50 at about pH 3.5

Prevent, by any means available, spillage from entering drains or water courses.

**DO NOT discharge into sewer or waterways.**

**Persistence and degradability**

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|------------|-------------------------|------------------|
| water      | LOW                     | LOW              |

**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 | <ul style="list-style-type: none"> <li>▶ Containers may still present a chemical hazard/ danger when empty.</li> <li>▶ Return to supplier for reuse/ recycling if possible.</li> </ul> Otherwise: <ul style="list-style-type: none"> <li>▶ If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</li> <li>▶ Where possible retain label warnings and SDS and observe all notices pertaining to the product.</li> <li>▶ Recycle wherever possible.</li> <li>▶ 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.</li> <li>▶ Treat and neutralise at an approved treatment plant. Treatment should involve: Neutralisation with soda-ash or soda-lime followed 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).</li> </ul> |
|------------------------------|---|

**SECTION 14 Transport information****Labels Required**

|                  |   |
|------------------|---|
|                  |  |
| Marine Pollutant | NO  |
| HAZCHEM          | 2X  |

**Land transport (ADG)**

|                              |  |                |
|------------------------------|--|----------------|
| UN number or ID number       | 3264   |                |
| UN proper shipping name      | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (contains nitric acid) |                |
| Transport hazard class(es)   | Class  | 8              |
|                              | Subsidiary risk  | Not Applicable |
| Packing group                | III  |                |
| Environmental hazard         | Not Applicable   |                |
| Special precautions for user | Special provisions   | 223 274        |
|                              | Limited quantity   | 5 L            |

**Air transport (ICAO-IATA / DGR)**

|                         |  |
|-------------------------|--|
| UN number               | 3264   |
| UN proper shipping name | Corrosive liquid, acidic, inorganic, n.o.s. * (contains nitric acid) |



## Cobalt ICP Standard

|                                     |   |                |
|-------------------------------------|---|----------------|
| <b>Transport hazard class(es)</b>   | ICAO/IATA Class   | 8              |
|                                     | ICAO / IATA Subrisk                                       | Not Applicable |
|                                     | ERG Code  | 8L             |
| <b>Packing group</b>                | III   |                |
| <b>Environmental hazard</b>         | Not Applicable  |                |
| <b>Special precautions for user</b> | Special provisions  | A3 A803        |
|                                     | Cargo Only Packing Instructions                           | 856            |
|                                     | Cargo Only Maximum Qty / Pack                             | 60 L           |
|                                     | Passenger and Cargo Packing Instructions                  | 852            |
|                                     | Passenger and Cargo Maximum Qty / Pack                    | 5 L            |
|                                     | Passenger and Cargo Limited Quantity Packing Instructions | Y841           |
|                                     | Passenger and Cargo Limited Maximum Qty / Pack            | 1 L            |

## Sea transport (IMDG-Code / GGVSee)

|                                     |  |                |
|-------------------------------------|--|----------------|
| <b>UN number</b>                    | 3264   |                |
| <b>UN proper shipping name</b>      | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (contains nitric acid) |                |
| <b>Transport hazard class(es)</b>   | IMDG Class   | 8              |
|                                     | IMDG Subrisk   | Not Applicable |
| <b>Packing group</b>                | III  |                |
| <b>Environmental hazard</b>         | Not Applicable   |                |
| <b>Special precautions for user</b> | EMS Number   | F-A, S-B       |
|                                     | Special provisions   | 223 274        |
|                                     | Limited Quantities   | 5 L            |

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

| Product name                | Pollution Category | Ship Type |
|-----------------------------|--------------------|-----------|
| Nitric acid (less than 70%) | Y                  | 2         |

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

| Product name | Group         |
|--------------|---------------|
| cobalt       | Not Available |
| nitric acid  | Not Available |
| water        | Not Available |

## Transport in bulk in accordance with the IGC Code

| Product name | Ship Type     |
|--------------|---------------|
| cobalt       | Not Available |
| nitric acid  | Not Available |
| water        | Not Available |

## SECTION 15 Regulatory information

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

## cobalt is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4  
 Australian Inventory of Industrial Chemicals (AIIC)  
 Chemical Footprint Project - Chemicals of High Concern List  
 FEI Equine Prohibited Substances List - Controlled Medication

FEI Equine Prohibited Substances List (EPSL)  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2A: Probably carcinogenic to humans  
 International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

## nitric acid is found on the following regulatory lists

Australia Hazardous Chemical Information System (HCIS) - Hazardous Chemicals  
 Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 5

Australian Inventory of Industrial Chemicals (AIIC)

## water is found on the following regulatory lists

Australian Inventory of Industrial Chemicals (AIIC)

## National Inventory Status

## Cobalt ICP Standard

| National Inventory                              | Status  |
|---|---|
| Australia - AIIC / Australia Non-Industrial Use | Yes   |
| Canada - DSL                                    | Yes   |
| Canada - NDSL                                   | No (cobalt; nitric acid; water)   |
| China - IECSC                                   | Yes   |
| Europe - EINEC / ELINCS / NLP                   | Yes   |
| Japan - ENCS                                    | No (cobalt)   |
| 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   |
| <b>Legend:</b>                                  | Yes = All CAS declared ingredients are on the inventory<br>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

|                      |            |
|----------------------|------------|
| <b>Revision Date</b> | 11/07/2023 |
| <b>Initial Date</b>  | 11/07/2023 |

## 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  
 AIIC: 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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