

according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended

Creation Date 09-Mar-2004 Revision Date 11-Oct-2023 Revision Number 9

# SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1. Product identifier

Product Description: Cobalt(II) nitrate hexahydrate

Cat No.: 423580000; 423580050; 423581000; 423585000

**Synonyms** Cobaltous nitrate hexahydrate

**CAS No** 10026-22-9

Molecular Formula Co N2 O6 . 6 H2 O

**REACH registration number** 01-2119542530-49 (for the anhydrous form)

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

Recommended Use Laboratory chemicals. Uses advised against No Information available

#### 1.3. Details of the supplier of the safety data sheet

Company

UK entity/business name

Fisher Scientific UK Bishop Meadow Road,

Loughborough, Leicestershire LE11 5RG, United Kingdom

EU entity/business name

Thermo Fisher Scientific

Janssen Pharmaceuticalaan 3a, 2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11 Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99 **CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

## **SECTION 2: HAZARDS IDENTIFICATION**

#### 2.1. Classification of the substance or mixture

CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

**Physical hazards** 

Oxidizing solids Category 2 (H272)

**Health hazards** 

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| Acute oral toxicity                             | Category 4 (H302)                      |
|---|--|
| Acute Inhalation Toxicity - Dusts and Mists     | Category 4 (H332)                      |
| Serious Eye Damage/Eye Irritation               | Category 1 (H318)                      |
| Respiratory Sensitization                       | Category 1 (H334)                      |
| Skin Sensitization                              | Category 1 (H317)                      |
| Germ Cell Mutagenicity                          | Category 2 (H341)                      |
| Reproductive Toxicity                           | Category 1B (H360F)                    |
| Environmental hazards                           |  |
| Acute aquatic toxicity Chronic aquatic toxicity | Category 1 (H400)<br>Category 1 (H410) |
|   | J , ( -,                               |

Full text of Hazard Statements: see section 16

#### 2.2. Label elements



Signal Word

**Danger** 

#### **Hazard Statements**

H272 - May intensify fire; oxidizer

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H341 - Suspected of causing genetic defects

H350i - May cause cancer by inhalation

H360F - May damage fertility

H410 - Very toxic to aquatic life with long lasting effects

H302 + H332 - Harmful if swallowed or if inhaled

#### **Precautionary Statements**

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

## Additional EU labelling

Restricted to professional users

#### 2.3. Other hazards

In accordance with Annex XIII of the REACH Regulation, inorganic substances do not require assessment

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

## **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

#### 3.1. Substances

| Component                  | CAS No     | EC No             | Weight % | CLP Classification - According to<br>GB-CLP Regulations UK SI 2019/720 and<br>UK SI 2020/1567   |
|----------------------------|------------|-------------------|----------|---|
| Cobalt nitrate hexahydrate | 10026-22-9 |                   | >95      | Ox. Sol. 2 (H272) Acute Tox. 4 (H302) Acute Tox. 4 (H332) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Resp. Sens. 1 (H334) Muta. 2 (H341) Carc. 1B (H350i) Repr. 1B (H360F) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) |
| Cobalt(II) nitrate         | 10141-05-6 | EEC No. 233-402-1 | -        | Ox. Sol. 2 (H272) Acute Tox. 4 (H302) Acute Tox. 4 (H332) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Resp. Sens. 1 (H334) Muta. 2 (H341) Carc. 1B (H350i) Repr. 1B (H360F) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) |

| Component                  | Specific concentration limits (SCL's) | M-Factor | Component notes |
|----------------------------|---------------------------------------|----------|-----------------|
| Cobalt nitrate hexahydrate | -                                     | 10       | -               |
| Cobalt(II) nitrate         | Carc. 1B (H350i) :: C>=0.01%          | 10       | -               |

|  | REACH registration number | 01-2119542530-49 (for the anhydrous form) |
|--|---------------------------|---|
|--|---------------------------|---|

Full text of Hazard Statements: see section 16

## **SECTION 4: FIRST AID MEASURES**

## 4.1. Description of first aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is

required.

**Eye Contact**Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In

the case of contact with eyes, rinse immediately with plenty of water and seek medical

advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical

attention is required.

**Ingestion** Do NOT induce vomiting. Call a physician or poison control center immediately.

**Inhalation** Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth

method if victim ingested or inhaled the substance; give artificial respiration with the aid of a

pocket mask equipped with a one-way valve or other proper respiratory medical device.

Immediate medical attention is required.

Self-Protection of the First Aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

#### 4.2. Most important symptoms and effects, both acute and delayed

Causes eye burns. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. Causes severe eye damage. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

#### 4.3. Indication of any immediate medical attention and special treatment needed

**Notes to Physician** 

Treat symptomatically.

## **SECTION 5: FIREFIGHTING MEASURES**

## 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.

## Extinguishing media which must not be used for safety reasons

No information available.

#### 5.2. Special hazards arising from the substance or mixture

Oxidizer: Contact with combustible/organic material may cause fire. Do not allow run-off from fire-fighting to enter drains or water courses. May ignite combustibles (wood paper, oil, clothing, etc.).

#### **Hazardous Combustion Products**

Nitrogen oxides (NOx), Cobalt oxides.

## 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

## **SECTION 6: ACCIDENTAL RELEASE MEASURES**

## 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

## 6.2. Environmental precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment.

#### 6.3. Methods and material for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal.

## 6.4. Reference to other sections

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Refer to protective measures listed in Sections 8 and 13.

## **SECTION 7: HANDLING AND STORAGE**

#### 7.1. Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Keep away from clothing and other combustible materials.

#### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

#### 7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials.

Technical Rules for Hazardous Substances (TRGS) 510 Class 5.1B Storage Class (LGK) (Germany)

#### 7.3. Specific end use(s)

Use in laboratories

## **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

#### 8.1. Control parameters

#### **Exposure limits**

List source(s): UK - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

| Component                  | The United Kingdom                 | European Union | Ireland |
|----------------------------|------------------------------------|----------------|---------|
| Cobalt nitrate hexahydrate | STEL: 0.3 mg/m <sup>3</sup> 15 min |                |         |
|                            | TWA: 0.1 mg/m <sup>3</sup> 8 hr    |                |         |
|                            | Resp. Sens.                        |                |         |
| Cobalt(II) nitrate         | STEL: 0.3 mg/m <sup>3</sup> 15 min |                |         |
|                            | TWA: 0.1 mg/m <sup>3</sup> 8 hr    |                |         |
|                            | Resp. Sens.                        |                |         |

#### **Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

## Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

No information available

## **Predicted No Effect Concentration (PNEC)**

No information available.

#### 8.2. Exposure controls

#### **Engineering Measures**

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

**Eye Protection** Goggles (European standard - EN 166)

Hand Protection Protective gloves

| PVC |
|-----|
|-----|

**Skin and body protection** Long sleeved clothing.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use

appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used

and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits

are exceeded or if irritation or other symptoms are experienced **Recommended Filter type:** Particulates filter conforming to EN 143

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure

limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls Prevent product from entering drains. Do not allow material to contaminate ground water

system. Local authorities should be advised if significant spillages cannot be contained.

## **SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

#### 9.1. Information on basic physical and chemical properties

Physical State Solid

AppearanceRed brownOdorOdorless

Odor Threshold No data available

Melting Point/Range 55 - 56 °C / 131 - 132.8 °F

Softening Point No data available
Boiling Point/Range No information available

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Solid

Solid

Solid

Flammability (liquid) Not applicable

Flammability (solid,gas)

Explosion Limits

No information available

No data available

Flash Point No information available Method - No information available

Autoignition Temperature
Decomposition Temperature
pH

No data available
No data available
No information available

Viscosity Not applicable

Water Solubility 134 g/100ml

Solubility in other solvents No information available

Partition Coefficient (n-octanol/water)

Vapor Pressure No data available

**Density / Specific Gravity** 

Bulk Density
No data available
Vapor Density
Not applicable

Particle characteristics No data available

9.2. Other information

Molecular Formula Co N2 O6 . 6 H2 O

Molecular Weight 291.02 Oxidizing Properties Oxidizer

Evaporation Rate Not applicable - Solid

**SECTION 10: STABILITY AND REACTIVITY** 

10.1. Reactivity

10.2. Chemical stability

Hygroscopic. Oxidizer: Contact with combustible/organic material may cause fire.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Incompatible products. Excess heat. Avoid dust formation. Exposure to moist air or water.

Combustible material.

10.5. Incompatible materials

Strong oxidizing agents. Strong reducing agents. Combustible material.

10.6. Hazardous decomposition products

Nitrogen oxides (NOx). Cobalt oxides.

## **SECTION 11: TOXICOLOGICAL INFORMATION**

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

**Product Information** 

(a) acute toxicity;

Oral Category 4

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**Dermal** No data available Inhalation Category 4

| Component                  | LD50 Oral              | LD50 Dermal | LC50 Inhalation |
|----------------------------|------------------------|-------------|-----------------|
| Cobalt nitrate hexahydrate | LD50 = 691 mg/kg (Rat) | -           | -               |
| Cobalt(II) nitrate         | LD50 = 434 mg/kg (Rat) | -           | -               |

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory Category 1 Skin Category 1

May cause sensitization by skin contact

(e) germ cell mutagenicity; Category 2

Mutagenic effects have occurred in experimental animals

(f) carcinogenicity; No data available

The table below indicates whether each agency has listed any ingredient as a carcinogen

| Component                  | EU           | UK | Germany | IARC     |
|----------------------------|--------------|----|---------|----------|
| Cobalt nitrate hexahydrate |              |    |         | Group 2B |
| Cobalt(II) nitrate         | Carc Cat. 1B |    |         | Group 2B |

(g) reproductive toxicity; Category 1B

**Reproductive Effects** Possible risk of impaired fertility.

No data available (h) STOT-single exposure;

No data available (i) STOT-repeated exposure;

No information available. **Target Organs** 

(j) aspiration hazard; Not applicable

Solid

delayed

Symptoms / effects, both acute and Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling

of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

11.2. Information on other hazards

**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any

known or suspected endocrine disruptors.

## **SECTION 12: ECOLOGICAL INFORMATION**

12.1. Toxicity

**Ecotoxicity effects** The product contains following substances which are hazardous for the environment. Very

toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

| Component                  | Microtox | M-Factor |
|----------------------------|----------|----------|
| Cobalt nitrate hexahydrate |          | 10       |
| Cobalt(II) nitrate         |          | 10       |

12.2. Persistence and degradability Product contains heavy metals. Discharge into the environment must be avoided. Special

pre-treatment is necessary

Persistence based on information available, May persist.

Degradability Not relevant for inorganic substances.

Degradation in sewage Contains substances known to be hazardous to the environment or not degradable in waste

treatment plant water treatment plants.

12.3. Bioaccumulative potential May have some potential to bioaccumulate

**12.4. Mobility in soil**The product is water soluble, and may spread in water systems. Will likely be mobile in the

environment due to its water solubility. Highly mobile in soils

12.5. Results of PBT and vPvB

assessment

In accordance with Annex XIII of the REACH Regulation, inorganic substances do not

require assessment.

12.6. Endocrine disrupting

properties

**Endocrine Disruptor Information** 

This product does not contain any known or suspected endocrine disruptors

12.7. Other adverse effects

Persistent Organic Pollutant Ozone Depletion Potential This product does not contain any known or suspected substance This product does not contain any known or suspected substance

## **SECTION 13: DISPOSAL CONSIDERATIONS**

#### 13.1. Waste treatment methods

Waste from Residues/Unused

Products

Should not be released into the environment. Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in

accordance with local regulations.

**Contaminated Packaging** Dispose of this container to hazardous or special waste collection point.

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but

application specific.

Other Information Do not flush to sewer. Waste codes should be assigned by the user based on the

application for which the product was used. Do not empty into drains. Do not let this

chemical enter the environment.

## **SECTION 14: TRANSPORT INFORMATION**

#### Cobalt(II) nitrate hexahydrate

#### IMDG/IMO

**14.1. UN number** UN1477

**14.2. UN proper shipping name** NITRATES, INORGANIC, N.O.S.

Technical Shipping Name Cobalt (II) nitrate

14.3. Transport hazard class(es) 5.1 14.4. Packing group II

ADR

**14.1. UN number** UN1477

14.2. UN proper shipping name NITRATES, INORGANIC, N.O.S.

Technical Shipping Name Cobalt (II) nitrate

14.3. Transport hazard class(es) 5.1 14.4. Packing group II

<u>IATA</u>

**14.1. UN number** UN1477

14.2. UN proper shipping name NITRATES, INORGANIC, N.O.S.

Technical Shipping Name Cobalt (II) nitrate

14.3. Transport hazard class(es) 5.1 14.4. Packing group II

14.5. Environmental hazards Dangerous for the environment

Product is a marine pollutant according to the criteria set by IMDG/IMO

**14.6. Special precautions for user** No special precautions required.

14.7. Maritime transport in bulk

according to IMO instruments

Not applicable, packaged goods

## **SECTION 15: REGULATORY INFORMATION**

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

#### International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component                  | CAS No     | EINECS    | ELINCS | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|----------------------------|------------|-----------|--------|-----|-------|------|----------|------|------|
| Cobalt nitrate hexahydrate | 10026-22-9 | -         | -      | -   | Х     | X    | -        | X    | X    |
| Cobalt(II) nitrate         | 10141-05-6 | 233-402-1 | -      | -   | Х     | Х    | KE-06102 | Х    | Х    |

| Component                  | CAS No     | TSCA | TSCA Inventory<br>notification -<br>Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|----------------------------|------------|------|---|-----|------|------|-------|-------|
| Cobalt nitrate hexahydrate | 10026-22-9 | -    | -   | -   | -    | X    | X     | Х     |
| Cobalt(II) nitrate         | 10141-05-6 | Х    | ACTIVE  | X   | -    | Х    | Х     | Х     |

Legend: X - Listed '-' - Not Listed KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

#### Authorisation/Restrictions according to EU REACH

| Component | CAS No | REACH (1907/2006) -      | REACH (1907/2006) -       | REACH Regulation (EC    |
|-----------|--------|--------------------------|---------------------------|-------------------------|
| -         |        | Annex XIV - Substances   | Annex XVII - Restrictions | 1907/2006) article 59 - |
|           |        | Subject to Authorization | on Certain Dangerous      | Candidate List of       |

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|                            |            |   | Substances  | Substances of Very High Concern (SVHC)   |
|----------------------------|------------|---|---|--|
| Cobalt nitrate hexahydrate | 10026-22-9 | - | -   | SVHC Candidate list<br>Carcinogenic, Article<br>57a;Toxic for reproduction,<br>Article 57c               |
| Cobalt(II) nitrate         | 10141-05-6 | - | Use restricted. See item 28. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 75. (see link for restriction details) | SVHC Candidate list -<br>233-402-1 - Carcinogenic,<br>Article 57a;Toxic for<br>reproduction, Article 57c |

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

#### **REACH links**

https://echa.europa.eu/authorisation-list https://echa.europa.eu/substances-restricted-under-reach https://echa.europa.eu/candidate-list-table

## Seveso III Directive (2012/18/EC)

| Component                  | CAS No     | Seveso III Directive (2012/18/EC) -<br>Qualifying Quantities for Major Accident<br>Notification | Seveso III Directive (2012/18/EC) -<br>Qualifying Quantities for Safety Report<br>Requirements |
|----------------------------|------------|---|--|
| Cobalt nitrate hexahydrate | 10026-22-9 | Not applicable  | Not applicable   |
| Cobalt(II) nitrate         | 10141-05-6 | Not applicable  | Not applicable   |

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)? Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Take note of Directive 94/33/EC on the protection of young people at work

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

Take note of Dir 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations

#### **National Regulations**

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

WGK Classification See table for values

| Component          | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|--------------------|---------------------------------------|-------------------------|
| Cobalt(II) nitrate | WGK3                                  |                         |

| Component          | France - INRS (Tables of occupational diseases)            |  |
|--------------------|--|--|
| Cobalt(II) nitrate | Tableaux des maladies professionnelles (TMP) - RG 65,RG 70 |  |

## 15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## **SECTION 16: OTHER INFORMATION**

#### Full text of H-Statements referred to under sections 2 and 3

H302 - Harmful if swallowed

H332 - Harmful if inhaled

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H341 - Suspected of causing genetic defects

H350 - May cause cancer

H350i - May cause cancer by inhalation

H360F - May damage fertility

H400 - Very toxic to aquatic life

H410 - Very toxic to aquatic life with long lasting effects

H272 - May intensify fire; oxidizer

#### Legend

**CAS** - Chemical Abstracts Service

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

EINECS/ELINCS - European Inventory of Existing Commercial Chemical DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

Predicted No Effect Concentration (PNEC)

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

ADR - European Agreement Concerning the International Carriage of

Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime

Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from

Ships

ATE - Acute Toxicity Estimate

VOC - (Volatile Organic Compound)

#### Key literature references and sources for data

https://echa.europa.eu/information-on-chemicals

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

## **Training Advice**

Chemical incident response training.

09-Mar-2004 **Creation Date Revision Date** 11-Oct-2023 **Revision Summary** Not applicable.

## This safety data sheet complies with Regulation UK SI 2019/758 and UK SI 2020/1577 as

#### amended.

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#### **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

# **End of Safety Data Sheet**