SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by Commission Regulation (EU) 2020/878

Danafloat™ 123

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1.1	17.04.2024	50001988	Date of first issue: 01.08.2019

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

1.1 Product identifier

Product name Danafloat™ 123

Other means of identification

Product code 50001988

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

Use of the Substance/Mixture : Flotation agents

Recommended restrictions on use : Use as recommended by the label.
Do not use product for anything outside of the above specified uses.

1.3 Details of the supplier of the safety data sheet

Supplier Address

FMC Agricultural Solutions A/S
Thyborønvej 78
DK-7673 Harboøre
Denmark

Telephone: +45 9690 9690
Telefax: +45 9690 9691
E-mail address: SDS-Info@fmc.com .

1.4 Emergency telephone number

For leak, fire, spill or accident emergencies, call:
Denmark: +45-69918573 (CHEMTREC)

Medical emergency:
Denmark: +45 82 12 12 12

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin corrosion, Category 1C H314: Causes severe skin burns and eye damage.

Serious eye damage, Category 1	H318: Causes serious eye damage.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements : H314 Causes severe skin burns and eye damage.

Precautionary statements :

Prevention:

P261 Avoid breathing mist or vapours.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501 Dispose of contents and/or container in accordance with hazardous waste regulations.

Hazardous components which must be listed on the label:

sodium O,O-diethyl dithiophosphate
sodium hydroxide

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
sodium O,O-diethyl dithiophosphate	3338-24-7 222-079-2 01-2119982401-40-0000	Skin Corr. 1C; H314 Eye Dam. 1; H318	>= 49 - < 51
sodium hydroxide	1310-73-2 215-185-5 011-002-00-6	Met. Corr. 1; H290 Skin Corr. 1A; H314 Eye Dam. 1; H318 --- specific concentration limit Skin Corr. 1A; H314 >= 5 % Skin Corr. 1B; H314 2 - < 5 % Skin Irrit. 2; H315 0,5 - < 2 % Eye Irrit. 2; H319 0,5 - < 2 %	>= 2 - < 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Symptoms of poisoning may appear several hours later.
Do not leave the victim unattended.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
Avoid inhalation, ingestion and contact with skin and eyes.
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

If inhaled : Move to fresh air.

Call a physician or poison control centre immediately.
If unconscious, place in recovery position and seek medical advice.

In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Take off all contaminated clothing immediately.
Wash contaminated clothing before re-use.
Wash off immediately with plenty of water for at least 15 minutes.
Get medical attention immediately if irritation develops and persists.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

Risks : Causes severe skin burns and eye damage.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products	:	Fire may produce irritating, corrosive and/or toxic gases.

5.3 Advice for firefighters

Special protective equipment for firefighters	:	Firefighters should wear protective clothing and self-contained breathing apparatus.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Never return spills in original containers for re-use. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene. For disposal considerations see section 13.

6.2 Environmental precautions

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Neutralise with acid. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	In an industrial environment, it is recommended to avoid all personal contact with the product, if possible, by using closed systems with remote system control. The material should be handled by mechanical means as much as possible. Ade-

quate ventilation or local exhaust ventilation is required. The exhaust gases should be filtered or treated otherwise. For personal protection in this situation, see section 8.

Avoid formation of aerosol.
Do not breathe vapours/dust.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Prevent unauthorized access. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

Recommended storage temperature : > 10 °C

Further information on storage stability : No decomposition if stored and applied as directed.
Do not freeze.
Protect from frost.

7.3 Specific end use(s)

Specific use(s) : Flotation agents

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
sodium hydroxide	1310-73-2	L	2 mg/m3	DK OEL

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
sodium O,O-diethyl dithiophosphate	Workers	Inhalation	Long-term systemic effects	29,6 mg/m3
	Workers	Dermal	Long-term systemic effects	8,4 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
sodium O,O-diethyl dithiophosphate	Fresh water	0,261 mg/l
	Intermittent use (freshwater)	2,61 mg/l
	Marine water	0,0261 mg/l

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection
Material : Wear chemical resistant gloves, such as barrier laminate, butyl rubber or nitrile rubber.

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Wear appropriate chemical resistant clothing to prevent skin contact depending on the extent of exposure. During most normal work situations where exposure to the material cannot be avoided for a limited time span, waterproof pants and apron of chemical resistant material or coveralls of polyethylene (PE) will be sufficient. Coveralls of PE must be discarded after use if contaminated. In cases of excessive or prolonged exposure, coveralls of barrier laminate may be required.

Respiratory protection : No personal respiratory protective equipment normally required.

Protective measures : Plan first aid action before beginning work with this product.
Always have on hand a first-aid kit, together with proper instructions.
Ensure that eye flushing systems and safety showers are located close to the working place.
Wear suitable protective equipment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	light brown
Odour	:	Reminding of hydrogen sulphide
Odour Threshold	:	No data available
Melting point/freezing point	:	1 - 3 °C
Initial boiling point and boiling range	:	104 °C
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	does not flash
Auto-ignition temperature	:	not auto-flammable
Decomposition temperature	:	No data available
pH	:	12 - 14
Viscosity		
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Solubility(ies)		
Water solubility	:	Miscible

Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: -0,42 (22 °C)
Vapour pressure	:	No data available
Relative density	:	No data available
Density	:	1,18 - 1,22 g/cm3
Bulk density	:	No data available
Relative vapour density	:	No data available
Particle characteristics		
Particle size	:	No data available
Particle Size Distribution	:	No data available
Shape	:	No data available

9.2 Other information

Explosives	:	Not explosive
Oxidizing properties	:	Non-oxidizing

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	None known.No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : Avoid extreme temperatures
Protect from frost, heat and sunlight.
Heating of the product will produce harmful and irritant vapours.

10.5 Incompatible materials

Materials to avoid : None.

10.6 Hazardous decomposition products

No hazardous decomposition products are known.
See subsection 5.2.

SECTION 11: Toxicological information

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

Acute toxicity

Based on available data, the classification criteria are not met.

Product:

Acute oral toxicity : LD50 Oral (Rat): > 2.000 mg/kg

Acute inhalation toxicity : LC50 (Rat): 1 - 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 Dermal (Rat): > 2.000 mg/kg

Components:

sodium O,O-diethyl dithiophosphate:

Acute oral toxicity : Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : Assessment: The component/mixture is moderately toxic after short term inhalation.

Skin corrosion/irritation

Causes severe skin burns and eye damage.

Product:

Assessment : Causes severe burns.
Method : OECD Test Guideline 404
Result : Severe skin irritation

Remarks : Extremely corrosive and destructive to tissue.

Components:

sodium O,O-diethyl dithiophosphate:

Species	:	Rabbit
Method	:	OECD Test Guideline 404
Result	:	Corrosive after 1 to 4 hours of exposure

sodium hydroxide:

Result	:	Corrosive after 3 minutes or less of exposure

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Assessment	:	Risk of serious damage to eyes.
Result	:	Severe eye irritation
Remarks	:	May cause irreversible eye damage.

Components:

sodium hydroxide:

Result	:	Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Based on available data, the classification criteria are not met.

Product:

Result	:	Substance is not considered to be potential skin sensitiser.
Remarks	:	Not expected to cause skin sensitisation

Components:

sodium hydroxide:

Remarks	:	substance is corrosive

Germ cell mutagenicity

Based on available data, the classification criteria are not met.

Components:

sodium O,O-diethyl dithiophosphate:

Genotoxicity in vitro	:	Test Type: reverse mutation assay Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)

Result: negative
Remarks: Based on data from similar materials

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative
Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative
Remarks: Based on data from similar materials

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

sodium hydroxide:

Germ cell mutagenicity- Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Based on available data, the classification criteria are not met.

Components:

sodium hydroxide:

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

Reproductive toxicity

Based on available data, the classification criteria are not met.

Components:

sodium O,O-diethyl dithiophosphate:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 60, 200, 600 mg/kg/bw/day
General Toxicity - Parent: NOAEL: 200 mg/kg bw/day
General Toxicity F1: NOAEL: 200 mg/kg bw/day
Method: OECD Test Guideline 422
Result: negative
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

sodium hydroxide:

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT - single exposure

Based on available data, the classification criteria are not met.

STOT - repeated exposure

Based on available data, the classification criteria are not met.

Components:

sodium O,O-diethyl dithiophosphate:

Assessment	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

sodium O,O-diethyl dithiophosphate:

Species	:	Rat, male and female
NOAEL	:	200 mg/kg bw/day
LOAEL	:	600 mg/kg bw/day
Application Route	:	Oral
Exposure time	:	28d
Dose	:	0, 60, 200, 600 mg/kg/bw/d
Method	:	OECD Test Guideline 422
Remarks	:	Based on data from similar materials

Aspiration toxicity

Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Experience with human exposure

Components:

sodium hydroxide:

General Information	:	Symptoms: corrosive effects
Inhalation	:	Target Organs: Respiratory Tract Symptoms: corrosive effects
Skin contact	:	Target Organs: Skin Symptoms: corrosive effects

Eye contact : Target Organs: Eyes
Symptoms: corrosive effects

Ingestion : Target Organs: Gastrointestinal tract
Symptoms: corrosive effects

Further information

Product:

Remarks : No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

sodium O,O-diethyl dithiophosphate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 791 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna Straus): > 1.020 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): 261 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Based on data from similar materials

12.2 Persistence and degradability

Components:

sodium O,O-diethyl dithiophosphate:

Biodegradability : Inoculum: activated sludge
Result: Not biodegradable
Biodegradation: 0,4 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Remarks: Based on data from similar materials

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Bioaccumulation is not expected.

Components:

sodium O,O-diethyl dithiophosphate:

Partition coefficient: n-octanol/water : log Pow: -0,42 (22 °C)

12.4 Mobility in soil

Product:

Distribution among environmental compartments : Remarks: Under normal conditions the substance/mixture is of moderate mobility in soil.

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

According to the Waste Framework Directive (2008/98/EC), possibilities for reuse or reprocessing should first be considered. If this is not possible, the material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing.

Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

It is recommended to consider possible ways of disposal in the following order:
1. Reuse or recycling should first be considered. If offered for recycling, containers must be emptied and triply rinsed (or equivalent). Do not discharge rinsing water to sewer systems.
2. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.
3. Delivery of the packaging to a licensed service for disposal of hazardous waste.
4. Disposal in a landfill or burning in open air should only occur as a last resort. For disposal in a landfill, containers should be emptied completely, rinsed and punctured to make them unusable for other purposes. If burned, stay out of smoke.

SECTION 14: Transport information

14.1 UN number or ID number

ADN : UN 1719

ADR : UN 1719

RID : UN 1719

IMDG : UN 1719

IATA : UN 1719

14.2 UN proper shipping name

ADN : CAUSTIC ALKALI LIQUID, N.O.S.
(Sodium hydroxide, sodium O,O-diethyl dithiophosphate)

ADR : CAUSTIC ALKALI LIQUID, N.O.S.
(Sodium hydroxide, sodium O,O-diethyl dithiophosphate)

RID : CAUSTIC ALKALI LIQUID, N.O.S.
(Sodium hydroxide, sodium O,O-diethyl dithiophosphate)

IMDG : CAUSTIC ALKALI LIQUID, N.O.S.
(Sodium hydroxide, sodium O,O-diethyl dithiophosphate)

IATA : Caustic alkali liquid, n.o.s.
(Sodium hydroxide, sodium O,O-diethyl dithiophosphate)

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADN :	8	

ADR : 8

RID : 8

IMDG : 8

IATA : 8

14.4 Packing group

ADN

Packing group	:	III
Classification Code	:	C5
Hazard Identification Number	:	80
Labels	:	8

ADR

Packing group	:	III
Classification Code	:	C5
Hazard Identification Number	:	80
Labels	:	8
Tunnel restriction code	:	(E)

RID

Packing group	:	III
Classification Code	:	C5
Hazard Identification Number	:	80
Labels	:	8

IMDG

Packing group	:	III
Labels	:	8
EmS Code	:	F-A, S-B

IATA (Cargo)

Packing instruction (cargo aircraft)	:	856
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosive

IATA (Passenger)

Packing instruction (passenger aircraft)	:	852
Packing instruction (LQ)	:	Y841
Packing group	:	III
Labels	:	Corrosive

14.5 Environmental hazards

ADN

Environmentally hazardous : no

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 3
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable
Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals	:	Not applicable
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

Other regulations:

Young people under the age of 18 are not allowed to use or be exposed to the product professionally. Young people above the age of 15 are, however, except from this rule if the product is a necessary part of their education.

The components of this product are reported in the following inventories:

TCSI	:	Not in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	On the inventory, or in compliance with the inventory

DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

A chemical safety assessment has been performed. The results are attached.

SECTION 16: Other information

Full text of H-Statements

H290	:	May be corrosive to metals.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.

Full text of other abbreviations

Eye Dam.	:	Serious eye damage
Met. Corr.	:	Corrosive to metals
Skin Corr.	:	Skin corrosion
DK OEL	:	Denmark. Occupational Exposure Limits
DK OEL / L	:	Ceiling

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization;

KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:		**Classification procedure:**
Skin Corr. 1C	H314	Based on product data or assessment
Eye Dam. 1	H318	Based on product data or assessment

Disclaimer
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Prepared by

FMC Corporation

DK / 6N

EXPOSURE SCENARIO FOR COMMUNICATION

Substance Name: CAS No. 3338-24-7 EP1-Na
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0. Qualitative assessment – Additional conditions and measures based on human health classification

The substance is classified as Skin Corrosive Cat. 1C (H314) and Eye Damage Cat. 1 (H318). According to ECHA's Guidance Part E (2016) the long term and acute dermal local effects as well as the long term and acute inhalation local effects and local effects to the eye are associated with a moderate hazard.
Measures described in the following are suggested to ensure that the risk is adequately controlled.

General RMMs and OCs

- Ensure containment as appropriate.
- Minimise number of staff exposed.
- Assumes segregation of the emitting process.
- Ensure effective contaminant extraction.
- Assumes a good standard of general ventilation.
- Assumes a minimisation of manual phases.
- Ensure avoidance of contact with contaminated tools and objects.
- Assumes regular cleaning of equipment and work are.
- Ensure management/supervision in place to check that the RMMs in place are being used correctly and OCs followed.
- Ensure training for staff on good practice.
- Assumes a good standard of personal hygiene.

PPE

- Wear substance/task appropriate gloves. PVC, laminate, butyl rubber or nitrile rubber are appropriate gloves materials.
- Wear skin coverage with appropriate barrier material based on potential for contact with the chemicals. PVC, laminate, butyl rubber or nitrile rubber are appropriate materials.
- Wear substance/task appropriate respirator.
- Wear a face shield (optional).
- Wear chemical goggles.

Additional precautionary statements

- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wash thoroughly after handling.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- IF ON SKIN (or hair): Take of immediately all contaminated clothing. Rinse skin with water or shower.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Wash contaminated clothing before reuse.
- Immediately call a POISON CENTER/doctor/...
- Specific treatment (see reference to supplemental first aid instructions on the label).
- Store locked up.
- Dispose of contents/containers in accordance with local/regional/national/international regulation.

1. ES 1: Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Mining (without offshore industries) (SU 2a)

1.1. Use descriptors

ES name: *Use at industrial site as flotation agent*
Product category: Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20)
Sector of use: Mining (without offshore industries) (SU 2a)

Environment	
1: *Use of reactive processing aid at industrial site (no inclusion into or onto article)*	ERC 6b
Worker	
2: *Storage indoors*	PROC 1
3: *Storage outdoors*	PROC 1
4: *Smelting*	PROC 1
5: *Use in closed batch process indoors*	PROC 3
6: *Use in closed batch process outdoors*	PROC 3
7: *Flotation batch process with exposure possible indoors*	PROC 5
8: *Flotation batch process with exposure possible outdoors*	PROC 5
9: *Transfer of substance indoors*	PROC 8b
10: *Transfer of substance outdoors*	PROC 8b
11: *Laboratory analytical work on flotation process*	PROC 15
12: *Manual maintenance - indoor*	PROC 28
13: *Manual maintenance - outdoor*	PROC 28

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC 6b)

Amount used, frequency and duration of use (or from service life)
Daily amount per site ≤ 3 tonnes/day
Annual amount per site ≤ 864 tonnes/year
Conditions and measures related to external treatment of waste (including article waste)
Dispose of waste product or used containers according to local regulations.
Other conditions affecting environmental exposure
Receiving surface water flow ≥ 1.8E4 m^3/day
Assumed effluent discharge flow from site ≥ 1 m^3/day

1.2.2. Control of worker exposure: Storage indoors (PROC 1)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected

with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

1.2.3. Control of worker exposure: Storage outdoors (PROC 1)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 40 °C

1.2.4. Control of worker exposure: Smelting (PROC 1)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected

with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 1E3 °C

1.2.5. Control of worker exposure: Use in closed batch process indoors (PROC 3)

Product (article) characteristics
Covers concentrations up to 0.01 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

1.2.6. Control of worker exposure: Use in closed batch process outdoors (PROC 3)

Product (article) characteristics
Covers concentrations up to 0.01 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected

with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 40 °C

1.2.7. Control of worker exposure: Flotation batch process with exposure possible indoors (PROC 5)

Product (article) characteristics
Covers concentrations up to 0.01 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

1.2.8. Control of worker exposure: Flotation batch process with exposure possible outdoors (PROC 5)

Product (article) characteristics
Covers concentrations up to 0.01 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 40 °C

1.2.9. Control of worker exposure: Transfer of substance indoors (PROC 8b)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Covers liquids with low to medium viscosity.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Process contained with a loose lid or cover, not airtight.; The enclosure is not opened during the activity.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Effective housekeeping practices (e.g. daily cleaning using appropriate methods, preventive maintenance of machinery, use of protective clothing that will repel spills and reduce personal cloud) in place.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Covers room volume ≥ 100 m^3
Assumes process temperature up to 40 °C
Ensure that distance between the source of emission and the worker is at least 1m.
Covers submerged loading.

1.2.10. Control of worker exposure: Transfer of substance outdoors (PROC 8b)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Covers liquids with low to medium viscosity.
Amount used (or contained in articles), frequency and duration of use/exposure

Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Process contained with a loose lid or cover, not airtight.; The enclosure is not opened during the activity.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Effective housekeeping practices (e.g. daily cleaning using appropriate methods, preventive maintenance of machinery, use of protective clothing that will repel spills and reduce personal cloud) in place.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 40 °C
Ensure that distance between the source of emission and the worker is at least 1m.
Covers the outdoor application where the worker is not located further than 4 meters from the emission source
Covers submerged loading.

1.2.11. Control of worker exposure: Laboratory analytical work on flotation process (PROC 15)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Wear suitable face shield.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Indoor use

Assumes process temperature up to 40 °C

1.2.12. Control of worker exposure: Manual maintenance - indoor (PROC 28)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Covers liquids with low to medium viscosity.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure that the risk is adequately controlled.
Other conditions affecting workers exposure
Covers room volume ≥ 100 m^3
Assumes process temperature up to 40 °C
Covers objects with partially treated surface (i.e. less than 90%).

1.2.13. Control of worker exposure: Manual maintenance - outdoor (PROC 28)

Product (article) characteristics
Covers concentrations up to 50 %
Liquid
Covers liquids with low to medium viscosity.
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Please also refer to section 0. for technical and organisational conditions and measures to ensure that the risk is adequately controlled.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Please also refer to section 0. for conditions and measures related to personal protection and hygiene to ensure

that the risk is adequately controlled.
Other conditions affecting workers exposure
Outdoor use
Assumes process temperature up to 40 °C
Covers objects with partially treated surface (i.e. less than 90%).

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Use of reactive processing aid at industrial site (no inclusion into or onto article) (ERC 6b)

Release route	Release rate	Release estimation method
Water	0 kg/day	Estimated release factor
Air	0 kg/day	Estimated release factor
Soil	0 kg/day	Estimated release factor

Protection target	Exposure estimate	RCR
Fresh water	4.04E-6 mg/L (EUSES 2.1.2)	< 0.01
Marine water	3.9E-7 mg/L (EUSES 2.1.2)	< 0.01
Sewage Treatment Plant	0 mg/L (EUSES 2.1.2)	< 0.01

1.3.2. Worker exposure: Storage indoors (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.01 mg/m³ (TRA Workers 3.0)	< 0.01
Dermal, systemic, long term	1.7E-3 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		< 0.01

1.3.3. Worker exposure: Storage outdoors (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	7E-3 mg/m³ (TRA Workers 3.0)	< 0.01
Dermal, systemic, long term	1.7E-3 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		< 0.01

1.3.4. Worker exposure: Smelting (PROC 1)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.087 mg/m³ (TRA Workers 3.0)	< 0.01
Dermal, systemic, long term	1.7E-3 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		< 0.01

1.3.5. Worker exposure: Use in closed batch process indoors (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.1 mg/m³ (TRA Workers 3.0)	< 0.01
Dermal, systemic, long term	3.45E-3 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		< 0.01

1.3.6. Worker exposure: Use in closed batch process outdoors (PROC 3)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.07 mg/m³ (TRA Workers 3.0)	< 0.01

Route of exposure and type of effects	Exposure estimate	RCR
Dermal, systemic, long term	3.45E-3 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		< 0.01

1.3.7. Worker exposure: Flotation batch process with exposure possible indoors (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	2.5 mg/m³ (TRA Workers 3.0)	0.084
Dermal, systemic, long term	0.069 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		0.093

1.3.8. Worker exposure: Flotation batch process with exposure possible outdoors (PROC 5)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	1.75 mg/m³ (TRA Workers 3.0)	0.059
Dermal, systemic, long term	0.069 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		0.067

1.3.9. Worker exposure: Transfer of substance indoors (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.22 mg/m³ (ART)	< 0.01
Dermal, systemic, long term	0.686 mg/kg bw/day (TRA Workers 3.0)	0.082
Combined, systemic, long term		0.089

1.3.10. Worker exposure: Transfer of substance outdoors (PROC 8b)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	8.3E-3 mg/m³ (ART)	< 0.01
Dermal, systemic, long term	0.686 mg/kg bw/day (TRA Workers 3.0)	0.082
Combined, systemic, long term		0.082

1.3.11. Worker exposure: Laboratory analytical work on flotation process (PROC 15)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	5 mg/m³ (TRA Workers 3.0)	0.169
Dermal, systemic, long term	0.017 mg/kg bw/day (TRA Workers 3.0)	< 0.01
Combined, systemic, long term		0.171

1.3.12. Worker exposure: Manual maintenance - indoor (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	9.9E-3 mg/m³ (ART)	< 0.01
Dermal, systemic, long term	0.686 mg/kg bw/day (ECETOC TRA Workers)	0.082
Combined, systemic, long term		0.082

1.3.13. Worker exposure: Manual maintenance - outdoor (PROC 28)

Route of exposure and type of effects	Exposure estimate	RCR
Inhalation, systemic, long term	0.012 mg/m³ (ART)	< 0.01
Dermal, systemic, long term	0.686 mg/kg bw/day (ECETOC TRA Workers)	0.082
Combined, systemic, long term		0.082

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance:
The conditions of use at downstream users' sites may differ in some way from those described in the exposure scenario. In case of differences between the description of conditions of use in the exposure scenario and your own practice it does not mean that the use is not covered. The risk may still be adequately controlled. The way in which you determine if your conditions are equivalent or lower is termed "scaling". Scaling instructions are given below.

Human health: The workers' exposure is in general assessed using TRA Worker 3.0 as implemented in CHESAR v.3.7. For the workers' inhalation exposure, the modelling tool ART 1.5 is used for PROC 8b and PROC 28.

Environment: Emission to the environment is estimated using EUSES v.2.1.2 as implemented in CHESAR v.3.7. The releases have been estimated using process specific release factors.

Scaling tool:
Please use the above indicated publicly available modelling tools for scaling.

Scaling instructions:
Scaling can be used to check whether your conditions are "equivalent" to the conditions defined in the exposure scenario. If your conditions of use differ slightly from those indicated in the respective exposure scenario you might be able to demonstrate that, under your conditions of use, the exposure levels are equivalent or lower than under the described conditions. It may be possible to demonstrate this by compensating a variation in one particular condition with a variation in other conditions.

Scalable parameters:
In the following, the key determinants which are likely to vary in the actual use situation are given to be used for scaling.

- **Workers:**
  TRA Worker 3.0: duration of activity, percentage of substance in mixture/article, general ventilation, local exhaust ventilation, operating temperature, PPE.

  ART 1.5: duration of activity, percentage of substance in mixture/article, general ventilation, local exhaust ventilation, operating temperature, workroom size, transfer loading type, level of contamination, RPE.
  Remark: ART predicts air concentrations in a worker's personal breathing zone outside of any Respiratory Protection Equipment (RPE). Therefore, the use of RPE has to be considered subsequently.

  Remark regarding RMMs: Effectiveness is the key information related to risk management measures. You can be sure that your risk management measures are covered if their effectiveness is equal to, or higher than, what is specified in the exposure scenario.

- **Environment:**
  daily use amount, annual use amount, number of emission days, release factors.

Further details on scaling are provided in ECHA's Guidance for downstream users v2.1 (October 2014) as well as in ECHA's Practical Guide 13 (June 2012).

Boundaries of scaling:
RCRs not to be exceeded are described in Section 1.3.