



SAFETY DATA SHEET ZINC CHLORIDE SOLUTION

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

1.1. Product identifier

Product name	ZINC CHLORIDE SOLUTION
Product number	10692
Synonyms; trade names	ZINC CHLORIDE 50%

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

Identified uses	Industrial application Pharmaceuticals For further information, see attached Exposure Scenario.
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1.3. Details of the supplier of the safety data sheet

Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	10692

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 STOT SE 3 - H335
Environmental hazards	Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

2.2. Label elements

Hazard pictograms



Signal word	Danger
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Hazard statements	H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H335 May cause respiratory irritation. H410 Very toxic to aquatic life with long lasting effects.
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ZINC CHLORIDE SOLUTION

Precautionary statements

P260 Do not breathe vapour/ spray.
 P273 Avoid release to the environment.
 P301+P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.
 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.
 P310 Immediately call a POISON CENTER/ doctor.
 P391 Collect spillage.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P501 Dispose of contents/ container in accordance with national regulations.

Contains

ZINC CHLORIDE

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ZINC CHLORIDE		30-60%
CAS number: 7646-85-7	EC number: 231-592-0	REACH registration number: 01-2119472431-44-XXXX
M factor (Acute) = 1	M factor (Chronic) = 1	
Classification Acute Tox. 4 - H302 Skin Corr. 1B - H314 Eye Dam. 1 - H318 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410		

The full text for all hazard statements is displayed in Section 16.

Composition comments

The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Remove affected person from source of contamination. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly with water. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Give plenty of water to drink. Get medical attention immediately.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention immediately.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

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

Inhalation	May cause respiratory irritation.
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Ingestion	Harmful if swallowed. May cause burns in mucous membranes, throat, oesophagus and stomach.
Skin contact	Causes severe burns.
Eye contact	Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated.

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

Notes for the doctor	Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products	When heated, vapours/gases hazardous to health may be formed. Hydrogen chloride (HCl).
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5.3. Advice for firefighters

Protective actions during firefighting	Contain and collect extinguishing water.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes. Provide adequate ventilation.
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6.2. Environmental precautions

Environmental precautions	Avoid discharge into water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.
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6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Absorb spillage with inert, damp, non-combustible material. Collect and place in suitable waste disposal containers and seal securely. For waste disposal, see Section 13.
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6.4. Reference to other sections

Reference to other sections	For personal protection, see Section 8. For waste disposal, see Section 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Avoid inhalation of vapours and contact with skin and eyes. Avoid heat, flames and other sources of ignition. Provide adequate ventilation. Wear protective clothing as described in Section 8 of this safety data sheet.
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7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store in tightly-closed, original container in a dry and cool place. Store at temperatures not exceeding 50°C. Protect from moisture.
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ZINC CHLORIDE SOLUTION

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

ZINC CHLORIDE

Long-term exposure limit (8-hour TWA): WEL 1 mg/m³ fume

Short-term exposure limit (15-minute): WEL 2 mg/m³ fume

WEL = Workplace Exposure Limit.

ZINC CHLORIDE (CAS: 7646-85-7)

DNEL

General population - Dermal; Short term systemic effects: 8.3 mg/kg
 General population - Inhalation; Short term systemic effects: 1.3 mg/m³
 General population - Oral; Short term systemic effects: 0.83 mg/kg
 Workers - Dermal; Short term systemic effects: 8.3 mg/kg
 Workers - Inhalation; Short term systemic effects: 1 mg/m³
 Workers - Dermal; Long term systemic effects: 0.83 mg/kg
 Workers - Inhalation; Long term systemic effects: 1.3 - 2.5 mg/m³

PNEC

- Fresh water; 0.0206 mg/l
 - marine water; 0.0061 mg/l
 - Sediment (Freshwater); 117.8 mg/kg
 - Sediment (Marinewater); 56.5 mg/kg
 - Soil; 35.6 mg/kg
 - STP; 0.052 mg/l

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Provide eyewash station and safety shower.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Wear chemical splash goggles. EN 166

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. EN 374

Other skin and body protection

Wear appropriate clothing to prevent any possibility of liquid contact and repeated or prolonged vapour contact.

Hygiene measures

Wash at the end of each work shift and before eating, smoking and using the toilet. Take off immediately all contaminated clothing and wash it before reuse.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Particulate filter, type P2. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

ZINC CHLORIDE SOLUTION

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Odourless.
pH	pH (concentrated solution): 2-3
Melting point	-57C (40%w/w)
Initial boiling point and range	Data lacking.
Flash point	Not applicable.
Upper/lower flammability or explosive limits	Data lacking.
Vapour pressure	Data lacking.
Relative density	1.42-1.96
Solubility(ies)	Soluble in water.
Auto-ignition temperature	Data lacking.
Viscosity	Data lacking.
Explosive properties	Data lacking.
Oxidising properties	Data lacking.

9.2. Other information

Other information	No information required.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable at normal ambient temperatures and when used as recommended.
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10.2. Chemical stability

Stability	Stable under the prescribed storage conditions.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	No information available.
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10.4. Conditions to avoid

Conditions to avoid	Avoid excessive heat for prolonged periods of time.
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10.5. Incompatible materials

Materials to avoid	Strong alkalis. Cyanides.
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10.6. Hazardous decomposition products

Hazardous decomposition products	When heated, vapours/gases hazardous to health may be formed. Hydrogen chloride (HCl).
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

ZINC CHLORIDE SOLUTION

Notes (oral LD₅₀) LD₅₀ 1100-1260 mg/kg, Oral, Rat

ATE oral (mg/kg) 875.0

Skin corrosion/irritation

Animal data Corrosive to skin.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation Data lacking.

Skin sensitisation

Skin sensitisation Data lacking.

Germ cell mutagenicity

Genotoxicity - in vitro Data lacking.

Carcinogenicity

Carcinogenicity Data lacking.

Reproductive toxicity

Reproductive toxicity - fertility Data lacking.

Specific target organ toxicity - single exposure

STOT - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Data lacking.

Aspiration hazard

Aspiration hazard Data lacking.

Inhalation May cause respiratory irritation.

Ingestion Harmful if swallowed. May cause burns in mucous membranes, throat, oesophagus and stomach.

Skin contact Causes severe burns.

Eye contact Causes serious eye damage.

Toxicological information on ingredients.

ZINC CHLORIDE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 350.0

Species Rat

ATE oral (mg/kg) 350.0

Acute toxicity - dermal

Notes (dermal LD₅₀) No information available.

Skin corrosion/irritation

ZINC CHLORIDE SOLUTION

Animal data Corrosive.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

Germ cell mutagenicity

Genotoxicity - in vitro No information available.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility No information available.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No information available.

Aspiration hazard

Aspiration hazard No information available.

Inhalation Dust may irritate the respiratory system.

Ingestion Harmful if swallowed. May cause burns in mucous membranes, throat, oesophagus and stomach.

Skin contact Causes severe burns.

Eye contact Causes serious eye damage.

SECTION 12: Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Ecological information on ingredients.

ZINC CHLORIDE

Ecotoxicity Very toxic to aquatic life with long lasting effects.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: 0.1-0.28 mg/l, Zinc., Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 72 hours: 0.28 mg/l, Zinc., Selenastrum capricornutum

ZINC CHLORIDE SOLUTION

Ecological information on ingredients.

ZINC CHLORIDE

Acute aquatic toxicity

LE(C) ₅₀	0.1 < L(E)C ₅₀ ≤ 1
M factor (Acute)	1
Acute toxicity - fish	LC ₅₀ , 96 hours: 0.4-2.2 mg/l, Cyprinus carpio (Common carp)
Acute toxicity - aquatic invertebrates	EC ₅₀ , 48 hours: 0.2 mg/l, Daphnia magna

Chronic aquatic toxicity

M factor (Chronic)	1
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12.2. Persistence and degradability

Persistence and degradability There are no data on the degradability of this product.

Ecological information on ingredients.

ZINC CHLORIDE

Persistence and degradability	The product is biodegradable.
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12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Ecological information on ingredients.

ZINC CHLORIDE

Bioaccumulative potential	No potential for bioaccumulation.
Partition coefficient	No information available.

12.4. Mobility in soil

Mobility The product is soluble in water.

Ecological information on ingredients.

ZINC CHLORIDE

Mobility	The product is soluble in water.
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12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

ZINC CHLORIDE

Results of PBT and vPvB assessment	This product does not contain any substances classified as PBT or vPvB.
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12.6. Other adverse effects

Other adverse effects Not determined.

ZINC CHLORIDE SOLUTION

Ecological information on ingredients.

ZINC CHLORIDE

Other adverse effects No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information	Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.
Disposal methods	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID)	1840
UN No. (IMDG)	1840
UN No. (ICAO)	1840
UN No. (ADN)	1840

14.2. UN proper shipping name

Proper shipping name (ADR/RID)	ZINC CHLORIDE SOLUTION
Proper shipping name (IMDG)	ZINC CHLORIDE SOLUTION
Proper shipping name (ICAO)	ZINC CHLORIDE SOLUTION
Proper shipping name (ADN)	ZINC CHLORIDE SOLUTION

14.3. Transport hazard class(es)

ADR/RID class	8
ADR/RID classification code	C1
ADR/RID label	8
IMDG class	8
ICAO class/division	8
ADN class	8

Transport labels



14.4. Packing group

ADR/RID packing group	III
IMDG packing group	III
ICAO packing group	III
ADN packing group	III

14.5. Environmental hazards

ZINC CHLORIDE SOLUTION

Environmentally hazardous substance/marine pollutant



14.6. Special precautions for user

EmS	F-A, S-B
ADR transport category	3
Emergency Action Code	2X
Hazard Identification Number (ADR/RID)	80
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information required.

SECTION 15: Regulatory information

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

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 453/2010 of 20 May 2010. This product may impact SEVESO storage regulations.
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15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

ZINC CHLORIDE SOLUTION

Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 CAS: Chemical Abstracts Service.
 DNEL: Derived No Effect Level.
 IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.
 EL50: Exposure Limit 50
 hPa: Hectopascal
 LL50: Lethal Loading fifty
 OECD: Organisation for Economic Co-operation and Development
 POW: Octanol-water partition coefficient
 SCBA: self-contained breathing apparatus
 STP: Sewage Treatment Plant
 VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

10/03/2021

Version number

3.000

Supersedes date

13/07/2018

SDS number

10692

SDS status

Approved.

ZINC CHLORIDE SOLUTION

Hazard statements in full

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Signature

K Winter



Exposure scenario

Industrial manufacture of Zinc Chloride

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial manufacture of Zinc Chloride
Product category	PC19 Intermediate. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of the substance
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Worker

Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC26 Handling of solid inorganic substances at ambient temperature
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Industrial manufacture of Zinc Chloride

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 12500 tonnes

Frequency and duration of use

Continuous.

Risk management measures

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.
Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water Provide onsite wastewater removal efficiency of 90%.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, low dustiness

Concentration details Covers concentrations up to 100 %.

Amounts used

Daily amount per site: 96 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Industrial manufacture of Zinc Chloride

Assessment method	Workplace measurements
Environmental exposure	Fresh water: Exposure 0.0036 mg/l, PNEC 0.0206 mg/l, RCR 0.175 freshwater sediment: Exposure 70 mg/kg, PNEC 117.8 mg/kg, RCR 0.59 The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method	Workplace measurements
Exposure	Worker - inhalation, short-term - systemic: Exposure 0.2 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.2 Worker - dermal, short-term - systemic: Exposure 0.96 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.12 The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial use of Zinc Chloride in Formulation

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial use of Zinc Chloride in Formulation
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging
<u>Environment</u>	
Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture
<u>Worker</u>	
Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature

Industrial use of Zinc Chloride in Formulation

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 5000 tonnes

Frequency and duration of use

Continuous.

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day (Default)

Risk management measures

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.
Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water Provide onsite wastewater removal efficiency of 90%.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Liquid

Concentration details Covers concentrations up to 100 %.

Amounts used

Daily amount per site: 14 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Industrial use of Zinc Chloride in Formulation

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method Workplace measurements

Environmental exposure Fresh water: Exposure 0.0034 mg/l, PNEC 0.0206 mg/l, RCR 0.165
freshwater sediment: Exposure 45 mg/kg, PNEC 117.8 mg/kg, RCR 0.38

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method Workplace measurements

Exposure Worker - inhalation, short-term - systemic: Exposure 0.2 mg/m³, DNEL 1 mg/m³, RCR 0.2
Worker - dermal, short-term - systemic: Exposure 0.96 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.12

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial use in manufacturing other inorganic or organic zinc substances

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial use in manufacturing other inorganic or organic zinc substances
Product category	PC7 Base metals and alloys. PC14 Metal surface treatment products PC19 Intermediate. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals. PC24 Lubricants, greases and release products. PC29 Pharmaceuticals PC39 Cosmetics, personal care.
Article category	AC2 Machinery, mechanical appliances, electrical/electronic articles AC7 Metal articles AC12-1 Constructional articles and building material for indoor use: wall construction material, ceramic, metal, plastic and wood construction material, insulating material. AC12-2 Constructional articles and building material for outdoor use: wall construction material, road surface material, ceramic, metal, plastic and wood construction material, insulating material.
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals SU10 Formulation [mixing] of preparations and/or re-packaging SU14 Manufacture of basic metals, including alloys SU15 Manufacture of fabricated metal products, except machinery and equipment SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Environment

Industrial use in manufacturing other inorganic or organic zinc substances

Environmental release category	ERC1 Manufacture of the substance
	ERC2 Formulation into mixture
	ERC5 Use at industrial site leading to inclusion into/onto article
	ERC6a Use of intermediate

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
	PROC5 Mixing or blending in batch processes
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
	PROC13 Treatment of articles by dipping and pouring.
	PROC15 Use as laboratory reagent.
	PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
	PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature
	PROC23 Open processing and transfer operations at substantially elevated temperature
	PROC26 Handling of solid inorganic substances at ambient temperature

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details	Covers concentrations up to 100 %.
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Amounts used

Annual amount per site: 75 tonnes

Frequency and duration of use

Continuous.

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m ³ /day (Default)
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Risk management measures

Technical measures	Handle substance within a predominantly closed system provided with extract ventilation.
	Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Filtration. Wet scrubber for dust elimination of waste gases.
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Water	Provide onsite wastewater removal efficiency of 90%.
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Conditions and measures related to external treatment of waste for disposal

Waste treatment	External treatment and disposal of waste should comply with applicable local and/or national regulations.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Solid , or: Liquid
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Industrial use in manufacturing other inorganic or organic zinc substances

Concentration details Covers concentrations up to 100 %.

Amounts used

Daily amount per site: 25 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method Workplace measurements

Environmental exposure Fresh water: Exposure 0.0037 mg/l, PNEC 0.0206 mg/l, RCR 0.18
freshwater sediment: Exposure 42 mg/kg, PNEC 117.8 mg/kg, RCR 0.39

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method Workplace measurements

Exposure Worker - inhalation, short-term - systemic: Exposure 0.2 mg/m³, DNEL 1 mg/m³, RCR 0.2
Worker - dermal, short-term - systemic: Exposure 0.664 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.08

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Industrial use in manufacturing other inorganic or organic zinc substances

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial use as a laboratory reagent

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial use as a laboratory reagent
Product category	PC19 Intermediate. PC21 Laboratory chemicals. PC28 Perfumes, fragrances. PC39 Cosmetics, personal care.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging SU22 Professional uses SU24 Scientific research and development

Environment

Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6a Use of intermediate ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
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Worker

Industrial use as a laboratory reagent

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Covers concentrations up to 100 %.

Amounts used

SU3 Industrial uses
Annual amount per site: 5 tonnes
SU22 Professional uses
Annual amount per site: 0.5 tonnes

Frequency and duration of use

Continuous.

Other given operational conditions affecting environmental exposure

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.0000063

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day (Default)

Risk management measures

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.
Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water Provide onsite wastewater removal efficiency of 90%.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Liquid

Concentration details Covers concentrations up to 100 %.

Amounts used

Industrial use as a laboratory reagent

SU3 Industrial uses
Annual amount per site: 5 tonnes
SU22 Professional uses
Annual amount per site: 0.5 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable working clothes.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method Workplace measurements

Environmental exposure SU3 Industrial uses
Fresh water: Exposure 0.0034 mg/l, PNEC 0.0206 mg/l, RCR 0.17
freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39
SU22 Professional uses
Fresh water: Exposure 0.0047 mg/l, PNEC 0.0206 mg/l, RCR 0.23
freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method Workplace measurements

Exposure Worker - inhalation, short-term - systemic: Exposure 0.023 mg/m³, DNEL 1 mg/m³, RCR 0.023
Worker - dermal, short-term - systemic: Exposure 0.664 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.004

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Industrial use as a laboratory reagent

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial use as component in manufacture of solid blends and matrices

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial use as component in manufacture of solid blends and matrices
Product category	PC1 Adhesives, sealants. PC8 Biocidal products PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints. PC14 Metal surface treatment products PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC19 Intermediate. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals. PC26 Paper and board treatment products PC28 Perfumes, fragrances. PC29 Pharmaceuticals PC32 Polymer preparations and compounds. PC35 Washing and cleaning products PC37 Water treatment chemicals. PC38 Welding and soldering products, flux products
Article category	AC2 Machinery, mechanical appliances, electrical/electronic articles AC3 Electrical batteries and accumulators AC4 Stone, plaster, cement, glass and ceramic articles
Main sector	SU3 Industrial uses

Industrial use as component in manufacture of solid blends and matrices

Sector of use	SU1 Agriculture, forestry, fishery
	SU4 Manufacture of food products
	SU5 Manufacture of textiles, leather, fur
	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
	SU9 Manufacture of fine chemicals
	SU10 Formulation [mixing] of preparations and/or re-packaging
	SU11 Manufacture of rubber products
	SU12 Manufacture of plastics products, including compounding and conversion
	SU13 Manufacture of other non-metallic mineral products
	SU14 Manufacture of basic metals, including alloys
	SU15 Manufacture of fabricated metal products, except machinery and equipment
	SU16 Manufacture of computer, electronic and optical products, electrical equipment
	SU18 Manufacture of furniture
	SU19 Building and construction work
	SU20 Health services

Environment

Environmental release category	ERC1 Manufacture of the substance
	ERC2 Formulation into mixture
	ERC5 Use at industrial site leading to inclusion into/onto article
	ERC6a Use of intermediate

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
	PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
	PROC4 Chemical production where opportunity for exposure arises
	PROC5 Mixing or blending in batch processes
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
	PROC13 Treatment of articles by dipping and pouring.
	PROC14 Tableting, compression, extrusion, pelletisation, granulation
	PROC15 Use as laboratory reagent.
	PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature
	PROC25 Other hot work operations with metals
	PROC26 Handling of solid inorganic substances at ambient temperature

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details	Concentration of substance in product: 100%
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Amounts used

Annual amount per site: 5000 tonnes

Frequency and duration of use

Continuous.

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m³/day (Default)
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Industrial use as component in manufacture of solid blends and matrices

Risk management measures

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.
Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water Provide onsite wastewater removal efficiency of 90%.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Liquid

Concentration details Covers concentrations up to 100 %.

Amounts used

Daily amount per site: 15 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method Workplace measurements

Environmental exposure Fresh water: Exposure 0.0034 mg/l, PNEC 0.0206 mg/l, RCR 0.16
freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39

Industrial use as component in manufacture of solid blends and matrices

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method Workplace measurements

Exposure Worker - inhalation, short-term - systemic: Exposure 0.2 mg/m³, DNEL 1 mg/m³, RCR 0.2
Worker - dermal, short-term - systemic: Exposure 0.664 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.08

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices
Product category	PC4 Anti-freeze and de-icing products. PC8 Biocidal products PC12 Lawn and garden preparations (- fertilizers). PC23 Leather treatment products PC24 Lubricants, greases and release products. PC25 Metal working fluids. PC28 Perfumes, fragrances. PC29 Pharmaceuticals PC31 Polishes and wax blends. PC32 Polymer preparations and compounds. PC33 Semiconductor. PC34 Textile dyes and impregnating products PC35 Washing and cleaning products PC37 Water treatment chemicals. PC38 Welding and soldering products, flux products PC39 Cosmetics, personal care. PC40 Extraction agents.

Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices

Article category

AC1 Vehicles
 AC2 Machinery, mechanical appliances, electrical/electronic articles
 AC3 Electrical batteries and accumulators
 AC5 Fabrics, textiles and apparel
 AC6 Leather articles
 AC7 Metal articles
 AC10 Rubber articles
 AC11 Wood articles
 AC13 Plastic articles

Main sector

SU3 Industrial uses

Sector of use

SU1 Agriculture, forestry, fishery
 SU4 Manufacture of food products
 SU5 Manufacture of textiles, leather, fur
 SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
 SU9 Manufacture of fine chemicals
 SU10 Formulation [mixing] of preparations and/or re-packaging
 SU11 Manufacture of rubber products
 SU12 Manufacture of plastics products, including compounding and conversion
 SU13 Manufacture of other non-metallic mineral products
 SU14 Manufacture of basic metals, including alloys
 SU15 Manufacture of fabricated metal products, except machinery and equipment
 SU16 Manufacture of computer, electronic and optical products, electrical equipment
 SU18 Manufacture of furniture
 SU19 Building and construction work
 SU20 Health services

Environment

Environmental release category

ERC1 Manufacture of the substance
 ERC2 Formulation into mixture
 ERC3 Formulation into solid matrix
 ERC5 Use at industrial site leading to inclusion into/onto article
 ERC6a Use of intermediate
 ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
 ERC6d Use of reactive process regulators in polymerisation processes at industrial site (inclusion or not into/onto article)
 ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
 ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
 ERC8c Widespread use leading to inclusion into/onto article (indoor)
 ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
 ERC8f Widespread use leading to inclusion into/onto article (outdoor)
 ERC9a Widespread use of functional fluid (indoor)
 ERC9b Widespread use of functional fluid (outdoor)
 ERC10a Widespread use of articles with low release (outdoor)
 ERC10b Widespread use of articles with high or intended release (outdoor)
 ERC11a Widespread use of articles with low release (indoor)

Worker

Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC6 Calendering operations. PROC7 Industrial spraying PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC19 Manual activities involving hand contact PROC20 Use of functional fluids in small devices PROC21 Low energy manipulation and handling of substances bound in/on materials or articles PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles PROC25 Other hot work operations with metals
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Concentration details Covers concentrations up to 100 %.

Amounts used

Annual amount per site: 5000 tonnes

Frequency and duration of use

Continuous.

Environmental factors not influenced by risk management measures

Dilution Receiving surface water flow: 18000 m³/day (Default)

Risk management measures

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.
Bund storage facilities to prevent soil and water pollution in the event of spillage.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water Provide onsite wastewater removal efficiency of 90%.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices

Physical state	Solid , or: Liquid
Concentration details	Covers concentrations up to 100 %.

Amounts used

Daily amount per site: 20 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method	Workplace measurements
Environmental exposure	Fresh water: Exposure 0.0034 mg/l, PNEC 0.0206 mg/l, RCR 0.16 freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39 The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method	Workplace measurements
Exposure	Worker - inhalation, short-term - systemic: Exposure 0.2 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.2 Worker - dermal, short-term - systemic: Exposure 0.664 mg/kg/day, DNEL 8.3 mg/kg/day, RCR 0.08

Industrial use as component in manufacture of dispersions, pastes or other viscous or polymerized matrices

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride
Product category	PC1 Adhesives, sealants. PC8 Biocidal products PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints. PC14 Metal surface treatment products PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals. PC23 Leather treatment products PC25 Metal working fluids. PC29 Pharmaceuticals PC34 Textile dyes and impregnating products PC35 Washing and cleaning products PC39 Cosmetics, personal care.
Article category	AC1 Vehicles AC2 Machinery, mechanical appliances, electrical/electronic articles AC3 Electrical batteries and accumulators AC5 Fabrics, textiles and apparel AC6 Leather articles AC7 Metal articles
Main sector	SU3 Industrial uses SU22 Professional uses

Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride

Sector of use	SU5 Manufacture of textiles, leather, fur
	SU6b Manufacture of pulp, paper and paper products
	SU9 Manufacture of fine chemicals
	SU10 Formulation [mixing] of preparations and/or re-packaging
	SU16 Manufacture of computer, electronic and optical products, electrical equipment
	SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
	SU18 Manufacture of furniture
	SU20 Health services

Environment

Environmental release category	ERC3 Formulation into solid matrix
	ERC5 Use at industrial site leading to inclusion into/onto article
	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
	ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
	ERC10a Widespread use of articles with low release (outdoor)
	ERC11a Widespread use of articles with low release (indoor)

Worker

Process category	PROC4 Chemical production where opportunity for exposure arises
	PROC5 Mixing or blending in batch processes
	PROC6 Calendering operations.
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
	PROC10 Roller application or brushing
	PROC11 Non industrial spraying
	PROC13 Treatment of articles by dipping and pouring.
	PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid
Concentration details	Covers concentrations up to 25 %.

Amounts used

Annual amount per site: 5000 tonnes

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0.0003
Emission factor - water	Release fraction to wastewater from wide dispersive use: 0.0002

Environmental factors not influenced by risk management measures

Dilution	Receiving surface water flow: 18000 m ³ /day (Default)
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Risk management measures

Good practice	Carefully handle the substance to minimise releases.
Technical measures	Handle substance within a predominantly closed system provided with extract ventilation.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Filtration. Wet scrubber for dust elimination of waste gases.
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Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride

Water No discharge of substance into waste water.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 25 %.

Amounts used

Daily amount per site: 1.5 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Assessment method Workplace measurements

Environmental exposure Fresh water: Exposure 0.0039 mg/l, PNEC 0.0206 mg/l, RCR 0.19
freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39

The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Process category	PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC6 Calendering operations. PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.
Assessment method	MEASE
Specific conditions	Indoor.
Exposure	Worker - inhalation: Exposure 0.675 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.675 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 2)

Process category	PROC11 Non industrial spraying PROC19 Manual activities involving hand contact
Assessment method	MEASE
Specific conditions	Indoor. Use respiratory equipment with particle filter, type P1.
Exposure	Worker - inhalation: Exposure 0.75 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.75 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 2)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 3)

Process category	PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC6 Calendering operations. PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC19 Manual activities involving hand contact
Assessment method	MEASE
Specific conditions	Outdoor. Use respiratory equipment with particle filter, type P1.

Industrial and professional use of solid substrates containing less than 25% of Zinc Chloride

Exposure Worker - inhalation: Exposure 0.75 mg/m³, DNEL 1 mg/m³, RCR 0.75
Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 3)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 4)

Process category PROC11 Non industrial spraying
Assessment method MEASE
Specific conditions Outdoor. Use respiratory equipment with particle filter, type P1.
Exposure Worker - inhalation: Exposure 0.6 mg/m³, DNEL 1 mg/m³, RCR 0.6
Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 4)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.



Exposure scenario

Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride

Identification

Product name	Zinc Chloride
REACH registration number	01-2119472431-44-XXXX
CAS number	7646-85-7
EC number	231-592-0
EU index number	030-003-00-2
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride
Product category	PC1 Adhesives, sealants. PC4 Anti-freeze and de-icing products. PC8 Biocidal products PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC9c Finger paints. PC14 Metal surface treatment products PC19 Intermediate. PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents PC21 Laboratory chemicals. PC24 Lubricants, greases and release products. PC25 Metal working fluids. PC28 Perfumes, fragrances. PC29 Pharmaceuticals PC31 Polishes and wax blends. PC32 Polymer preparations and compounds. PC35 Washing and cleaning products PC39 Cosmetics, personal care.
Article category	AC1 Vehicles AC2 Machinery, mechanical appliances, electrical/electronic articles AC7 Metal articles AC11 Wood articles

Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride

Main sector	SU3 Industrial uses SU22 Professional uses
Sector of use	SU5 Manufacture of textiles, leather, fur SU6b Manufacture of pulp, paper and paper products SU9 Manufacture of fine chemicals SU11 Manufacture of rubber products SU12 Manufacture of plastics products, including compounding and conversion SU13 Manufacture of other non-metallic mineral products SU15 Manufacture of fabricated metal products, except machinery and equipment SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18 Manufacture of furniture SU19 Building and construction work SU20 Health services

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC10a Widespread use of articles with low release (outdoor)
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Worker

Process category	PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC17 Lubrication at high energy conditions in metal working operations PROC19 Manual activities involving hand contact PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid
Concentration details	Covers concentrations up to 25 %.

Amounts used

Annual amount per site: 5000 tonnes

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0.0003
Emission factor - water	Release fraction to wastewater from wide dispersive use: 0.0002

Environmental factors not influenced by risk management measures

Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride

Dilution Receiving surface water flow: 18000 m³/day (Default)

Risk management measures

Good practice Carefully handle the substance to minimise releases.

Technical measures Handle substance within a predominantly closed system provided with extract ventilation.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Filtration. Wet scrubber for dust elimination of waste gases.

Water No discharge of substance into waste water.

Conditions and measures related to external treatment of waste for disposal

Waste treatment External treatment and disposal of waste should comply with applicable local and/or national regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 25 %.

Amounts used

Daily amount per site: 1.5 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures. Ensure control measures are regularly inspected and maintained. Regular cleaning of equipment.

Risk management measures

Wear suitable gloves (tested to EN374), coverall and eye protection.
Full-/half-/quarter-face masks (DIN EN 136/140)
with filter for particulates: P1.

3. Exposure estimation (Environment 1)

Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride

Assessment method	Workplace measurements
Environmental exposure	Fresh water: Exposure 0.0039 mg/l, PNEC 0.0206 mg/l, RCR 0.19 freshwater sediment: Exposure 41 mg/kg, PNEC 117.8 mg/kg, RCR 0.39 The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC17 Lubrication at high energy conditions in metal working operations PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
Assessment method	MEASE
Specific conditions	Indoor.
Exposure	Worker - inhalation: Exposure 0.675 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.675 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 2)

Process category	PROC7 Industrial spraying PROC11 Non industrial spraying
Assessment method	MEASE
Specific conditions	Indoor. Use respiratory equipment with particle filter, type P1.
Exposure	Worker - inhalation: Exposure 0.7 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.7 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 2)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 3)

Industrial and professional use of dispersions, pastes and polymerised substrates containing less than 25% of Zinc Chloride

Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
	PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
	PROC10 Roller application or brushing
	PROC13 Treatment of articles by dipping and pouring.
	PROC14 Tableting, compression, extrusion, pelletisation, granulation
	PROC17 Lubrication at high energy conditions in metal working operations
	PROC21 Low energy manipulation and handling of substances bound in/on materials or articles
	PROC11 Non industrial spraying
Assessment method	MEASE
Specific conditions	Outdoor. PROC11 Non industrial spraying Use respiratory equipment with particle filter, type P1.
Exposure	Worker - inhalation: Exposure 0.6 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.6 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 3)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

3. Exposure estimation (Health 4)

Process category	PROC19 Manual activities involving hand contact
Assessment method	MEASE
Specific conditions	Indoor. Use respiratory equipment with particle filter, type P1.
Exposure	Worker - inhalation: Exposure 0.3 mg/m ³ , DNEL 1 mg/m ³ , RCR 0.3 Worst case assumption The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 4)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.