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

1.1 Product identifier

Zinc chloride liquid

Registration number	01-2119472431-44-0001
IUPAC	Zinc chloride
EU-INDEX	030-003-00-2
EINECS/ELINCS	231-592-0
CAS	7646-85-7

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

1.2.1 Relevant uses

Raw material for pharmaceutical industry
Usage only in accordance with the identified usages as stipulated in the CSR/CSA.

1.2.2 Uses advised against

None known.

1.3 Details of the supplier of the safety data sheet

Company

S.A. LIPMES
Creu Guixera s/n
08243 Manresa (Barcelona) / SPAIN
Phone +34 938770447
Fax +34 938741160
E-mail lipmes@lipmes.com

Address enquiries to

Technical information	lipmes@lipmes.com
Safety Data Sheet	sdb@chemiebuero.de

1.4 Emergency telephone number

Advisory body	+49 (0)89-19240 (24h) (English)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture [REGULATION (GB) CLP]

Acute Tox. 4: H302 Harmful if swallowed.
Skin Corr. 1B: H314 Causes severe skin burns and eye damage.
Eye Dam. 1: H318 Causes serious eye damage.
STOT SE 3: H335 May cause respiratory irritation.
Aquatic Acute 1: H400 Very toxic to aquatic life.
Aquatic Chronic 1: H410 Very toxic to aquatic life with long lasting effects.

2.2 Label elements

The product is required to be labelled in accordance with regulation CLP.

Hazard pictograms

Signal word DANGER

Contains: Zinc chloride EU-INDEX 030-003-00-2

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.

Precautionary statements
P260 Do not breathe spray.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P273 Avoid release to the environment.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/national regulation.

2.3 Other hazards

Other hazards No particular hazards known.

SECTION 3: Composition / Information on ingredients

3.1 Substances

The product is a substance.

Range [%]	Substance
> 25	Zinc chloride
	CAS: 7646-85-7, EINECS/ELINCS: 231-592-0, EU-INDEX: 030-003-00-2, Reg-No.: 01-2119472431-44-XXXX
	GHS/CLP: Acute Tox. 4: H302 - Skin Corr. 1B: H314 - Aquatic Acute 1: H400 - Aquatic Chronic 1: H410, M-Factor (acute): 1, M-Factor (chronic): 1
	SCL [%]: >= 5: STOT SE 3: H335

Comment on component parts
Substances of Very High Concern - SVHC: substances are not contained or are below 0.1%.
For full text of H-statements: see SECTION 16.

3.2 Mixtures

not applicable

SECTION 4: First aid measures

4.1 Description of first aid measures

General information Take off contaminated clothing and wash before reuse.

Inhalation
Consult a doctor immediately.
Ensure supply of fresh air.
In case of respiratory arrest induce breathing with a respiratory device. Seek medical advice.

Skin contact
Immediate medical treatment necessary, as untreated burns can result in slow-healing wounds.
In case of contact with skin wash off immediately with plenty of water.

Eye contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Shield unaffected eye.
Consult a doctor immediately.

Ingestion
Consult a doctor immediately.
Do not induce vomiting.
Rinse out mouth and give plenty of water to drink.

4.2 Most important symptoms and effects, both acute and delayed

No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.
Forward this sheet to your doctor.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Product itself is non-combustible. Fire extinguishing method of surrounding areas must be considered.

Extinguishing media that must not be used

Full water jet.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride (HCl).

5.3 Advice for firefighters

Wear full protective suit.
Use self-contained breathing apparatus.

Fire residues and contaminated firefighting water must be disposed of in accordance within the local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment.

6.2 Environmental precautions

Prevent spread over a wide area (e.g. by containment or oil barriers).
Do not discharge into the drains/surface waters/groundwater.

6.3 Methods and material for containment and cleaning up

Pick up with absorbent material (e.g. sand, sawdust, universal absorbent, diatomaceous earth).
Dispose of absorbed material in accordance within the regulations.

6.4 Reference to other sections

See SECTION 8+13

SECTION 7: Handling and storage

7.1 Precautions for safe handling

No special measures necessary if used correctly.

Do not eat, drink or smoke when using this product.
Clean skin thoroughly after work, apply skin cream.
Use barrier skin cream.
Contaminated work clothing should not be allowed out of the workplace.
Take off contaminated clothing and wash before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Provide acid-resistant floor.

Do not store with alkalies.

Keep container in a well-ventilated place.
Keep container tightly closed.

7.3 Specific end use(s)

Usage only in accordance with the identified usages as stipulated in the CSR/CSA.
See product use, SECTION 1.2

SECTION 8: Exposure controls / personal protection

8.1 Control parameters

Ingredients with occupational exposure limits to be monitored (GB)

Substance
Zinc chloride
CAS: 7646-85-7, EINECS/ELINCS: 231-592-0, EU-INDEX: 030-003-00-2, Reg-No.: 01-2119472431-44-XXXX
Long-term exposure: 1 mg/m³, fume
Short-term exposure (15-minute): 2 mg/m³

DNEL

Substance
Zinc chloride, CAS: 7646-85-7
Industrial, inhalative, Long-term - systemic effects, 1 mg/m³ (AF=1)
Industrial, dermal, Long-term - systemic effects, 8.3 mg/kg bw/d (AF=1)
general population, inhalative, Long-term - systemic effects, 1.25 mg/m³ (AF=1)
general population, dermal, Long-term - systemic effects, 8.3 mg/kg bw/d (AF=1)
general population, oral, Long-term - systemic effects, 0.83 mg/kg bw/d (AF=1)

PNEC

Substance
Zinc chloride, CAS: 7646-85-7
sewage treatment plants (STP), 100 µg/l (AF=1)
soil, 35.6 mg/kg dw (AF=1)
sediment (seawater), 56.5 mg/kg dw (AF=1)
sediment (freshwater), 117.8 mg/kg dw (AF=1)
seawater, 6.1 µg/L (AF=1)
freshwater, 20.6 µg/L (AF=1)

8.2 Exposure controls

Additional advice on system design	Ensure adequate ventilation on workstation. Generic Exposure Scenarios only in accordance with the identified usages as stipulated in the CSR/CSA. Measurement methods for taking workplace measurements must meet the performance requirements of DIN EN 482. For example, recommendations are given in the IFA's list of hazardous substances.
Eye protection	Tightly fitting goggles. (EN 166:2001)
Hand protection	The details concerned are recommendations. Please contact the glove supplier for further information. In full contact: > 0.7 mm; Butyl rubber, >480 min (EN 374-1/-2/-3).
Skin protection	Acid-resistant protective clothing (EN 340)
Other	Personal protective equipment should be selected specifically for the working place, depending on concentration and quantity handled. The resistance of this equipment to chemicals should be ascertained with the respective supplier. Avoid contact with eyes and skin.
Respiratory protection	Respiratory protection mask in the event of high concentrations. Short term: filter apparatus, filter P2. (DIN EN 143)
Thermal hazards	not applicable
Delimitation and monitoring of the environmental exposition	Comply with applicable environmental regulations limiting discharge to air, water and soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	liquid
Color	colourless
Odor	odourless
Odour threshold	not applicable
pH-value	>3 (100 g/l 20°C)
pH-value [1%]	No information available.
Boiling point [°C]	114-150
Flash point [°C]	The product is not combustible.
Flammability (solid, gas) [°C]	The product is not explosive.
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Oxidising properties	no
Vapour pressure/gas pressure [kPa]	No information available.
Density [g/cm³]	1.93
Relative density	No information available.
Bulk density [kg/m³]	not applicable
Solubility in water	miscible
Solubility other solvents	No information available.
Partition coefficient [n-octanol/water]	No information available.
Kinematic viscosity	No information available.
Relative vapour density	No information available.
Evaporation speed	No information available.
Melting point [°C]	(-45)- (-5)
Auto-ignition temperature	not applicable
Decomposition temperature [°C]	not applicable
Particle characteristics	No information available.

9.2 Other information

No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reactions known if used as directed.

10.2 Chemical stability

Stable under normal ambient conditions (ambient temperature).

10.3 Possibility of hazardous reactions

Reactions with alkalies (lyes).

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

Various metals.
Cyanides and sulfides.

10.6 Hazardous decomposition products

No hazardous decomposition products known.

SECTION 11: Toxicological information

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

Acute oral toxicity

Substance
Zinc chloride, CAS: 7646-85-7
LD50, oral, Rat, 1100 mg/kg bw

Acute dermal toxicity

Substance
Zinc chloride, CAS: 7646-85-7
LD50, dermal, Rat, > 2000 mg/kg bw

Acute inhalational toxicity

Substance
Zinc chloride, CAS: 7646-85-7
LC50, inhalative, Rat, 1.975 mg/L (10 min)

Serious eye damage/irritation	Risk of serious damage to eyes. Based on the available information, the classification criteria are fulfilled.
Skin corrosion/irritation	Product is caustic. Based on the available information, the classification criteria are fulfilled.
Respiratory or skin sensitisation	Non-sensitizing. Based on the available information, the classification criteria are not fulfilled.
Specific target organ toxicity — single exposure	May cause respiratory irritation. Based on the available information, the classification criteria are fulfilled.
Specific target organ toxicity — repeated exposure	Based on the available information, the classification criteria are not fulfilled.
Mutagenicity	Ames-test: negative. Based on the available information, the classification criteria are not fulfilled.
Reproduction toxicity	Based on the available information, the classification criteria are not fulfilled.
Carcinogenicity	Based on the available information, the classification criteria are not fulfilled.
Aspiration hazard	Based on the available information, the classification criteria are not fulfilled.
General remarks	
	The toxiclogical data are those of the pure product.

11.2 Information on other hazards

Endocrine disrupting properties	No information available.
Other information	none

SECTION 12: Ecological information

12.1 Toxicity

Substance
Zinc chloride, CAS: 7646-85-7
LC50, (48h), Daphnia magna, 1220 µg Zn/l
LC50, (96h), fish, 439 µg Zn/l
LC50, (96h), Pimephales promelas, 0.78 mg Zn/l (Lit.)
LC50, (96h), Oncorhynchus mykiss, 0.169 mg Zn/l
EC50, (48h), Ceriodaphnia dubia, 0.147 - 0.413 mg Zn/l (Lit.)
IC50, (72h), Selenastrum capricornutum, 0.136 mg Zn/l (Lit.)

12.2 Persistence and degradability

Behaviour in environment compartments	not determined
Behaviour in sewage plant	not determined
Biological degradability	not applicable

12.3 Bioaccumulative potential

No evidence for bioaccumulation potential.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

not applicable

12.6 Endocrine disrupting properties

No information available.

12.7 Other adverse effects

Do not discharge product unmonitored into the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

Product

	Dispose of as hazardous waste.
Waste no. (recommended)	060313*

Contaminated packaging

	Packaging that cannot be cleaned should be disposed of as for product. Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.
Waste no. (recommended)	150110* packaging containing residues of or contaminated by hazardous substances

SECTION 14: Transport information

14.1 UN number or ID number

Transport by land according to ADR/RID	1840
Inland navigation (ADN)	1840
Marine transport in accordance with IMDG	1840
Air transport in accordance with IATA	1840

14.2 UN proper shipping name

Transport by land according to ADR/RID	ZINC CHLORIDE SOLUTION
- Classification Code	C1
- Label	
- ADR LQ	5 l
- ADR 1.1.3.6 (8.6)	Transport category (tunnel restriction code) 3 (E)
Inland navigation (ADN)	ZINC CHLORIDE SOLUTION
- Classification Code	C1
- Label	
Marine transport in accordance with IMDG	Zinc chloride, solution
- EMS	F-A, S-B
- Label	
- IMDG LQ	5 l
Air transport in accordance with IATA	Zinc chloride, solution
- Label	

14.3 Transport hazard class(es)

Transport by land according to ADR/RID	8 (N)
Inland navigation (ADN)	8 (N)
Marine transport in accordance with IMDG	8
Air transport in accordance with IATA	8

14.4 Packing group

Transport by land according to ADR/RID	III
Inland navigation (ADN)	III
Marine transport in accordance with IMDG	III
Air transport in accordance with IATA	III

14.5 Environmental hazards

Transport by land according to ADR/RID	yes
Inland navigation (ADN)	yes
Marine transport in accordance with IMDG	MARINE POLLUTANT
Air transport in accordance with IATA	yes

14.6 Special precautions for user

Relevant information under SECTION 6 to 8.

14.7 Maritime transport in bulk according to IMO instruments

No information available.

SECTION 15: Regulatory information

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

EEC-REGULATIONS	2008/98/EC 2000/532/EC); 2010/75/EU; 2004/42/EC; (EC) 648/2004; (EC) 1907/2006 (REACH); (EU) 1272/2008; 75/324/EEC ((EC) 2016/2037); (EU) 2020/878; (EU) 2016/131; (EU) 517/2014
TRANSPORT-REGULATIONS	ADR (2021); IMDG-Code (2021, 40. Amdt.); IATA-DGR (2022)
NATIONAL REGULATIONS (GB):	EH40/2005 Workplace exposure limits (Second edition, published December 2011); UK REACH; GB CLP.
- Observe employment restrictions for people	Observe employment restrictions for mothers-to-be and nursing mothers. Observe employment restrictions for young people.
- VOC (2010/75/CE)	not applicable

15.2 Chemical safety assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: Other information

16.1 Hazard statements (SECTION 3)

H410 Very toxic to aquatic life with long lasting effects.
H400 Very toxic to aquatic life.
H314 Causes severe skin burns and eye damage.
H302 Harmful if swallowed.

16.2 Abbreviations and acronyms:

ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route
RID = Règlement concernant le transport international ferroviaire de marchandises dangereuses
ADN = Accord européen relatif au transport international des marchandises dangereuses par voie de navigation intérieure
ATE = acute toxicity estimate
CAS = Chemical Abstracts Service
CLP = Classification, Labelling and Packaging
DMEL = Derived Minimum Effect Level
DNEL = Derived No Effect Level
EC50 = Median effective concentration
ECB = European Chemicals Bureau
EEC = European Economic Community
EINECS = European Inventory of Existing Commercial Chemical Substances
EL50 = Median effective loading
ELINCS = European List of Notified Chemical Substances
EmS = Emergency Schedules
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC-Code = International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50 = Inhibition concentration, 50%
IMDG = International Maritime Code for Dangerous Goods
IUCLID = International Uniform ChemicaL Information Database
IVIS = In vitro irritation score
LC50 = Lethal concentration, 50%
LD50 = Median lethal dose
LC0 = lethal concentration, 0%
LOAEL = lowest-observed-adverse-effect level
LL50 = Median lethal loading
LQ = Limited Quantities
MARPOL = International Convention for the Prevention of Marine Pollution from Ships
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
PBT = Persistent, Bioaccumulative and Toxic substance
PNEC = Predicted No-Effect Concentration
REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
STP = Sewage Treatment Plant
TLV®/TWA = Threshold limit value – time-weighted average
TLV®STEL = Threshold limit value – short-time exposure limit
VOC = Volatile Organic Compounds
vPvB = very Persistent and very Bioaccumulative

16.3 Other information

Customs Tariff not determined

Classification procedure

Acute Tox. 4: H302 Harmful if swallowed. (Calculation method)
Skin Corr. 1B: H314 Causes severe skin burns and eye damage. (Calculation method)
Eye Dam. 1: H318 Causes serious eye damage. (Calculation method)
STOT SE 3: H335 May cause respiratory irritation. (Calculation method)
Aquatic Acute 1: H400 Very toxic to aquatic life. (Calculation method)
Aquatic Chronic 1: H410 Very toxic to aquatic life with long lasting effects. (Calculation method)

Modified position none

Number (ES)	Exposure Scenario Title	Chemical product category [PC]	Life cycle stage covered by ES						Sector of use category [SU]	Process category [PROC]	Article Category [AC]	Environmental release category [ERC]
			Manufacture	Formulation	End use			Service life				
					Use at industrial site	Widespread use by professional workers	consumer use					
1	Zinc chloride recovery	19, 20, 21	X		X			X	8, 9	2, 3, 5, 8b, 9, 26		1
2	Zinc chloride production and refining	20, 21	X		X			X	8, 9	2, 3, 5, 8b, 9, 26		1
6	Production of inorganic zinc compounds	19, 20, 21			X			X	8, 9, 10	2, 3, 8b, 9, 15		1, 2, 6a
7	Electrogalvanising	7, 14			X			X	15, 17, 0.Nace C25.6.1	13, 21	2, 7	2, 5
8	Electroplating	7, 14			X			X	0.Nace C25.6.1, 15, 17	3, 8b, 21	2, 7	2, 5
9	Zinc production by electrowinning	7			X			X	0.NACE C24.4.3, 14	2, 8b, 22, 26		1
10	Production of Zinc chloride based fluxing agents	19, 20, 21	X		X			X	8, 9, 10	2, 3, 5, 8b, 9, 15		1, 2, 5, 6a
11	steel surface treatment prior to hot-dip galvanizing	14, 38			X			X	8, 14, 15, 18, 19, 0.Nace C23.9.9	2, 4, 8b, 13, 25	1, 2, 3, 7	5, 8a, 10a, 11a
13	Laboratory reagents	19, 21, 28, 39	X		X	X		X	10, 24	1, 2, 3, 4, 5, 8b, 9, 15		1, 2, 4, 6a, 6b, 8a, 8d
14	Catalytic agent	19, 20			X	X		X	9, 10	4, 5, 8b, 9, 15		4, 6b
15	Zinc production by pyrometallurgy	7			X			X	14, 0.NACE C24.4.3	2, 8b, 23, 26		1
16	Production of organic zinc compounds	19, 20, 21, 24, 29, 39	X		X			X	9, 10	1, 2, 3, 4, 8b, 9, 15		1, 2, 6a
17	Production of organic pigments	9a, 9b, 9c	X	X	X			X	8, 9, 10, 13	1, 2, 3, 4, 5, 8b, 9, 22		1, 2, 5

Number (ES)	Exposure Scenario Title	Chemical product category [PC]	Life cycle stage covered by ES						Sector of use category [SU]	Process category [PROC]	Article Category [AC]	Environmental release category [ERC]
			Manufacture	Formulation	End use			Service life				
					Use at industrial site	Widespread use by professional workers	consumer use					
18	Production of coatings, paints, inks, enamels, varnishes	1, 9a, 9b, 9c, 14, 15, 18, 26, 32	X		X			X	5, 8, 9, 10, 11, 12, 13, 14	1, 2, 3, 4, 5, 8b, 9		1, 2, 3, 4, 5, 7
19	Formulation of abrasive material for tools	9b, 14, 15, 20	X	X	X			X	8, 9, 10, 13, 14, 18	1, 2, 3, 4, 5, 8b, 9, 14, 22, 26		1, 10a, 11a
20	Component for paper coating or treatment for paper products	9a, 15, 18, 21, 35, 20, 23, 34			X			X	6b, 7, 8, 9, 10	3, 4, 5, 6, 8b, 9, 13		2, 6b
21	Use of ZnCl2 containing paper coatings	1, 9a, 9b, 9c, 15, 18			X	X		X	6b, 10	4, 5, 6, 8b, 9, 10, 13, 19	0	8a, 8d, 10a, 10b
22	Textile and leather coating treatment	9a, 15, 19, 20, 21, 23, 34, 35			X			X	5, 8, 9, 10	3, 4, 5, 6, 8b, 9, 13	5, 6	2, 6b
23	Use of ZnCl2 containing coatings for textile and leather	15, 23, 34			X	X		X	5, 10	4, 5, 6, 19, 8b, 9, 13	5, 6	8a, 8d, 10a, 11a
24	Additive in the manufacturing of electricelectronic components	20, 33			X			X	10, 13, 16, 0.NACE C26.1.1:	3, 5, 8b, 9, 14, 22	2, 4	2, 5
25	Batteries /fuel cells	14, 19, 20, 21		X	X			X	16, 0.NACE-CodeC27.2	3, 5, 13, 14	3	2, 5
26	Component for production of rubber, resins and related preparations	9a, 9b, 9c, 18, 19, 20, 24, 32, 33	X	X	X			X	10, 11	10, 3, 5, 6, 8b, 9, 13, 14, 21, 24	10	2, 3, 4, 5, 6d, 10a, 11a
27	Production of polymermatrices, plastics and related preparations	19, 20, 32, 33	X	X	X			X	10, 12	2, 3, 5, 6, 8b, 9, 10, 13, 14, 21, 24	1, 2, 3, 13	1, 3, 5, 6a
28	Additive / component for the production of Sealants / Adhesives / Mastics	1, 9a, 14, 19, 20, 24, 32		X	X			X	10, 8	3, 5, 8b, 9, 10, 11, 13, 14, 20, 21, 24	1, 2, 7, 11	1, 2, 3, 5, 6a, 6d, 8b, 8c, 10a, 10b, 11a

Number (ES)	Exposure Scenario Title	Chemical product category [PC]	Life cycle stage covered by ES						Sector of use category [SU]	Process category [PROC]	Article Category [AC]	Environmental release category [ERC]
			Manufacture	Formulation	End use			Service life				
					Use at industrial site	Widespread use by professional workers	consumer use					
30	Additive / component for the production of Lubricants / Grease / Metal working fluids	14, 24, 25, 32			X			X	10, 18	3, 4, 5, 8b, 9, 10, 13	1, 2, 7	1, 2, 3, 5, 6a, 6d, 8b, 9a, 9b, 11a
32	Additive / component for the production of Polishes / wax blends	9c, 9b, 9a, 14, 25, 31		X	X			X	9, 10, 18	3, 4, 5, 7, 8b, 9, 10, 11, 13, 19	1, 2, 7	1, 2, 3, 5, 6a, 6d, 8a, 8b
34	Use of ZnCl2- containing catalysts	2, 9a, 9b, 9c, 19, 20, 40			X			X	8, 9, 10	1, 2, 3, 5, 8b, 9, 14		1, 5, 4, 6a, 6b
35	Additive component for production of de-icing products	4, 20, 35			X			X	8, 9	3, 5, 8b, 9		2, 5, 8c, 8f
37	Additive for the formulation of animal feedstuffs	29, 20		X	X			X	4	3, 5, 8b, 9		2, 10a
38	Additive for the formulation of biocidal products	37, 8		X	X			X	9, 10	5, 8b, 9		2
39	Additive for the formulation of cleaning products	8, 35, 37		X	X			X	10, 9	5, 8b, 9		2, 8a, 8b
41	Additive for the formulation of fertilizers	9b, 12, 20, 21		X	X			X	8, 1, 10	1, 2, 3, 4, 5, 8b, 9, 13		2, 3, 10a, 10b, 5
43	Additive in the formulation of cosmetics	28, 35, 39		X	X			X	10	1, 2, 3, 5, 8b, 9, 13, 14, 15		2, 5
45	Additive in the formulation of pharma / veterinary products	20, 21, 29		X	X			X	10, 20, 9, 0.Nace C21.1	1, 2, 3, 5, 8b, 9, 13, 14, 15		2, 5, 8a, 8d
12	Use of zinc chloride based fluxing agents before welding/soldering processes	7, 25, 38				X	X	X	16, 17, 18, 0.Nace C23.9.9	2, 4, 8b, 13, 25	1, 2, 3, 7	3, 5, 8a, 8d, 10a, 10b
29	Use of ZnCl2-containing Sealants / Adhesives / Mastics	9a, 9b, 9c, 1, 14, 19, 20, 24, 32		X		X	X	X	5, 6a, 6b, 11, 12, 13, 15, 19	7, 8a, 8b, 9, 10, 11, 13, 14, 17, 19, 21	7, 1, 2, 11	8a, 8c, 8d, 8f

Number (ES)	Exposure Scenario Title	Chemical product category [PC]	Life cycle stage covered by ES						Sector of use category [SU]	Process category [PROC]	Article Category [AC]	Environmental release category [ERC]
			Manufacture	Formulation	End use			Service life				
					Use at industrial site	Widespread use by professional workers	consumer use					
31	Use of ZnCl2-containing Lubricants / Grease / Metal working fluids	24, 14, 25, 32	X			X	X	X	17, 18	7, 8a, 8b, 9, 10, 11, 13, 14, 17, 19, 21	11, 1, 2, 7	8a, 8c, 8d, 8f
33	Use of ZnCl2-containing Polishes / wax blends	9a, 9b, 9c, 14, 25, 31		X		X	X	X	18, 9	7, 8a, 8b, 9, 10, 11, 13, 14, 19, 21	7, 1, 11, 2	8a, 8c, 8d, 8f
36	Use of ZnCl2-containing de-icing products	4, 20, 35				X	X	X	18, 9	7, 8a, 8b, 9, 10, 11, 13, 14, 19, 21		8a, 10a
40	Use of ZnCl2-containing cleaning products	8, 35, 39		X		X	X	X	9	8a, 8b, 9, 10, 11, 13		8a
42	Use of ZnCl2-containing fertilizer's formulations	9b, 12, 20		X		X	X	X	1, 9	2, 7, 8a, 8b, 9, 10, 11, 13, 19, 26		8a, 8b, 8d, 8e, 9b, 10b
44	Use of cosmetics	28, 35, 39		X		X	X	X	9	8a, 8b, 9, 10, 11		8a
46	Use of of Pharma / veterinary products	20, 21, 29		X		X	X	X	20	8a, 8b, 9, 10, 11		8a