SAFETY DATA SHEET

PACL XL10 LQ 5,1%AL HB
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Ref. 1.1/REG_EU/EN
Revision Date: 29.05.2015
Previous date: 02.03.2015
Print Date: 04.08.2015

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

1.1 Product identifier

Commercial Product Name
PACL XL10 LQ 5,1%AL HB

1.2 Relevant identified uses of the substance or mixture and uses advised against
Use of the Substance/Mixture
Recommended restrictions on use
There are no uses advised against.

1.3 Details of the supplier of the safety data sheet
Kemira Oyj
P.O. Box 33000101 HELSINKI FINLAND
Telephone+358108611, Telefax +358108621124
ProductSafety.FI.Helsinki@kemira.com

1.4 Emergency number

Carechem 24 International: +44 (0) 1235 239 670
Centro de Informação Antivenenos (Portugal): +351 808250143 (24 h.)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification according to Regulation (EU) 1272/2008(CLP) Serious eye damage; Category 1; Causes serious eye damage. Corrosive to metals; Category 1; May be corrosive to metals. Classification according to EU Directives 67/548/EEC or 1999/45/EC Irritant; Risk of serious damage to eyes.

2.2 Label elements
Labelling (REGULATION (EC) No 1272/2008)
2.3 Other hazards

Advice; Small amounts of hydrogen chloride may be released at temperatures above the boiling point.
Potential environmental effects; May lower the pH of water and thus be harmful to aquatic organisms.
**SAFETY DATA SHEET**

**PACL XL10 LQ 5,1%AL HB**

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**CAS/EU number/REACH Registration Number**

<table>
<thead>
<tr>
<th>CAS/EU number/REACH Registration Number</th>
<th>Chemical name of the substance</th>
<th>Concentration</th>
<th>Classification according to Regulation (EU) 1272/2008 (CLP)</th>
<th>Classification according to EU Directives 67/548/EEC or 1999/45/EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>39290-78-3</td>
<td>Aluminium chloride hydroxide sulfate</td>
<td>10 - 25 %</td>
<td>Eye Dam. Category 1.H318</td>
<td>Xi ,R41</td>
</tr>
<tr>
<td>01-2119531540-51</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Further information**

For the full text of the R-phrases mentioned in this Section, see Section 16.

For the full text of the H-Statements mentioned in this Section, see Section 16.

**SECTION 4: FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General advice**

Show this safety data sheet to the doctor in attendance.

**Inhalation**

Move to fresh air.

**Skin contact**

Rinse with plenty of water. If symptoms persist, call a physician.

**Eye contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. If possible use lukewarm water. Consult a physician.

**Ingestion**

Rinse mouth with water. Drink 1 or 2 glasses of water. If symptoms persist, call a physician.

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

**Symptoms** : corrosive effects, May cause irreversible eye damage.

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

**Treatment** : Rinse with plenty of water.

**SECTION 5: FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

**Extinguishing media** : Not combustible.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media** : No special requirements.
5.2 Special hazards arising from the substance or mixture
Small amounts of hydrogen chloride may be released at temperatures above the boiling point. Thermal decomposition products: hydrogen chloride (HCl) Sulphur oxides (SOx)

5.3 Advice for firefighters
Exposure to decomposition products may be a hazard to health. In the event of fire, wear self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
For personal protection see section 8.

6.2 Environmental precautions
Restrict the spread of the spillage by using inert absorbent material (sand, gravel). Cover the drains. Must be disposed of in accordance with local and national regulations.

6.3 Methods and materials for containment and cleaning up
Clean-up methods - small spillage
Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up. Must be disposed of in accordance with local and national regulations.

Clean-up methods - large spillage
Remove spill using a vacuum truck. Dilute residues with water and then neutralize with lime or limestone powder to a solid consistency. Shovel or sweep up remaining material. Must be disposed of in accordance with local and national regulations.

6.4 Reference to other sections
Inform the rescue service in case of entry into waterways, soil or drains.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
For personal protection see section 8. The work place and work methods shall be organized in such a way that direct contact with the product is prevented or minimized.
Small amounts of hydrogen chloride may be released at temperatures above the boiling point.

7.2 Conditions for safe storage, including any incompatibilities
For quality reasons:
Keep at temperatures below 30 °C.
Keep at temperatures above 0 °C. Handling operations become difficult due to increased viscosity.

Materials for packaging
Suitable material: plastic (PE, PP, PVC), polyester with fibreglass reinforcement, rubber-coated steel,
titanium

Materials to avoid: chlorites, hypochlorites, sulphites, galvanized surfaces, Iron, sodium hydroxide

Storage stability:
Storage period 12 Months

7.3 Specific end use(s)

Water treatment chemical

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Limit values in other countries

Finland:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³, Calculated as Al

Sweden:
Aluminium chloride hydroxide sulfate
NGV = 1 mg/m³, Calculated as Al

Germany:
Aluminium chloride hydroxide sulfate
MAK = 4 mg/m³, inhalable fraction, Calculated as Al
MAK = 1.5 mg/m³, respirable fraction, Calculated as Al
MAK = 0.2 mg/m³, Calculated as Al

Belgium:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Switzerland:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, inhalable fraction

Denmark:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³, Calculated as Al

Estonia:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Spain:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

France:
Aluminium chloride hydroxide sulfate
VME = 2 mg/m³, Calculated as Al

Great Britain:
Aluminium chloride hydroxide sulfate
TWA = 1 mg/m³

Greece:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Ireland:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Lithuania:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Netherlands:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³

Norway:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

Portugal:
Aluminium chloride hydroxide sulfate
TWA = 2 mg/m³, Calculated as Al

DNEL
Aluminium chloride hydroxide sulfate
End Use: Workers
Exposure routes: oral
Potential health effects: Long-term exposure - systemic effects
Value: 0.5 mg/kg bw/day
Calculated as Al
End Use: Workers
Exposure routes: Inhalation
Potential health effects: Long-term exposure - systemic effects
Value: 1.8 mg/m³
Calculated as Al

End Use: Consumers
Exposure routes: oral
Potential health effects: Long-term exposure - systemic effects
Value: 0.3 mg/kg bw/day
Calculated as Al

End Use: Consumers
Exposure routes: Inhalation
Potential health effects: Long-term exposure - systemic effects
Value: 1.1 mg/m³
Calculated as Al

PNEC Aluminium chloride hydroxide sulfate
: Sewage treatment plant
The PNEC value would be highly depending on conditions as pH and organic matter, and therefore a true PNEC cannot and does not need to be derived.

Oral
Bioaccumulative potential, Secondary poisoning, not significant, Derivation of the PNEC, Not relevant

Soil
study scientifically unjustified

Water
Not relevant, The compound is considered to have no long term effects in aquatic systems due to the rapid formation of insoluble hydroxides.

,The PNEC value would be highly depending on conditions as pH and organic matter, and therefore a true PNEC cannot and does not need to be derived.

Air
Not relevant
8.2 Exposure controls

8.2.1 Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice.
Eye wash bottle or emergency eye-wash fountain must be found in the work place.

8.2.2 Individual protection measures, such as personal protective equipment
Hand protection
Glove material: PVC and neoprene gloves
Protective gloves complying with EN 374.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough.
Break through time: > 480 min

Eye protection
Eye wash bottle with pure water Tightly fitting safety goggles.

Skin and body protection
Wear protective clothing if necessary. Use rubber boots.

Respiratory protection
Respiratory protection is not required under normal handling conditions. If aerosols or mist are formed, eg. when cleaning containers with a high pressure washer, use half mask with dust filter P2.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
General Information (appearance, odour)

| Physical state | liquid |
| Colour         | Yellowish, clear |
| Odour          | not significant |

Important health safety and environmental information

| pH              | ca. 3 |
| Crystallisation point/range | -15 °C |
| Boiling point/boiling range  | 105 - 115 °C |
| Flash point      | Not applicable, inorganic compound |
In accordance with column 2 of REACH Annex VII, the study does not need to be conducted. The product is not flammable.

Density
1.18 - 1.22 g/cm³

Solubility:
Water solubility: (20 °C) completely soluble

Partition coefficient: n-octanol/water
Not applicable, inorganic compound

In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.

> 200 °C

9.2 Other data

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
May be corrosive to metals.

10.2 Chemical stability
Stable under normal conditions.

10.3 Possibility of hazardous reactions
Hazardous reactions: Contact with certain metals (e.g. aluminium, zinc) may form explosive gas mixtures with air.

10.4 Conditions to avoid
Conditions to avoid: High temperatures.
Avoid freezing.

10.5 Incompatible materials
Materials to avoid: chlorites, hypochlorites, sulphites, galvanized surfaces, iron
sodium hydroxide

10.6 Hazardous decomposition products

<table>
<thead>
<tr>
<th>Hazardous decomposition products</th>
<th>Thermal decomposition products:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>hydrogen chloride (HCl)</td>
</tr>
<tr>
<td></td>
<td>Sulphur oxides (SOx)</td>
</tr>
<tr>
<td>Thermal decomposition</td>
<td>&gt;200 °C</td>
</tr>
</tbody>
</table>

**SECTION 11: TOXICOLOGICAL INFORMATION**

11.1 Information on toxicological effects

**Acute toxicity**

Low order of acute toxicity.

**Aluminium chloride hydroxide sulfate:**

LD50/Oral/Rat: 2 360 mg/kg
LC50/Inhalation/4 h/Rat: > 5 mg/l
LD50/Dermal/Rat/male and female: > 2 000 mg/kg

**Irritation and corrosion**

Skin:
Repeated or prolonged skin contact may cause: Skin irritation dry skin

Eyes:
May cause irreversible eye damage.

**Aluminium chloride hydroxide sulfate:**

Skin: Rabbit/OECD Test Guideline 404: No irritating effects.

Eyes: Rabbit/72 h/OECD Test Guideline 405: No eye irritation

**Sensitisation**

Remarks: The data is based on the toxicological properties of individual components of the product. Not sensitizing.

Aluminium chloride hydroxide sulfate:
Guinea pig/OECD Test Guideline 406
Remarks: Read-across (Analogy) CAS-No. 12042-91-0 Not sensitizing.
Long term toxicity

**Aluminium chloride hydroxide sulfate:**
Repeated dose toxicity:
- Oral/Rat/OECD Test Guideline 422:
  - NOAEL: 327 mg/kg
  - Remarks: bw/day Systemic toxicity Read-across (Analogy) CAS-No. 1327-41-9

  NOAEL: 90 mg/kg
  Remarks: bw/day Calculated as Al

- Oral/Rat/OECD Test Guideline 422:
  - NOAEL: 65 mg/kg
  - Remarks: bw/day Local effects Read-across (Analogy) CAS-No. 1327-41-9

  NOAEL: 18 mg/kg
  Remarks: bw/day Calculated as Al

Dermal:
- Remarks: study scientifically unjustified

Inhalation/Rat/OECD Test Guideline 413:
- Remarks: Subchronic toxicity Read-across (Analogy) CAS-No. 12042-91-0

  Remarks: Calculated as Al

Carcinogenicity
- Not believed to be a carcinogen.

Mutagenicity
- Mutagenicity (Salmonella typhimurium - reverse mutation assay)/AMES test/OECD Test Guideline 471:
  - Result: negative
  - Metabolic activation: with and without

- In vitro mammalian cells/micronucleus test/OECD Test Guideline 487:
  - Result: negative
  - Metabolic activation: with and without
  - Remarks: Read-across (Analogy) 1327-41-9
In vitro gene mutation study in mammalian cells/Lymphoma/OECD Test Guideline 476:  
Result: negative  
Metabolic activation: with and without  
Remarks: Read-across (Analogy) 1327-41-9

Reproductive toxicity  
Oral/Rat/female/Reproductive effects/OECD Test Guideline 452:  
NOAEL: 3 225 mg/kg  
NOAEL F1:  
Remarks: Read-across (Analogy) CAS-No. 31142-56-0  
No known effect.

Oral/Rat/male and female/Screening test/OECD Test Guideline 422:  
NOAEL: 1 000 mg/kg  
NOAEL F1:  
Remarks: Read-across (Analogy) 1327-41-9  
No known effect.

Not believed to be toxic for reproduction.

Teratogenicity  
Oral/Rat/OECD Test Guideline 452:  
NOAEL: 1 075 mg/kg  
Read-across (Analogy) Did not show mutagenic or teratogenic effects in animal experiments. CAS-No. 31142-56-0

Human experience

Inhalation  
Symptoms: Inhalation may provoke the following symptoms:; cough and difficulties in breathing

Skin contact  
Symptoms: Repeated or prolonged skin contact may cause:; dry skin, irritation

Eye contact  
Symptoms: Contact with eyes causes a smarting pain and a flood of tears.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity
Aquatic toxicity

This material is not classified as dangerous for the environment. At environmentally relevant pH 5.5 – 8, the solubility of aluminium is low. Aluminium salts dissociate with water resulting in rapid formation and precipitation of aluminium hydroxides. At pH <5.5, the free ion (Al3+) becomes the prevalent form, the increased availability at this pH is reflected in higher toxicity. At pH 6.0–7.5, solubility declines due to the presence of insoluble Al(OH)3. At higher pH (pH >8.0), the more soluble Al(OH)4 - species predominate, which again increases availability. Aluminium salts must not be released to rivers and lakes in an uncontrolled way and pH variations around 5 - 5.5 should be avoided.

Aluminium chloride hydroxide sulfate:
LC50/96 h/Danio rerio/semi-static test/OECD Test Guideline 203: > 1 000 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
NOEC/Danio rerio/semi-static test/OECD Test Guideline 203: > 1 000 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
LC50/Danio rerio/semi-static test/OECD Test Guideline 203: > 0,156 mg/l
Calculated as Al Maximum soluble concentration under the test conditions.
EC50/48 h/Daphnia magna (Water flea)/OECD Test Guideline 202: 98 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
NOEC/Daphnia magna (Water flea)/OECD Test Guideline 202: 24 mg/l
Remarks: Read-across (Analogy), CAS-No., 1327-41-9
EC50/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 14 mg/l
EC50: 3,4 mg/l
Calculated as Al
NOEC/72 h/Pseudokirchneriella subcapitata (green algae)/static test/OECD Test Guideline 201: 1 mg/l
NOEC: 0,24 mg/l
Calculated as Al

Toxicity to other organisms

12.2 Persistence and degradability

Biological degradability:

The methods for determining the biological degradability are not applicable to inorganic substances.

Chemical degradation:

When reacting with water on pH range 5.8 - 8 precipitates of aluminium hydroxides are formed.
Biological degradability:
Aluminium chloride hydroxide sulfate:

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

The product is not expected to bioaccumulate.
Partition coefficient: n-octanol/water: Not applicable, inorganic compound
Partition coefficient: n-octanol/water: In accordance with column 2 of REACH Annex VII, the study does not need to be conducted.

Aluminium chloride hydroxide sulfate:

The product is not expected to bioaccumulate.
Partition coefficient: n-octanol/water: Not applicable, inorganic compound

12.4 Mobility in soil

Mobility

Water solubility: completely soluble (20 °C)

12.5 Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

12.6 Other adverse effects

May lower the pH of water and thus be harmful to aquatic organisms.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.
Thoroughly cleaned packaging material may be recycled.

Contaminated packaging

Classified as hazardous waste. Must be disposed of in accordance with local and national regulations.
SECTION 14: TRANSPORT INFORMATION

14.1 UN number
3264

Land transport
ADR:
Description of the goods: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Aluminium chloride hydroxide sulfate )

14.2 UN proper shipping name

14.3 Transport hazard class(es) 8
14.4 Packing group: III
Classification code: C1
Risk code 80
ADR/RID-Labels: 8

Sea transport
IMDG:
Description of the goods: UN3264, CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINIUM CHLORIDE HYDROXIDE SULFATE )

14.2 UN proper shipping name

14.3 Transport hazard class(es): 8
14.4 Packing group: III
IMDG-Labels: 8
14.5 Environmental hazards: Not a Marine Pollutant

Air transport
ICAO/IATA:
Description of the goods: UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Aluminium chloride hydroxide sulfate )

14.2 UN proper shipping name

14.3 Transport hazard class(es): 8
14.4 Packing group: III
ICAO-Labels: 8

14.8 Special precautions for user

The product is classified as dangerous goods, as it is slightly corrosive to metals.

SECTION 15: REGULATORY INFORMATION

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

SECTION 16: OTHER INFORMATION

Full text of H-statements referred to under section 3.
H318 Causes serious eye damage.
H290 May be corrosive to metals.

Text of R-phrases mentioned in Section 3
R41 Risk of serious damage to eyes.

Training advice

Read the safety data sheet before using the product.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Sources of key data used to compile the Safety Data Sheet

Regulations, databases, literature, own tests.

Additions, Deletions, Revisions

Relevant changes have been marked with vertical lines.
Annex

Contents: Exposure scenario

1. ES 2., Formulation and distribution, Aqueous solution
   SU 3; SU 10; ERC2; PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, PROC19;

2. ES 3., Use of substance in synthesis as a process chemical and as an intermediate.

3. ES 4., Aqueous solution
   SU 3; SU6b, SU8, SU9, SU14; ERC1, ERC2, ERC4, ERC5, ERC6a, ERC8a; PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15;

4. ES 5., Spraying formulations., Aqueous solution
   SU 3; SU5, SU6b, SU7; ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8a, ERC8b, ERC8c, ERC8f, ERC10a, ERC11a; PROC1, PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC11, PROC19;

6. ES 5., Non-spraying formulations., Aqueous solution
   SU 3; SU1, SU5, SU6b, SU7, SU13, SU19; ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8a, ERC8b, ERC8c, ERC8f, ERC10a, ERC11a; PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19;

7. ES 6., Flocculant or coagulant in water and waste water treatment., Aqueous solution
   SU 3; SU2, SU5, SU6b, SU 10, SU23; ERC2, ERC4, ERC6b, ERC8a, ERC8b, ERC8d; PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC19;

8. ES 7., Laboratory chemicals, Industrial use, Professional use, Aqueous solution
   SU 3; SU9; ERC4; PROC15;
1. Short title of Exposure Scenario: ES 2., Formulation and distribution, Aqueous solution

Main User Groups

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use

SU 10: Formulation [mixing] of preparations and/or repackaging (excluding alloys)

Process category

PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15: Use as laboratory reagent
PROC19: Hand-mixing with intimate contact and only PPE available

Environmental release category

ERC2: Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics

Concentration of the Substance in Mixture/Article

Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Technical conditions and measures / Organizational measures
Remarks
: Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15, PROC19

Product characteristics
Concentration of the Substance in Mixture/Article
: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Physical Form (at time of use)
: Aqueous solution

Vapour pressure
: < 0,1 hPa

Amount used
Remarks
: Varies between ml and m³

Frequency and duration of use
Remarks
: Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure
Remarks
: Assumes use at not more than 20°C above ambient temperature,, Assumes a good basic standard of occupational hygiene is implemented,, Ensure operatives are trained to minimise exposures.

Technical conditions and measures
Process categories, 1, 2, 3, Handle substance within a closed system,, Clear transfer lines prior to de-coupling.
Organisational measures to prevent /limit releases, dispersion and exposure
Process categories, 1, 2, 3, 4, 8a, 8b, 14, 15, No specific measures identified.Clear spills immediately., Clean equipment and the work area every day.Process categories, 19, Industrial use5-25%:, Avoid carrying out operation for more than 1 hour.1-5%:, Avoid carrying out operation for more than 4 hours.<1%:, No specific measures identified.Process categories, 19, Professional use5-25%:, Avoid carrying out operation for more than 15 minutes.orWear respiratory protection.1-5%:, Avoid carrying out operation for more than 1 hour.<1%:, Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection and gloves., Wear suitable gloves tested to EN374., Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.Process category, 19, Professional use5-25%:, Wear a respirator conforming to EN140 with Type A/P2 filter or better.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Workers</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterisation ratio (PEC/PNEC):</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Industrial use, 5-25%:; TRA duration factor 15 min - 1 h</td>
<td>Inhalation exposure</td>
<td>1,35 mg/m³</td>
<td>0,75</td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Industrial use, 1-5%:; TRA duration factor 1 - 4 h</td>
<td>Inhalation exposure</td>
<td>1,35 mg/m³</td>
<td>0,75</td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Industrial use, &lt;1%:; TRA duration factor &gt; 4 h</td>
<td>Inhalation exposure</td>
<td>1,12 mg/m³</td>
<td>0,62</td>
</tr>
<tr>
<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Professional use, 5-25%:;</td>
<td>Inhalation exposure</td>
<td>1,69 mg/m³</td>
<td>0,94</td>
</tr>
</tbody>
</table>
### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.
1. Short title of Exposure Scenario: ES 3., Use of substance in synthesis as a process chemical and as an intermediate. Aqueous solution

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use: SU6b: Manufacture of pulp, paper and paper products
SU8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU9: Manufacture of fine chemicals
SU14: Manufacture of basic metals, including alloys

Process category: PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15: Use as laboratory reagent

Environmental release category: ERC1: Manufacture of substances
ERC2: Formulation of preparations
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC5: Industrial use resulting in inclusion into or onto a matrix
ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
ERC8a: Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC5, ERC6a, ERC8a
Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Technical conditions and measures / Organizational measures
Remarks: Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15, PC20, PC21, PC26, PC19

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Physical Form (at time of use): Aqueous solution
Vapour pressure: < 0,1 hPa

Amount used
Remarks: Varies between ml and m³

Frequency and duration of use
Remarks: Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure
Remarks: Assumes use at not more than 20°C above ambient temperature, Assumes a good basic standard of occupational
hygiene is implemented. Ensure operatives are trained to minimise exposures.

**Technical conditions and measures**
Process categories, 1, 2, 3, Handle substance within a closed system, Clear transfer lines prior to decoupling.

**Organisational measures to prevent/limit releases, dispersion and exposure**
Process categories, 1, 2, 3, 4, 8b, 15, No specific measures identified. Clear spills immediately.

**Conditions and measures related to personal protection, hygiene and health evaluation**
Use suitable eye protection and gloves. Wear suitable gloves tested to EN374. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

**3. Exposure estimation and reference to its source**

**Workers**

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterisation ratio (PEC/PNEC):</th>
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</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td></td>
<td>No specific measures identified.</td>
<td></td>
<td>&lt; 1</td>
<td></td>
</tr>
</tbody>
</table>

**Consumers**

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECETOC TRA</td>
<td></td>
<td>No specific measures identified.</td>
<td></td>
<td>&lt; 1</td>
<td></td>
</tr>
</tbody>
</table>

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.
1. Short title of Exposure Scenario: ES 4., Spraying formulations., Aqueous solution

Main User Groups
- **SU 3**: Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use
- **SU5**: Manufacture of textiles, leather, fur
- **SU6b**: Manufacture of pulp, paper and paper products
- **SU7**: Printing and reproduction of recorded media

Process category
- **PROC1**: Use in closed process, no likelihood of exposure
- **PROC2**: Use in closed, continuous process with occasional controlled exposure
- **PROC3**: Use in closed batch process (synthesis or formulation)
- **PROC5**: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
- **PROC7**: Industrial spraying
- **PROC8a**: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
- **PROC8b**: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
- **PROC9**: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- **PROC11**: Non industrial spraying
- **PROC19**: Hand-mixing with intimate contact and only PPE available

Environmental release category
- **ERC3**: Formulation in materials
- **ERC4**: Industrial use of processing aids in processes and products, not becoming part of articles
- **ERC5**: Industrial use resulting in inclusion into or onto a matrix
- **ERC6a**: Industrial use resulting in manufacture of another substance (use of intermediates)
- **ERC6b**: Industrial use of reactive processing aids
- **ERC8a**: Wide dispersive indoor use of processing aids in open systems
- **ERC8b**: Wide dispersive indoor use of reactive substances in open systems
- **ERC8c**: Wide dispersive indoor use resulting in inclusion into or onto a matrix
- **ERC8f**: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
**2.1 Contributing scenario controlling environmental exposure for:** ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8a, ERC8b, ERC8c, ERC8f, ERC10a, ERC11a

**Product characteristics**

**Concentration of the Substance in Mixture/Article:** Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Technical conditions and measures / Organizational measures**

**Remarks:** Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

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**2.2 Contributing scenario controlling worker exposure for:** PROC1, PROC2, PROC3, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC11, PROC19, PC9a, PC19, PC20, PC21, PC23, PC26, PC34, PC35

**Product characteristics**

**Concentration of the Substance in Mixture/Article**

Covers the percentage of the substance in the product up to 100 % (unless stated differently).

**Physical Form (at time of use):** Aqueous solution

**Vapour pressure:** < 0,1 hPa

**Amount used**
Remarks : Varies between ml and m³

**Frequency and duration of use**
Remarks : Covers daily exposures up to 8 hours (unless stated differently).

**Other operational conditions affecting workers exposure**
Remarks : Assumes use at not more than 20°C above ambient temperature., Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to minimise exposures.

**Technical conditions and measures**
Process categories, 1, 2, 3, Handle substance within a closed system.
Process categories, 7, Industrial use, Professional use
5-25%:, Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings., Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20., or, Avoid carrying out operation for more than 1 hour.
1-5%:, Local exhaust ventilation and/or general ventilation is good practice.
<1%:, Limit the substance content in the product to 1 %.
Process categories, 11, Industrial use, Professional use
5-25%:, Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings., Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.
1-5%:, Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings., Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

**Organisational measures to prevent /limit releases, dispersion and exposure**
Process categories, 1, 2, 3, 5, 8a, 8b, 9, No specific measures identified., Clean equipment and the work area every day., Clear spills immediately, Process categories, 7, Industrial use, Professional use5-25%:, Wear respiratory protection.1-5%:, Wear respiratory protection.. Avoid carrying out operation for more than 4 hours.<1%:, Avoid carrying out operation for more than 15 minutes., or, Wear respiratory protection., Process categories, 11, Industrial use, Professional use5-25%:, Wear respiratory protection., or, Avoid carrying out operation for more than 1 hour.1-5%:, Avoid carrying out operation for more than 4 hours.<1%:, Avoid carrying out operation for more than 15 minutes.Process categories, 19, Industrial use5-25%:, Avoid carrying out operation for more than 1 hour.1-5%:, Avoid carrying out operation for
more than 4 hours.<1%; No specific measures identified.Process categories, 19, Professional use5-25%; Wear respiratory protection., or, Avoid carrying out operation for more than 15 minutes.1-5%; Avoid carrying out operation for more than 1 hour.<1%; Avoid carrying out operation for more than 4 hours.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Use suitable eye protection and gloves., Wear suitable gloves tested to EN374., Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Process category, 7, Professional use5-25%; Wear a respirator conforming to EN140 with Type A/P2 filter or better.1-5%; Wear a respirator conforming to EN140 with Type A/P2 filter or better. Process category, 195-25%; Wear a respirator conforming to EN140 with Type A/P2 filter or better.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterisation ratio (PEC/PNEC):</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7</td>
<td>ECETOC TRA</td>
<td>Industrial use, 5-25%; Half mask, 90 %, (with LEV)</td>
<td>Inhalation exposure</td>
<td>0,67 mg/m³</td>
<td>0,37</td>
</tr>
<tr>
<td>PROC7</td>
<td>ECETOC TRA</td>
<td>Industrial use, 5-25%; TRA duration factor 15 min - 1 h, Half mask</td>
<td>Inhalation exposure</td>
<td>1,35 mg/m³</td>
<td>0,75</td>
</tr>
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<td>PROC7</td>
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<td>Inhalation exposure</td>
<td>1,35 mg/m³</td>
<td>0,75</td>
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<tr>
<td>PROC7</td>
<td>ECETOC TRA</td>
<td>Industrial use, &lt;1%; &lt; 15 min</td>
<td>Inhalation exposure</td>
<td>1,12 mg/m³</td>
<td>0,62</td>
</tr>
<tr>
<td>PROC11</td>
<td>ECETOC TRA</td>
<td>Professional</td>
<td>Inhalation</td>
<td>1,35 mg/m³</td>
<td>0,75</td>
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<tr>
<td>PROC11</td>
<td>ECETOC TRA</td>
<td>Professional use, 5-25%.; &lt; 15 min, 80 %, (with LEV)</td>
<td>Inhalation exposure</td>
<td>1,35 mg/m³</td>
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<td>ECETOC TRA</td>
<td>Professional use, 1-5%;; TRA duration factor 15 min - 1 h, 80 %, (with LEV)</td>
<td>Inhalation exposure</td>
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<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Professional use, 5-25%.; &lt; 15 min</td>
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</tbody>
</table>
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.
1. Short title of Exposure Scenario: ES 5., Non-spraying formulations., Aqueous solution

Main User Groups : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use : SU1: Agriculture, forestry, fishery
SU5: Manufacture of textiles, leather, fur
SU6b: Manufacture of pulp, paper and paper products
SU7: Printing and reproduction of recorded media
SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
SU19: Building and construction work

Process category : PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC6: Calendering operations
PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15: Use as laboratory reagent
PROC19: Hand-mixing with intimate contact and only PPE available

Environmental release category : ERC2: Formulation of preparations
ERC3: Formulation in materials
ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
ERC5: Industrial use resulting in inclusion into or onto a matrix

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ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b: Industrial use of reactive processing aids
ERC8a: Wide dispersive indoor use of processing aids in open systems
ERC8b: Wide dispersive indoor use of reactive substances in open systems
ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix
ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix
ERC10a: Wide dispersive outdoor use of long-life articles and materials with low release
ERC11a: Wide dispersive indoor use of long-life articles and materials with low release

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC8a, ERC8b, ERC8c, ERC8f, ERC10a, ERC11a

<table>
<thead>
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<th>Product characteristics</th>
<th></th>
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<tr>
<td>Concentration of the Substance in Mixture/Article</td>
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</tr>
</tbody>
</table>

Technical conditions and measures / Organizational measures

Remarks: Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19, PC1, PC9a, PC12, PC19, PC20, PC21, PC23, PC26, PC34, PC35

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100% (unless stated differently).

Physical Form (at time of use): Aqueous solution
Vapour pressure: < 0,1 hPa

Amount used
Remarks: Varies between ml and m³

Frequency and duration of use
Remarks: Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure
Remarks: Assumes use at not more than 20°C above ambient temperature. Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

Technical conditions and measures
Process categories, 1, 2, 3, Handle substance within a closed system.

Process categories, 10, Industrial use
5-25%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20, or, Wear respiratory protection.

Process categories, 10, Professional use
5-25%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20, or, Wear respiratory protection.
1-5%: Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20, or, Avoid carrying out operation for more than 1 hour.
<1%; Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.

**Organisational measures to prevent /limit releases, dispersion and exposure**

Process categories, 1, 2, 3, 4, 5, 6, 8a, 8b, 9, 13, 14, 15, No specific measures identified. Clean equipment and the work area every day. Clear spills immediately. Process categories, 19, Industrial use 5-25%; Avoid carrying out operation for more than 1 hour.1-5%; Avoid carrying out operation for more than 4 hours.<1%; No specific measures identified. Process categories, 19, Professional use 5-25%; Wear respiratory protection, or, Avoid carrying out operation for more than 15 minutes.1-5%; Avoid carrying out operation for more than 1 hour.<1%; Avoid carrying out operation for more than 4 hours. Process categories, 10, Industrial use 5-25%; Wear respiratory protection, or, Avoid carrying out operation for more than 1 hour.1-5%; Avoid carrying out operation for more than 4 hours.<1%; No specific measures identified. Process categories, 10, Professional use 5-25%; Avoid carrying out operation for more than 4 hours. Wear respiratory protection.1-5%; Avoid carrying out operation for more than 1 hour.

**Conditions and measures related to personal protection, hygiene and health evaluation**

Use suitable eye protection and gloves. Wear suitable gloves tested to EN374. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Process category, 195-25%; Wear a respirator conforming to EN140 with Type A filter or better. Process category, 10, Professional use 5-25%; Wear a respirator conforming to EN140 with Type A/P2 filter or better.

### 3. Exposure estimation and reference to its source

<table>
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<tr>
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<tr>
<td>PROC10</td>
<td>ECETOC TRA</td>
<td>Industrial use, 5-25%; 80 %, (with LEV)</td>
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<td>1,35 mg/m³</td>
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<td>ECETOC TRA</td>
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**PACL XL10 LQ 5,1%AL HB**

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

**Ref. 1.1/REG_EU/EN**

**Revision Date: 29.05.2015**  
**Previous date: 02.03.2015**

**Print Date: 04.08.2015**

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<thead>
<tr>
<th>PROC</th>
<th>ECETOC TRA</th>
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**PACL XL10 LQ 5,1%AL HB**

SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

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When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

4. **Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.
1. Short title of Exposure Scenario: ES 6., Flocculant or coagulant in water and waste water treatment., Aqueous solution

| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Sector of use    | SU2: Mining, (including offshore industries) |
|                  | SU5: Manufacture of textiles, leather, fur |
|                  | SU6b: Manufacture of pulp, paper and paper products |
|                  | SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) |
|                  | SU23: Electricity, steam, gas water supply and sewage treatment |
| Process category | PROC2: Use in closed, continuous process with occasional controlled exposure |
|                  | PROC3: Use in closed batch process (synthesis or formulation) |
|                  | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises |
|                  | PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) |
|                  | PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities |
|                  | PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities |
|                  | PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
|                  | PROC19: Hand-mixing with intimate contact and only PPE available |
| Environmental release category | ERC2: Formulation of preparations |
|                                | ERC4: Industrial use of processing aids in processes and products, not becoming part of articles |
|                                | ERC6b: Industrial use of reactive processing aids |
|                                | ERC8a: Wide dispersive indoor use of processing aids in open systems |
|                                | ERC8b: Wide dispersive indoor use of reactive substances in open systems |
|                                | ERC8d: Wide dispersive outdoor use of processing aids in open systems |
### 2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6b, ERC8a, ERC8b, ERC8d

**Product characteristics**

| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |

**Technical conditions and measures / Organizational measures**

**Remarks**

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

### 2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC19, PC20, PC21, PC37

**Product characteristics**

| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |

| Physical Form (at time of use) | Aqueous solution |
| Vapour pressure | < 0.1 hPa |

**Amount used**

**Remarks**

Varies between ml and m³

**Frequency and duration of use**

**Remarks**

Covers daily exposures up to 8 hours (unless stated differently).
Other operational conditions affecting workers exposure

Remarks: Assumes use at not more than 20°C above ambient temperature.

Technical conditions and measures

Process categories, 2, 3, Handle substance within a closed system.

Organisational measures to prevent/limit releases, dispersion and exposure

Process categories, 2, 3, 4, 5, 8a, 8b, 9. No specific measures identified. Clean equipment and the work area every day. Clear spills immediately. Process categories, 19. Industrial use 5-25%: Avoid carrying out operation for more than 1 hour. 1-5%: Avoid carrying out operation for more than 4 hours.<1%: No specific measures identified. Process categories, 19. Professional use 5-25%: Avoid carrying out operation for more than 15 minutes. 1-5%: Avoid carrying out operation for more than 1 hour.<1%: Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Use suitable eye protection and gloves. Wear suitable gloves tested to EN374. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Process category, 195-25%: Wear a respirator conforming to EN140 with Type A filter or better.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice: Assumes a good basic standard of occupational hygiene is implemented. Ensure operatives are trained to minimise exposures.

3. Exposure estimation and reference to its source

Workers

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<thead>
<tr>
<th>Contributing Scenario</th>
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<th>Value type</th>
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<td>PROC19</td>
<td>ECETOC TRA</td>
<td>Industrial use, 5-25%: TRA duration factor 15 min - 1 h</td>
<td>Inhalation exposure</td>
<td>1.35 mg/m³</td>
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SAFETY DATA SHEET

PACL XL10 LQ 5,1%AL HB
SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006

Revision Date: 29.05.2015
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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.
### 1. Short title of Exposure Scenario: ES 7, Laboratory chemicals, Industrial use, Professional use, Aqueous solution

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<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
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<tbody>
<tr>
<td>Sector of use</td>
<td>SU9: Manufacture of fine chemicals</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC15: Use as laboratory reagent</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</td>
</tr>
</tbody>
</table>

#### 2.1 Contributing scenario controlling environmental exposure for: ERC4

**Product characteristics**

| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 100 % (unless stated differently). |

---

**Technical conditions and measures / Organizational measures**

**Remarks**

Aluminum, aluminum powders, aluminum oxide and soluble aluminum compounds are non-hazardous (not classified for the environment). Aluminum (Al) is the most commonly occurring metallic element, comprising eight percent of the earth's crust and is therefore found in great abundance in both the terrestrial and sediment environments. Concentrations of 3-8% (30,000-80,000 ppm) are not uncommon. The relative contributions of anthropogenic aluminum to the existing natural pools of aluminum in soils and sediments is very small, and therefore, not relevant either in terms of added amounts or in terms of toxicity.

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#### 2.2 Contributing scenario controlling worker exposure for: PROC15, PC21
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Revision Date: 29.05.2015   Previous date: 02.03.2015  Print Date: 04.08.2015

Product characteristics
Concentration of the Substance in Mixture/Article: Covers the percentage of the substance in the product up to 100 % (unless stated differently).

Physical Form (at time of use): Aqueous solution
Vapour pressure: < 0,1 hPa

Amount used
Remarks: Varies between ml and m³

Frequency and duration of use
Remarks: Covers daily exposures up to 8 hours (unless stated differently).

Other operational conditions affecting workers exposure
Remarks: Assumes use at not more than 20°C above ambient temperature., Assumes a good basic standard of occupational hygiene is implemented., Ensure operatives are trained to minimise exposures.

Organisational measures to prevent /limit releases, dispersion and exposure
Process categories, 15, No specific measures identified.Clear spills immediately., Clean equipment and the work area every day.

Conditions and measures related to personal protection, hygiene and health evaluation
Use suitable eye protection and gloves., Wear suitable gloves tested to EN374., Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

3. Exposure estimation and reference to its source

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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Worker exposure for this scenario has been assessed using ECETOC TRA V2.0.