BASE METAL CHEMICALS

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Aluminium Chloride Anhydrous

Safety data sheet

According to the REACH Regulation (EC)1907/2006/ amended by Regulation (EU) 2020/878
Issue Date : 20/05/2022 Revision Date : 20/05/2022 Supersedes version of: 23/12/2021 Version 4.02

SECTION1: Identification of the substance/mixture and of the company/undertaking

·1.1Product identifier

·Trade name: aluminium chloride, anhydrous
·CAS Number:
7446-70-0
·EC number:
231-208-1
·Index number:
013-003-00-7
·Registration number: 01-2119459371-39-0026
·1.2 Relevant identified uses of the substance or mixture and uses advised against:
None of the identified uses is advised against.
·Application of the substance/ the preparation:
Chemicals for synthesis
Catalyst

·1.3 Details of the supplier of the safety data sheet
·Supplier/Manufacturer:
MEDIKIMIKA S.R.L.
Viale Josemaria Escriva
De Balaguer 6,
21047 Saronno (VA)
Italy.
Tel : +39(0) 2 96705096
Email : sales@medikimika.it

* SECTION 2: Hazards identification

·2.1 Classification of the substance or mixture
·Classification according to Regulation (EC) No1272/2008

GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H 318 Causes serious eye damage.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008.The substance is classified and labelled according to the CLP regulation

Hazard pictograms

GHS05

·Signal word Danger
·Hazard statements
H314 Causes severe skin burns and eye damage.
·Precautionary statements

Works : Plot No. 2, R.S. No. 1089/B, Lamdapura Road,
Village : Manjusar, Taluka : Savli, Dist.: Vadodara-391775.
M.: +91 9978905311, **Website:** www.basemetal.co.in

P260	Do not breathe dust.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
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 POISONCENTER or doctor/physician.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:
EUH014 Reacts violently with water.
·**2.3 Other hazards** Aqueous solutions of the substance are acidic.
·**Results of PBT and vPvB assessment**
·**PBT:** Substance characteristics do not meet screening criteria.
·**vPvB:** Substance characteristics do not meet screening criteria.

SECTION3:Composition/information on ingredients

·**3.1 Chemical characterization: Substances**
·**CAS No. Description:**
7446-70-0 aluminium chloride
·**Identification number(s):**
·**EC number:** 231-208-1
·**Index number:** 013-003-00-7

SECTION4: First aid measures

4.1 Description of first aid measures
·**General information:**
First aid personnel should pay attention to their own safety.
Immediately remove any clothing soiled by the product.
·**After inhalation:**
Remove victim from contaminated area. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Call a doctor.
In case of unconsciousness, place patients on their side in a stable position for transportation.
·**After skin contact:**
Remove contaminated clothes and shoes.
Remove dust mechanically first.
Cover wound with a sterile dressing.
Immediately rinse thoroughly for at least 10 minutes under running water.
Immediate medical treatment required. Failure to treat burns can prevent wounds from healing.
·**After eye contact:**
Protect unharmed eye.
Rinse the eyes with open eyelids for10 - 15 minutes with water.
Immediate transport to ophthalmologist or ophthalmic clinic.

·**After swallowing:**
Swallowing of the solid basically impossible. After swallowing of an aqueous solution:
Do not induce vomiting.
Drink plenty of water, but never give anything to an unconscious person. If vomiting occurs spontaneously.

Hold the head of the vomiting person low with the body in a prone position in order to avoid aspiration.
Immediate transport to a hospital.

·4.2 Most important symptoms and effects, both acute and delayed
After swallowing:
Central nervous system depression
After inhalation:
Irritation of mucous membranes
Cough
Dyspnoea
Pneumonia
Oedema of the lungs
·Information for doctor:
Skin contact and inhalative uptake of hydrochloric acid being formed by hydrolysis are the most prominent exposures.
·4.3 Indication of any immediate medical attention and special treatment needed
Symptomatic treatment
(decontamination, vital functions)
In cases of irritation to the lungs, initial treatment with Dexametason metered aerosol

SECTION5: Fire fighting measures

5.1Extinguishing media
·Suitable extinguishing agents:
The product is not combustible and does not support any combustion. Use fire fighting measures suiting the environment.
·For safety reasons unsuitable extinguishing agents:
Water
Foam
·5.2 Special hazards arising from the substance or mixture
In case of fire, the following can be released:
Hydrogen chloride (HCl)
·5.3 Advice for fire fighters
·Protective equipment:
Wear self-contained respiratory protective device. Wear a fully protective suit.

SECTION6: Accidental release measures

·6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Avoid contact with eyes and skin.
Do not breath dust.

·6.2 Environmental precautions:
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
·6.3 Methods and material for containment and cleaning up:
Ensure adequate ventilation.
Pick up mechanically.
Use dry equipment and fill into dry drums only.
Do not flush with water or aqueous cleansing agents
Make sure to recycle or dispose of in suitable receptacles.
·6.4 Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.
Contact with water or humidity may form hydrogene chloride. Provide corresponding personal protection measures.

SECTION7: Handling and storage

·**7.1 Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Keep receptacles tightly sealed.
Only handle and refill product in closed systems.
Prevent formation of dust.
Restrict the quantity stored at the work place.
Keep the working area dry and clean.
Do not clean work station wet.
Avoid inhalation of dust.
Avoid contact with eyes and skin.
·**Information about protection against explosions and fires:**
The product is not flammable.
Observe the general rules of industrial fire protection.

·**7.2 Conditions for safe storage, including any incompatibilities**
·**Storage:**
·**Requirements to be met by store rooms and receptacles:**
Store only in unopened original receptacles.
Store at ambient temperatures and under dry conditions.
·**Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from feed.
Store away from flammable substances.
Store away from acids.
Refer to national regulations for storing hazardous chemicals.
·**Further information about storage conditions:**
Keep receptacle tightly sealed.
Protect from humidity and water.
This product is hygroscopic.
If stored for a longer period, it is recommended to store under inert gas (e.g. nitrogen).
·**Storage class:** 8B: Non-flammable corrosive hazardous materials
·**7.3 Specific end use(s)** No further relevant information available

SECTION8: Exposure controls/personal protection

·**Additional information about design of technical systems:** No further data; see Section 7.

·**8.1 Control parameters**
·Components with limit values that require monitoring at the workplace:
7446-70-0 aluminium chloride
WEL(Great Britain)Long-term value: 2 mg/m³

·**DNELs**
Abbreviations:
In= Industrial
Prof= Professional
Cons = Consumer

LLE = Long term, local effects
LSE = Long term, systemic effects
SLE =Short term, local effects
SSE=Short term, systemic effects

Oral DNEL/Cons/LSE 0.3 mg/kg bw/day (human)
Inhalative DNEL/In/LLE 1 mg/m³ (human)
DNEL/In/SLE 2 mg/m³ (human)

·**Additional information:** The lists that were valid during the creation were used as basis.

·**8.2 Exposure controls**
·**Personal protective equipment:**
·**General protective and hygienic measures:**
After contact with eyes, rinse immediately.
If larger quantities are handled, provide emergency showers
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Vacuum contaminated clothing. Do not blow or brush off contamination.
Avoid any contact with eyes and skin.
Provide eye bath

Breathing Equipment:

In case of unintended release:
Short term filter device
Filter P3
If hydrochloric acid forms:
Filter: BE P

·**Protection of hands:**

After use of gloves apply skin-cleaning agents and skin cosmetics.
Chemical resistant gloves (EN 374)
The glove material has to be impermeable and resistant to the product/substance/preparation.
Due to missing tests no recommendation to the glove material can be given for the product / preparation / chemical mixture.
Selection of the glove material in consideration of the penetration times, rates of diffusion and the degradation
·**Material of gloves:**
Nitrile rubber, NBR
For undissolved solid substances following materials may be suitable:
Nitrile rubber (NBR), butyl rubber (BR), fluorocarbon rubber (FKM) and polychloroprene rubber (CR)
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
·**Penetration time of glove material:**
The exact penetration time has to be found out by the manufacturer of the protective gloves and has to be observed.
·**Eye protection:**
Basket goggles (DIN EN 58211, code number 3) or face protection shield
Face protection
Tightly sealed goggles
·**Body protection:**
Acid resistant protective clothing
Depending on risk;
Boots
Apron

Use protective suit.
Selection of protective clothing is subject to the specific kind of work and the corresponding risk potential.

SECTION9: Physical and chemical properties

·9.1 Information on basic physical and chemical properties
·General Information:
·Appearance:

Form:	Powder
Crystals	
Colour:	Slightly yellowish
·Odour:	Like chlorine Pungent
·Odour threshold:	Not determined
·pH-value(100 g/l)at20 °C:	2.4
·Change in condition:	
Melting point/Melting range:	180 °C (190 °C bei 2,5 bar) Sublimates.
Boiling point/Boiling range:	192.5 °C (2330hPa)
·Flashpoint:	Not applicable
·Flammability(solid, gas):	Product is not flammable.
·Ignition temperature:	
Decomposition temperature:	262 °C
·Self ignition temperature:	Not applicable
·Explosive properties;	Product does not present an explosion hazard.
·Explosion limits:	
Lower:	Not applicable
Upper:	Not applicable
·Vapour pressure at20 °C:	0.00003 hPa
·Density at 25 °C:	2.44 g/cm³
·Bulk density at 20 °C:	~ 1200 kg/m³
·Dissociation constant pKa	Not applicable
·Solubility in/ Miscibility with Water:	Not applicable The substance is hydrolytically unstable at pH 4,7 and 9 (half-life < 12 h). Reacts violently with water.
·Partition coefficient(n-octanol/water):	Not applicable
·Viscosity:	
dynamic:	Not applicable
Surface tension:	Not applicable
·9.2 Other information	No further relevant information available

SECTION10: Stability and reactivity

·10.1 Reactivity No further relevant information available
·10.2 Chemical stability

·**Thermal decomposition/ conditions to be avoided:**
Conditions to be avoided: see chapter 7.
·No decomposition if used and stored according to specifications
To avoid thermal decomposition do not overheat.

10.3 Possibility of hazardous reactions
Reacts violently(even explosively)with all products being mentioned under "Materials to be avoided:".
Reacts violently with water.

·**10.4 Conditions to avoid** No further relevant information available

·**10.5 Incompatible materials:**
Water and humidity
Alkali metals
Alkaline-earth metals
Oxidants Alcohol Bases Phenol
Ethylene oxide Alkenes Halogen oxides
Organic nitro compounds

·**10.6 Hazardous decomposition products:**
No hazardous decomposition products if instructions for storage and handling are followed
Upon contact with water or humidity formation of the following substances:

SECTION11: Toxicological information

·**11.1 Information on toxicological effects**
·**Acute toxicity:** Based on available data, the classification criteria are not met.

·**LD/LC50values that are relevant for classification:**

Oral	LD_{50} 3450 mg/kg (rabbit male)
	3470 mg/kg (rat/female)
	vehicle: water
Dermal	LD_{50} > 2000 mg/kg (rabbit)

·**Primary irritant effect:**
Skin corrosion/irritation
Causes severe skin burns and eye damage
·**Serious eye damage/irritation**
Causes serious eye damage
·**On respiratory tract:** No data available
·**Respiratory or skin Sensitization:** No testing concerning sensitization is required, since the substance is classified as corrosive.
·**Other information (about experimental toxicology):** No in vivo testing due to corrosive properties
Repeated dose toxicity:
In studies on repeated dose toxicity (inhalative) some effects were observed, however, further research is required.
Test substance: aluminium chloride/aluminium chlorohydrate
CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):
Germ cell mutangenicity
Ames-test: negative
Mouse lymphoma assay(OECD 476): negative
Mutagenicity (mammalian cell test): chromosomes aberration negative
Carcinogenicity Based on available data, the classification criteria are not met.
Reproductive toxicity

Oral NOAEL 4476 mg/l (rat/male)
90d, RA from CAS:7784-13-6

NOAEL (P) 1000 mg/kg bw/day(rat)
1-21 d gestation period

NOAEL(developmental) 100 mg/kg bw/day(rat)
Fetotoxicity (over all effects)

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

·**STOT-single exposure** Based on available date, the classification criteria are not met.

·**STOT-repeated exposure:**

Oral NOAEL 200 mg/kg/day (rat) (OECD 422)

Aspiration hazard Not relevant

SECTION12: Ecological information

·12.1 Toxicity

·Aquatic toxicity:

EC_{30}/96h (static) 0.035 mg/l (Chlorella pyrenoidosa)
anorganisches Aluminium

EC_{50}/48h (static) 7.4 mg/l (Ceriodaphnia dubia)
27.3 mg/l (Daphnia magna)

IC_{50}/24h 4.5 mg/l (Pseudomonas fluorescens)

IC_{50}/96h 1.5-2 mg/l (Scendesmus quadricauda)

LC_{50}/96h (static) 36.6 mg/l (Onchorhynchus mykiss)
1.16 mg/l (Pimephales promelas) (EPA/600/4-85/013)

NOEC 0.1 mg/l (marine species)
28d; nominal (reproduction)
0.25 mg/l (Onchorhynchus mykiss)
45d
56.48 MG/L (Pimephales promelas)

NOEC/96h (static) >50 mg/l (Ictalurus punctatus)
45.7 mg/l (Lemna minor)

EC_{10}: > 1000 mg/l (180 Min.; activated sludge domestic; freshwater;static;OECD 209)
EC_{10}: > 1000 mg/l (180 Min.; activated sludge domestic; freshwater;static;OECD 209)

·**12.2 Persistence and degradability**

Not applicable

Inorganic product; not removable from water by biological cleaning process

Other Information

Abiotic degradation by hydrolysis

Degradation products:

Hydrochloric acid

Aluminium hydroxide

Elimination from water by precipitation or flocculation processes

12.3 Bio accumulative potential

The dissociation product aluminium hydroxide forms complexes, precipitating to gibbsite. Thus, bioaccumulation is unlikely. However, under low pH conditions (<6) aluminium may stay dissolved and may accumulate in fish. In general, the potential for accumulation in fsh will depend on the aluminium species present, and is therefore dependant on pH. Temperature, dissolved organic carbon (DOC) and numerous other ligands.

Depending on pH-value following BCF, data for aluminium were determined:

215 (pH 5.3)

123 (pH 6.1)

36 (pH 7.2)

Source: EHC 94

BCF 400-1365 were calculated by Environment Canada (2000) based on results published by Rot R. (1999).

12.4 Mobility in soil No further relevant information available

Ecotoxical effects:
Remark: Harmful effects possible due to shift of pH-value.
Additional ecological information:
General notes:
Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous to water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Danger to drinking water is possible if large quantities leak into the ground or into water course.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
12.5 Results of PBT and vPvB assessment
PBT: Substance characteristics do not meet screening criteria.
vPvB: substance characteristics do not meet screening criteria.
12.6 Other adverse effects No further relevant information available.

SECTION13: Disposal considerations

·13.1 Waste treatment methods
·Recommendation:
Must be recycled or disposed of according to the regulations. Waste has to be classified according to the European Waste Catalogue based on the identification of the waste generating source.
Disposal according to instructions of local authorities
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

European waste catalogue:
06 00 00 WASTES FROM INORGANIC CHEMICAL PROCESSES
06 03 00 wastes from the MFSU of salts and their solutions and metallic oxides
06 03 99 Wastes not otherwise specified
·Uncleaned packagings:
·Recommendation: Disposal must be made according to official regulations.

SECTION14: Transport information

14.1 UN-Number
·ADR,IMDG,IATA UN1726
14.2 UN proper shipping name
·ADR 1726 ALUMINIUM CHLORIDE, ANHYDROUS
·IMDG,IATA ALUMINIUM CHLORIDE, ANHYDROUS
·14.3 Transport hazard class(es)

·ADR

·Class 8 (C2) Corrosive substances
·Label 8

·IMDG,IATA

Class	8 Corrosive substances
·Label	8
·14.4 Packing group	
·ADR,IMDG,IATA	II
·14.5 Environmental hazards:	
·Marine pollutant:	No
·14.6 Special precautions for user	Warning: Corrosive substances
·Danger code(Kemler):	80
·EMS Number:	F-A,S-B
·Segregation groups:	Acids
Stowage Category	A
Stowage Code	SW2 Clear of living quarters
·14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable
·Transport/Additional information:	Protect from wet conditions.
·ADR	
·Limited quantities(LQ):	1 kg
Expected quantities (EQ)	Code E2
	Maximum net quantity per inner packaging 30 g
	Maximum net quantity per outer packaging 500 g
·Transport Category:	2
Tunnel restriction code	E
·IMDG	
·Limited quantities(LQ):	1 kg
Expected quantities (EQ)	Code E2
	Maximum net quantity per inner packaging 30 g
	Maximum net quantity per outer packaging 500 g
·IATA	
·Remarks:	Packing Instructions:
	For Limited Quantities: Y 844 5 kg max. net/Pkg
	Passenger and cargo aircraft: 859 15 kg max. net/Pkg
	Cargo aircraft only: 863.50 kg max net/Pkg
·UN" Model Regulation":	UN1726, ALUMINIUM CHLORIDE, ANHYDROUS, 8 II

SECTION15: Regulatory information

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

·Directive 2012/18/EU

Named dangerous substances – ANNEX I Substance is not listed
Seveso category O1 Substances or mixtures with hazard statement EUH014
Qualifying quantity (tonnes) for the application of lower-tier requirements 100 t
Qualifying quantity (tonnes) for the application of upper-tier requirements 500 t

National regulations

·**Information about limitation of use:**
Take note of Directive 94/33/EC on the protection of young people at work.
Water hazard class:
Water hazard class 1 (Assessment by list):slightly hazardous for water
Ident number: 507

·**15.2 Chemical safety assessment**: A chemical Safety Assessment has been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

·**Reasons for amendments:**

No change required according to maintenance check
Replaces version dated: 21.07.2016

·Department issuing MSDS:
KFT Chemie service GmbH
Im Leuschnerpark. 364347 Griesheim
Postfach 1451 64345 Griesheim Germany

Phone: +496155 86829-0 Fax:+496155 86829-25
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·Contact: Dr. Sonja Fischer

·**Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route(European Agreement concerning the International Carriage of DangerousGoodsby Road)
RID:Règlement international concernant le transport des marchandises dangereuses par chemin de fer(Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances CAS:
Chemical Abstracts Service(division of the American Chemical Society) DNEL: Derived No-Effect Level(REACH)
PNEC: Predicted No-Effect Concentration(REACH) LC50:
Lethal concentration,50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: Very Persistent and very Bioaccumulative
Skin Corr. 1B, Skin corrosion/irritation, Hazard Category, 1B
Eye Dem 1 : Serious eye damage/eye irritation. Hazard Category 1
·**Sources:**
RTECS database
ESIS (European existing Substances Information System)
Chemical Safety Report
IUCLID- Dossier from ECHA
·*** Data compared to the previous version altered.**
Changes have been made to sections marked with a*,as compared to the previous version.

Annex: Exposure scenario 1

·**Short title of the exposure scenario**1.Manufacturing and distribution

·**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

·Process category

PROC2 Use in closed, continuous process with occasional controlled exposure

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)

·**Environmental release category** ERC1 Manufacture of substances

·**Notes**

No environmental hazard was identified. Therefore an exposure estimation and risk characterisation for the environment has not been performed.

Condition of use

Worker

·**Worker**

> 4 hours/day (PROC2, 3, 4)

15 min - 1 h per day(PROC 8a, 8b, 9)

·**Physical parameters**

·**Physical state**

Solid

Dustiness: moderate

Remark to "Dustiness: moderate": Covering the use of sieved AlCl3 or agglutinated AlCl3 (AlCl3 is hygroscopic, therefore it is assumed that the particles agglutinate and the dustiness is reduced to moderate). The assessment is not useable in case of handling highly dusty grounded AlCl3.

·**Other operational conditions**

·**Other operational conditions affecting worker exposure**

Outdoor use.

Local exhaust ventilation: PROC 2,3,4,8a, 8b, 9

Effectiveness local exhaust ventilation: 90 % (PROC2, 3, 4, 8a, 8b, 9)

Protective gloves: PROC 2,3,4,8a, 8b, 9

Eye protection: PROC 2,3,4,8a, 8b, 9

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Exposure must be kept under the limits of the highest expected concentrations (see under "Exposure estimation")

Minimise number of staff exposed

Segregation of the emitting process

Good standard of general ventilation

G1: Assumes a good basic standard of occupational hygiene has been implemented.

E119: Ensure operatives are trained to minimise exposures
Avoid frequent and direct contact with the substance.
Minimisation of manual phases.
Regular cleaning of equipment and work area (at least daily).
Supervision in place to check that RMMs are applied correctly and OCs are followed.
Technical protective measures
Closed systems as far as possible
Local exhaust ventilation: PROC 2, 3, 4 8a, 9
Effectiveness local exhaust ventilation: 90% (PROC 2, 3 4 8a, 9)
Local exhaust verification or respirator for indoor use PROC (8b)
Effectiveness local exhaust ventilation: 95% (PROC 8b)
Personal protective measures
Tightly sealed goggles
Protective/chemical resistant gloves, in combination with basic use instructions/training (PROC 2, 3, 4, 8a, 8b, 9)
.....
Respirator: PROC 8b
Effectiveness respirator: 95% (PROC 8b)
Local exhaust ventilation with adequate effectiveness is required in case no respiratory protection is used (PROC 8b)
·**Exposure estimation**
·**Worker(dermal)** No significant dermal exposure
Worker (inhalation)
The highest expected concentration of inhalative exposition is 0.05 mg/m3.(a) PROC2, 8b, RCR 0.05)
The highest expected concentration of inhalative exposition is 0.1 mg/m3. (PROC 3 RCR 0.1)
The highest expected concentration of inhalative exposition is 0.5 mg/ m3 (PROC 4 RCR 0.5)
-Guidance for downstream users
Risk assessment toos(s) utilised;

Annex: Exposure scenario 2

·**Short title of the exposure scenario** 2.Reactive process agent in inorganic and organic synthesis

·**Sector of Use**
SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU8 Manufacture of bulk, large scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

·**Process category**
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition.

·**Environmental release category**
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a use of intermediates
ERC6b use of reactive processing aid at industrial site (no inclusion into or onto article)
Notes
No environmental hazard was identified. Therefore an exposure estimation and risk characterisation for the environment has not been

performed.

Conditions of use

Worker

'> 4 hours/day (PROC 3)

5 workdays/week

·**Physical parameters:** application temperature: 180 °C (PROC 3)

·**Physical state: Liquid**

Concentration of the substance in the mixture Concentration: 100% (PROC 3)

Other operational conditions

·**Other operational conditions affecting worker exposure**

Indoor use, industrial setting: PROC 3

Assumed exposed body surface: 240 cm^2 (PROC 3)

Generation of/exposure towards aerosols has to be excluded

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Minimize number of staff exposed

Segregation of the emitting process

Good standard of general ventilation

G1: Assumes a good basic standard of occupational hygiene has been implemented

E119: Ensure operatives are trained to minimise exposures

Avoid frequent and direct contact with the substance.

Minimisation of manual phases.

Regular cleaning of equipment and work area (at least daily).

Supervision in place to check that RMMs are applied correctly and OCs are followed.

Technical protective measures Closed systems as far as possible

Personal protective measures

Tightly sealed goggles

Proective/chemical resistant gloves, in combination with basic use instructions/training (PROC 3)

·**Exposure estimation**

·**Worker (inhalation)** Inhalative exposure is regarded to be negligible

Guidance for downstream users

Risk assessment tool(s) utilised:

Annex: Exposure scenario 3

·**Short title of the exposure scenario**

Use as intermediate for the production of Aluminium containing substances (use ofAlCl3 as vapour)

·**Sector of Use**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

SU8 Manufacture of bulk, large scale chemicals (including petroleum products)

SU9 Manufacture of fine chemicals

·**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.

·**Environmental release category**

ERC6a Use of intermediate

Notes

No environmental hazard was indentified. Therefore an exposure estimation and risk characterisation for the environment has not been performed.

·**Conditions of use**

Worker

'> 4 hours/day (PROC 1, 2)

5 workdays/week

·**Physical parameters**

·**Physical state** Liquid

·**Other operational conditions**

·**Other operational conditions affecting worker exposure**

Indoor use, industrial setting, PROC 1, 2

Assumed exposed body surface: 240 cm^2 (PROC 1)

Assumed exposed body surface: 480 cm^2 (PROC 1)

Generation of/exposure towards aerosols has to be excluded

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Minimize number of staff exposed
Segregation of the emitting process
Good standard of general ventilation
G1: Assumes a good basic standard of occupational hygiene has been implemented
E119: Ensure operatives are trained to minimise exposures
Avoid frequent and direct contact with the substance.
Minimisation of manual phases.
Regular cleaning of equipment and work area (at least daily).
Supervision in place to check that RMMs are applied correctly and OCs are followed.
Technical protective measures Closed systems as far as possible
Personal protective measures
Tightly sealed goggles
Proective/chemical resistant gloves, in combination with basic use instructions/training (PROC 1, 2)

·**Exposure estimation**

·**Worker (dermal)** No significant dermal exposure

-**Worker (inhalation)** Inhalative exposure is regarded to be negligible

Guidance for downstream users

BASE METAL CHEMICALS

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Aluminium Chloride Anhydrous
Safety Data Sheet
According to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue Date : 20/05/2022 Revision Date : 20/05/2022 Supersedes Version of: 23/12/2021 Version : 4.02
Risk assessment tool(s) utilised

Annex: Exposure scenario 4

·**Short title of the exposure scenario**

Use as intermediate for the production of Aluminium containing substances (use of AlCl3in solutions or slurries)

·**Sector of Use** SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

·**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.

·**Environmental release category**

ERC6a Use of intermediate

Notes

No environmental hazard was identified. Therefore an exposure estimation and risk characterisation for the environment has not been performed.

·**Conditions of use**

Worker

'> 4 hours/day (PROC 1, 2)

5 workdays/week

·**Physical parameters**

·**Physical state** Liquid

·**Other operational conditions**

·**Other operational conditions affecting worker exposure**

Indoor use, industrial setting, PROC 1, 2

Assumed exposed body surface: 240 cm^2 (PROC 1)

Assumed exposed body surface: 480 cm^2 (PROC 1)

Generation of/exposure towards aerosols has to be excluded

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Minimize number of staff exposed
Segregation of the emitting process
Good standard of general ventilation
G1: Assumes a good basic standard of occupational hygiene has been implemented
E119: Ensure operatives are trained to minimise exposures
Avoid frequent and direct contact with the substance.
Minimisation of manual phases.

Regular cleaning of equipment and work area (at least daily).
Supervision in place to check that RMMs are applied correctly and OCs are followed.
Technical protective measures Closed systems as far as possible
Personal protective measures
Tightly sealed goggles
Proective/chemical resistant gloves, in combination with basic use instructions/training (PROC 1, 2)

·Exposure estimation

·Worker (dermal) No significant dermal exposure

-Worker (inhalation) Inhalative exposure is regarded to be negligible

Guidance for downstream users

Risk assessment tool(s) utilised

Annex: Exposure scenario 5

·Short title of the exposure scenario

After hydrolysis: Use as process chemical in process water treatment, sewage water treatment
Industrial use
Professional use

·Sector of Use

SU3 Industrial uses: uses of substances as such or in preparations at industrial sites
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU5 Manufacture of textiles, leather, fur
SU6b Manufacture of pulp, paper and paper products
SU23 Electricity, steam, gas water supply and sewage treatment

·Process category

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 arisesUse
PROC5 Mixing or blending in batch processes

·Environmental release category

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC5 Use at Industrial site eading to inclusion into/onto article
ERC8b Widespread use of 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)

Notes

No environmental hazard was identified. Therefore an exposure estimation and risk characterisation for the environment has not been performed.

·**Physical parameters**

·**Physical state** Liquid

Concentration of the substance in the mixture Concentration: 100% (PROC 3, 4, 5)

·**Other operational conditions**

·**Other operational conditions affecting worker exposure**

Indoor use, industrial setting, PROC 3, 4, 5

Indoor use, professional setting: PROC 3, 4, 5

Assumed exposed body surface: 240 cm^2 (PROC 1)

Assumed exposed body surface: 480 cm^2 (PROC 1)

Generation of/exposure towards aerosols has to be excluded

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Minimize number of staff exposed
Segregation of the emitting process
Good standard of general ventilation
G1: Assumes a good basic standard of occupational hygiene has been implemented
E119: Ensure operatives are trained to minimise exposures
Avoid frequent and direct contact with the substance.
Minimisation of manual phases.
Regular cleaning of equipment and work area (at least daily).
Supervision in place to check that RMMs are applied correctly and OCs are followed.
Technical protective measures Closed systems as far as possible
Personal protective measures
Tightly sealed goggles
Proective/chemical resistant gloves, in combination with basic use instructions/training (PROC 3, 4, 5)

·**Exposure estimation**

·**Worker (dermal)** No significant dermal exposure

-**Worker (inhalation)** Inhalative exposure is regarded to be negligible

Guidance for downstream users

Risk assessment tool(s) utilised

Annex: Exposure scenario 6

·**Short title of the exposure scenario**

Use in laboratory

Industrial use

Professional use

·**Sector of Use**

SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

·**Process category** PROC15 Use as laboratory reagent

·**Environmental release category**

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)

ERC 8a 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)

ERC8e Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)

ERC8f Widespread use of leading to inclusion into/onto article (outdoor)

ERC9af Widespread use of functional fluid (indoor)

ERC9b Widespread use of functional fluid (outdoor)

Notes

No environmental hazard was identified. Therefore an exposure estimation and risk characterisation for the environment has not been performed.

·**Conditions of use**

Worker

'> 4 hours/day (PROC 15)

5 workdays/week

·**Physical parameters**

·**Physical state Solid**

Dustiness : moderate

Remark to : "Dustiness: moderate"; Covering the use of sieved AlCl3 or agglutinated AlCl3 (AlCl3 is hygroscopic, therefore, it is assumed that the particles agglutinate and the dustiness is reduced to moderate). The assessment is not useable in case of handling highly dusty grounded AlCl3

Concentration of the substance in the mixture Concentration: 100% (PROC 15)

·**Other operational conditions**

·**Other operational conditions affecting worker exposure**

Indoor use, industrial setting, PROC 15

Indoor use, professional setting: PROC 15

Assumed exposed body surface: 240 cm^2 (PROC 15)

Assumed exposed body surface: 480 cm^2 (PROC 15)

·**Risk management measures**

·**Worker protection**

·**Organisational protective measures**

Exposure must be kept under the limits of the highest expected concentrations (see under "Exposure estimation")
Minimize number of staff exposed
Segregation of the emitting process
Good standard of general ventilation
G1: Assumes a good basic standard of occupational hygiene has been implemented
E119: Ensure operatives are trained to minimise exposures
Avoid frequent and direct contact with the substance.
Minimisation of manual phases.
Regular cleaning of equipment and work area (at least daily).
Supervision in place to check that RMMs are applied correctly and OCs are followed.

Technical protective measures

Closed systems as far as possible
Local exhaust ventilation: PROC 15
Effectiveness local exhaust ventilation: 90% (PROC 15, industrial setting)

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Professional use

Local exhaust ventilation or respirator for indoor use PROC (15)

Effectiveness local exhaust ventilation: 90% (PROC 15, professional setting)

Professional protective measures

Tightly sealed goggles

Protective/chemical resistant gloves, in combination with basic use instructions/training (PROC 15)

.....

Professional use

Respirator: PROC 15

Effectiveness respirator : 80% (PROC 15)

Local exhaust ventilation with adequate effectiveness is required in case no respiratory protection is used (PROC 15)

·**Exposure estimation**

·**Worker (dermal)** No significant dermal exposure

-Worker (inhalation)

The highest expected concentration of inhalative exposition is 0.05 mg/m³. (a) PROC 15 (RCT 0.05) industrial use

The highest expected concentration of inhalative exposition is 0.1 mg/m³. (a) PROC 15 (RCT 0.1) professional use

Guidance for downstream users

Risk assessment tool(s) utilised