SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH)

Aluminium Sulphate Technical Pure

Date 26.01.2009 Version 1.0

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1. Identification of the substance or preparation: ALUMINIUM SULPHATE TECHNICAL PURE

Molecular formula: Al.3/2H2O4S

Chemical name:

EINECS name: **Aluminium sulphate**

IUPAC name: **Aluminium sulfate**

REFERENCE NUMBER – 05-2114100394-63-0000

1.2 Use of the substance/preparation:

Coagulant.

Used in leather, pulp-and-paper, wood, textile and chemical industries. Also used for water treatment.

1.3 Company/undertaking identification:

Manufacturer: CJSC Crimea TITAN

Severnaya Promzona, Armyansk, Autonomous Republic of Crimea, Ukraine, 96012

Person responsible for commercial introduction of the substance within European Community:

Irene Nasdala

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Person responsible for MSDS:

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1.4 Emergency telephone:

+38 06567 3 74 44 (during working hours only)
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2 HAZARDS IDENTIFICATION

The product is **not qualified** as hazardous according to Directive 67/548/EEC. Not included in Annex 1 of Regulation No. (EC) 304/2003.
Potential Health Effects:
Inhalation: on long-term exposure deposited in lungs, but not in active state.

Eye contact: injection of the compound into conjunctival sac of rabbit's eye results in conjunctivitis and purulent ophthalmitis.

Skin contact: no educed evidences of irritation.

Ingestion: swallowing small amounts of this material may result in gastroenteric upset.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Composition

Chemical name	Mass fraction, %	EINECS No.	CAS No.
Aluminium sulphate octadecahydrate:	**90 – 97**	**233-135-0**	**7784-31-8**
Aluminium sulphate	53,5 – 57,0	233-135-0	10043-01-3
Water	43,0 – 46,3	-	-

3.2 Classification

Not classified as hazardous

4 FIRST AID MEASURES

General measures: ensure rest, warm conditions, comfortable position, fresh air availability, free air access.
Inhalation: If breathing is difficult, provide damped oxygen or carbogen; if not breathing, give artificial respiration.
Eye contact: rinse eyes with plenty of water while the eyelid is open until irritation ceases. Inject into eyes 1-2 drops of 30 % sulfacetamide solution.

Skin contact: remove contaminated clothing, shoes and outfit. Rinse the contaminated skin with warm running water or weak soda solution until the skin is clean.
Ingestion: clear the oral cavity free of the substance. Give charcoal. Make the injured person drink water or milk.

5 FIRE FIGHTING MEASURES

Flame- and explosionproof. Non-flammable, it doesn't sustain combustion.
Using extinguishing media depends on fire hazard/explosion characteristics of combustibles in area.

6 ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

Avoid dust formation. Provide adequate ventilation. Use appropriate personal protective equipment:
dust mask, protective suit, safety shoes.

6.2. Environmental precautions

Avoid dust dispersion to the environment. Prevent leakages from entering drains and ditches that lead to natural waterways.

6.3. Methods for cleaning up

If spilled: collect in dry form into the lockable labeled container. The solutions and melts are covered with sand, ground or some sorbing agent, and then the mixture should be collected and put into the lockable labeled container for further use in production or landfill. Aerate room afterwards and wash release area.

7 HANDLING AND STORAGE

7.1 Handling

Production facilities must be equipped with aspiration hoods in the area of potential dust release. Running water must be supplied to the production facilities and auxiliary areas. If spilled: collect in dry form into the lockable labeled container in such a way that there is no spilling out. Wash the contaminated surface with water.

7.2 Storage

Store in manufacturer's package in closed storage facilities. The material provokes metal corrosion in the presence of moisture. Keep dry.

7.3 Specific use – not applicable

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure limits

Atmospheric air: TLV_{air} = 0,006 mg/m^3 (on the basis of aluminium)

Work zone air: $TLV_{work\ zone\ air}$ = 2,0 mg/m^3 (maximal single dose); 0,5 mg/m^3 (mean-shift dose), aerosols (in-equivalent aluminium).

8.2 Exposure controls

8.2.1 Occupational exposure controls:

Equipment must be sealed. Provide adequate extract-input ventilation. Running drinkable water must be supplied to the production facilities. Storage of foodstuff and eating in the substance processing area are forbidden.
Work zone air monitoring is recommended using photometric method for aluminium oxide according to the Instructional guidelines MU No. 3943-85 dd. 05.11.85.

8.2.1.1. Respiratory protection
Use respirators conforming to EN149 with dust filters according to EN 143.
8.2.1.2. Hand protection
Use Neopren or PVC gloves according to EN374.
8.2.1.3. Eye protection
Use safety dust proof goggles according to EN166.
8.2.1.4. Skin protection
Use protective clothing.

8.2.2 Environmental exposure controls

Provided that all necessary sanitary rules for transportation and storage are adhered, the possibility of environment pollution is eliminated.
The substance half-life is > 30-7 days (high-stable).

Non transformable in the environment.
Standard for water bodies of domestic and cultural and general water consumption: $TLV_{in\ water}$ = 0,5 mg/l (in-equivalent aluminium, taking into account total content of all forms).

Standard for fisheries waters: TLV_{fw} = 0,5 mg/l (in-equivalent Al +++ 0,08 mg/l).

8.2.3 Measures regarding consumptive use of the substance.

No additional measures required while observing 8.2.1.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Appearance	granulated material
Physical state	solid
Colour	white
Odor	odorless

9.2 Important health, safety and environmental information

pH	octadecahydrate – 2,5-4,0 (for concentration 50 000 mg/l at 20°C) anhydrous form - 2,9 (for concentration 1 g/ml of water); 3-3,5 (for concentration 10 g/l of water)
Boiling point/range	for octadecahydrate is not reachable (material will decompose). At 150°C the material loses 4 molecules of water, at 160°C – 8, at 250°C – 15, is completely dehydrated at 420°C for anhydrous form is not reachable. Decomposition at (650-770)°C
Ignition temperature	nonflammable
Flammability (solid/gaseous state)	nonflammable
Explosive properties	nonexplosive
Oxidizing properties	is not oxidizing agent
Vapor pressure	~ 0 mm hg

Relative Density	octadecahydrate – 1,69 g/sm^3 (at 17°C) anhydrous form - 2,71 g/sm^3
Solubility	soluble in weak acids, slightly soluble in ethyl alcohol, alkalies.

Water solubility	soluble in cold and hot water: 31,2 g/100 g (at 0°C); 36,2 g / 100 g (20°C); 89,0 g/100 g (100°C)
Partition coefficient n-octanol/water	insoluble in n-octanol
Viscosity	n/a
Vapor density	n/a
Evaporation coefficient	n/a

9.3 Other information

Miscibility	Immiscible
Fat solubility	Insoluble
Melting point	octadecahydrate – 86,5°C (with decomposition) anhydrous form – 770°C (with decomposition)

10 STABILITY AND REACTIVITY

Stable. Retains its physicochemical properties and use properties.

10.1 Conditions to avoid

Will react with sulphates of alkali metals, acids and alkalies. At conditions of humidity the material provokes corrosion of iron and its alloys, aluminium and steel. Reacts with water with sulphuric acid formation, including release of heat

10.2 Incompatibility (Materials to avoid)

Incompatibility with the following materials: water, strong oxidizing agents (for example: chlorine, perchlorates, peroxides); strong bases (for example: sodium hydroxide).

10.3 Hazardous decomposition products

Sulfur oxide, aluminium oxide. On heating irritating and pungent smoke may be released.

11 TOXILOGOCAL INFORMATION

Cases of intoxications from aluminium sulfate have not been reported. Non-fibrogenic.

Octadecahydrate:

Acute toxicity:

DL_{50} = 370 mg/kg (rat, oral). DL_{50} = 980 mg/kg (mouse, oral). DL_{50} = 61 mg/kg (rat, intraperitoneal). DL_{50} = 997 mg/kg (mouse, intraperitoneal). LC_{50} = data unavailable.

Irritant action data:

Inhalation: yes

Skin: non-irritant (20 mg/sm^3, cut area on the side of back, rabbits, 10 days, no effect)

Eyes: yes (50 mg, single introduction, rabbits: conjunctivitis, purulent ophthalmitis)

Swallowing: small doses won't produce negative effects. Large doses may cause gastroenteric upset

Sensibilizing action: yes (aluminium is referred to be a skin sensitizer)

Embriotoxicity: embriotoxic (mice, 200 mg/kg, intraperitoneal, 10-13 days, embriotoxic action identified)

Honadotoxicity: yes (1/10 $DL_{50,}$ oral, 2 month, rats – lapses in functional and cytophysiological indexes of spermatogenesis; EDmin 27,4 mg/kg intratesticular, single introduction, male rats – effect on spermatogenesis identified).

Teratogenecity: data unavailable

Mutagenic activity: yes (cytogenetic analysis, intraperitoneal, mouse, 250 mg/kg – SCE change, 200 mg/kg, intraperitoneal, mouse).

Carcinogenic activity: **humans**: data unavailable, **animals**: data unavailable. IARC rating: not listed as cancerigenic for humans.

Anhydrous form:

Acute toxicity:

DL_{50} = 4210 mg/kg (mouse, oral). DL_{50} = 274 mg/kg (mouse, intraperitoneal). DL_{50} = 1930 mg/kg (oral, rat). DL_{50} = 410 mg/kg (rat, intraperitoneal).

Irritant action data:

Inhalation: may cause irritation.

Skin: non-irritant. Skin-resorptive effect – not studied.

Eyes: yes (rabbits: conjunctivitis, purulent ophthalmitis). The substance contact with eyes causes reddening of conjunctiva, pain).

Swallowing: small doses won't produce negative effect. Large doses may cause gastroenteric upset.

Sensibilizing action: yes (aluminium is referred to be a skin sensitizer)

Embriotoxicity: not reported. There are another data – embriotoxic (mice, 200 mg/kg, intraperitoneal, 10-13 days, embriotoxic action identified).

Honadotoxicity: yes (rats, structural testicles changes, pathologic forms of spermatogenesis).

Teratogenecity: not studied

Mutagenic activity: not reported

Carcinogenic activity: **humans**: not studied, **animals**: not studied. IARC rating: not listed as cancerigenic for humans.

12 ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Acute fish toxicity: CL_{50} = 4,4 mg/l (Pimephales promelas). CL_{50} = 69 mg/l (Gambusia affinus, 48 hours). CL_{50} = 100 mg/l (Carassius auratus, 96 hours). CL_{50} = 30-36 mg/l (Cyprinus carpio, 24-96 hours).

Acute Daphnia magna toxicity: CL_{50} = 30-36 mg/l (24-96 hours)

Algal toxicity (in culture): CL_{50}= 200 mg/l (Scenedesmus quadricauda (green)

Invertebrates toxicity: data unavailable

12.2 Mobility

The substance won't transform in ambient medium.

12.3 Persistence and biodegradability

Biodegradability [BD = (BOD5 : COD) · 100 %]: not applicable

Chemical oxygen demand: not applicable

Biological oxygen demand: not applicable

The substance half-life is > 30-7 days.

12.4 Bioaccumulation potential

Cumulation: weak

12.5. PBTs classification (persistent-bioaccumulative and toxic substances)

The substance doesn't appear to be persistent and bioaccumulative one.

12.6 Other negative effects

Substances which may cause destruction of the ozone layer: not available
Volatility: non-volatile under normal conditions

13 WASTE DISPOSAL

If disposal is impossible waste is to be removed in strict correspondence with the state and local laws and regulations.

Collecting small spills: collect in labeled container for inorganic solids.

14 TRANSPORT INFORMATION

The aluminium sulfate is transported by railway (RID), road (ADR), and sea (IMDG) transport.

Obligatory mark «**Keep dry**».

The cargo is classified as non-hazardous in compliance with the international rules of carriage.

15 REGULATORY INFORMATION

State standard GOST 12966-85 «Aluminium sulphate technical»

Instructional guidelines MU 05.11.85 No.3943-85 «Instructional guidelines on photometric determination of aluminum oxide authorized by the Ministry of Health of USSR.

Safety data card of hazardous factor dated 15.08.2008 No. 9613 B000016. Aluminium sulphate
Safety data card of hazardous factor dated 02.04.2008 No. 8844 B000587. Sulphuric acid, aluminum salt (3:2), octadeca-hydrate
MSDS for aluminium sulphate 32785994.21.00131
Hygiene and Toxicology Datasheet for aluminium sulfate technical pure developed by the Institute of Ecohygiene and Toxicology named for L. I. Medved, Ministry of Health of Ukraine. 2008

Standard EN 374
Standard EN 149: 2001
Standard EN 166 1F (2002)

16 OTHER INFORMATION

16.1

R-phrase – unavailable.
S-phrases – unavailable.

16.2 Training advice

Read the MSDS before using the product

16.3 Recommended use restrictions

Information contained in the Material Safety Data Sheet refers to this particular substance. It may be invalid in case this substance is used together with any other materials or any other production process. The user bears responsibility for assessment of applicability and completeness of this information for his particular applications.