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SAFETY DATA SHEET FOR

ROYALSIL HI-PURITY AMEO

According to Hazard Communication Standard 29 CFR 1910.1200

1. IDENTIFICATION

CHEMICAL NAME: 3-Aminopropyltriethoxysilane

SYNONYM: 3-Triethoxysilylpropylamine

COMMERCIAL NAME: ROYALSIL HI-PURITY AEMO

LINEAR FORMULA: $\text{H}_2\text{N}(\text{CH}_2)_3\text{Si}(\text{OC}_2\text{H}_5)_3$

CAS#: 919-30-2

EC# 213-048-4

MDL#: MFCD00008207

PRODUCT USE: Used to treat mineral fillers, adhesion promoter in various paints, adhesives, caulks and sealants. Certain plastics.

Supplier: ROYALSIL Inc.
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CHEMTREC CONTRACT NUMBER: CCN674872

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302

Skin corrosion (Category 1B), H314

Skin sensitisation (Category 1), H317

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

Classification according to EU Directives 67/548/EEC or 1999/45/EC

Xn, C, Harmful, Corrosive, Irritant R22, R34, R43

Xi

2.2 GHS label elements

Labeling according Regulation (EC) No 1272/2008

Hazard Pictograms



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Signal Word

Danger

Hazard statement(s)

H302

Harmful if swallowed.

H314

Causes severe skin burns and eye damage.

H317

May cause an allergic skin reaction.

Precautionary statement(s)

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 POISON CENTER or doctor/ physician.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization (substance)

CAS No.	Chemical characteristics
919-30-2	Organosilane

3.2 Hazardous ingredients

Chemical name	CAS No.	Concentration
3-Aminopropyltriethoxysilane	919-30-2	≥98.0%
Ethanol	64-15-7	≤2.0%

Notes: Additional ethanol may be formed by reaction with moisture. Harmful if swallowed.

4. FIRST AID MEASURES

4.1 General information

Take persons to a safe place. Observe self-protection for first aid.

4.2 After inhalation

Move the exposed person to fresh air at once. Keep the patient calm. Protect against loss of body heat. If breathing stops, administer artificial respiration. Seek medical advice immediately and clearly identify substance.

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4.3 After contact with the skin

Remove contaminated clothes at once. Wash off with plenty of water or water and soap immediately for 10-15 minutes. In serious cases, use emergency shower immediately. Seek medical advice immediately and clearly identify substance.

4.4 After contact with the eyes

Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15-30min while

holding the eyelid(s) open. If contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Neutral saline solution may be used as soon as available. Do not interrupt flushing. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto the face. Seek medical advice immediately and clearly identify substance. Continue to bathe eyes during transport to medical practitioner.

4.5 After swallowing

If conscious, give two glasses of milk or water at once. Do not induce vomiting. Seek medical advice immediately and clearly identify substance.

4.6 Advice for the physician

Product may hydrolyze upon contact with body fluids in the gastrointestinal tract to produce additional methanol; therefore, consider the signs/symptoms of methanol poisoning and also observe the known latency period of several days.

5. FIREFIGHTING MEASURES

5.1 Flash point and sensitivity to static discharge

96°C (Test method: tag closed cup), sensitivity to static discharge is expected.

5.2 Suitable extinguishing media

Use foam, dry chemical, or carbon dioxide. DO NOT USE WATER!

5.3 General information

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water reactive. Material will react with water and may release a flammable and/or toxic gas.

5.4 Special protective equipment for fire fighting

Use respiratory protection independent of recirculated air.

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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

Wear personal protection equipment (see section 8). Keep unprotected persons away. Avoid contact with eyes and skin. Avoid inhaling mists or vapours. If material is released indicate risk of slipping.

6.2 Environmental precautions

Prevent material from entering surface waters, drains or sewers and soil. Contain any fluid that runs out using suitable material. Retain contaminated water/extinguishing water.

6.3 Methods for cleaning up

Collect for disposal .Residue: Flush with large amounts of water.

7. HANDLING AND STORAGE

7.1 Handling

Advice on safe handling

Do not swallow.
Do not get in eyes, on skin, on clothing.
Avoid prolonged or repeated contact with skin.
Avoid breathing vapor and mist.
Use with adequate ventilation.
Wash thoroughly after handling.

Ventilation

General (mechanical) room ventilation is expected to be satisfactory where this product is stored and handled in closed equipment. Special ,local ventilation is needed at points where vapors can be expected to escape to the workplace air.

7.2 Storage

Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Corrosives area. Store under an inert atmosphere.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Exposure limits

Component	CAS No.	Source	Value
Ethanol	64-15-7	TWA, OSHA	1.000ppm
Ethanol	64-15-7	TWA, ACGIH	1.000ppm

Absence of values indicates was not found.

TWA: Time Weighted Average; OSHA revoked the Final Rule Limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL- CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910.1000 (58 FR 35338).

8.2 Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

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9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Physical state/form.....: liquid
Color.....: colorless
Odor.....: amine like
pH.....: 11 (20g/L aq.sol. (20))
Boiling point.....: 122°C/at 760mmHg
Melting point.....: -70°C
Flash point.....: 96°C(tag closed cup)
Ignition temperature.....: 270°C
Upper explosion limit.....: 4.5%(V)
Lower explosion limit.....: 0.8%(V)
Vapor pressure.....: <13 hPa at 100°C
Vapor density.....: 7.64 – (Air=1.0)
Density/relative density.....: 0.946g/cm³(25°C)
Solubility.....: react with water
Viscosity(dynamic).....: no data available
Explosive properties.....: no data available
Oxidizing properties.....: no data available

9.2 Other information

Relative vapor density 7.64 – (Air=1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

May decompose on exposure to moist air or water.
Stable under recommended storage conditions.

10.3 Possibilities of hazardous reactions

No data available

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10.4 Condition to avoid

Heat, flames and sparks

10.5 Incompatible materials

Strong oxidizing agents, Acids

10.6 Hazardous decomposition products

Burning can produce the following combustion products:

Oxides of carbon.

Oxides of nitrogen.

Oxides of silicon .

Carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant.

Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 1.780 mg/kg

LC50 Inhalation - Rat - male - 6 h - > 5 ppm

(OECD Test Guideline 403)

LC50 Inhalation - Rat - female - 6 h - > 16 ppm

(OECD Test Guideline 403)

LD50 Dermal - Rabbit - 3,8 g/kg

Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns. - 1 h

(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit

(OECD Test Guideline 405)

Remarks: Severe eye irritation

Respiratory or skin sensitisation

Buehler Test - Guinea pig

May cause sensitisation by skin contact. (OECD Test Guideline 406)

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Germ cell mutagenicity

Hamster

ovary

Result: negative

Mutagenicity (micronucleus test)

Mouse - male and female

Result: negative

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Informatio

Repeated dose toxicity - Rat - male and female - Oral - No observed adverse effect level - 200 mg/kg -Lowest observed adverse effect level - 600 mg/kg Repeated dose toxicity - Rabbit - male and female - Dermal - No observed adverse effect level - 84 mg/kg

RTECS: TX2100000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Liver - Irregularities - Based on Human Evidence

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12. ECOLOGICAL INFORMATION

12.1 Toxicity

- Toxicity to fish** emi-static test LC50 - Danio rerio (zebra fish) - > 934 mg/l - 96 h
 (OECD Test Guideline 203)
- Toxicity to daphnia and other aquatic** Immobilization EC50 - Daphnia magna (Water flea) - 331 mg/l - 48 h
 (OECD Test Guideline 202)
- Toxicity to algae** static test EC50 - Desmodesmus subspicatus (green algae) > 1.000 mg/l
 -72h
- Toxicity to bacteria** EC50 - Pseudomonas putida - 43 mg/l - 5,75 h

12.2 Persistence and degradability

- Biodegradability** aerobic - Exposure time 28 d
 Result: 67 % - Not biodegradable

12.3 Bioaccumulative potential

- Bioaccumulation** Cyprinus carpio (Carp) - 5 mg/l
 Bioconcentration factor (BCF): 3,4

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

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14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID: 3267

IMDG: 3267

IATA: 3267

14.2 UN proper shipping name

ADR/RID: AMINES, LIQUID, CORROSIVE, N.O.S. (3-Aminopropyltriethoxysilane)

IDMG: AMINES, LIQUID, CORROSIVE, N.O.S. (3-Aminopropyltriethoxysilane)

IATA: Amines, liquid, corrosive, n.o.s. (3-Aminopropyltriethoxysilane)

14.3 Transport hazard classes

ADR/RID: 8

IMDG: 8

IATA: 8

14.3 Packing group

ADR/RID: II

IMDG: II

IATA: II

4.3 Environmental hazards

ADR/RID: no

IMDG marine pollutant: II

IATA: no

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

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

No data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

16. OTHER INFORMATION

Prepared by Asambly Chemicals Company Limited

(R) indicates Registered Trademark

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REV: 05-07-15