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Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name Tetramethylammonium hydroxide pentahydrate
Product number W820012
Brand 3ASenrise
CAS number 10424-65-4

1.2 Details of the supplier of the safety data sheet

Company: Anhui Senrise Technology Co., Ltd.
Address: No.88 Weisan Road, High-Tech Industrial Development Zone, Anqing, Anhui
Post code: 246003
Tel: 400-005-6266
Fax: 0556-5555368
Email: service@3asenrise.com

1.3 Emergency telephone

Emergency telephone: 0556-5500208

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

Identified uses: For R&D use only. Not for pharmaceutical, household or other uses.

2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Acute toxicity, Oral (Category 2), H300
Acute toxicity, Dermal (Category 2), H310
Skin corrosion/irritation (Category 1), H314
Serious eye damage/eye irritation (Category 1), H318
Specific target organ toxicity – single exposure (Category 1), H370
Specific target organ toxicity – repeated exposure (Category 1), H372
Short-term (acute) aquatic hazard (Category 2), H401
Long-term (chronic) aquatic hazard (Category 2), H411

2.2 GHS label elements, including precautionary statements

Pictogram



Signal word: Danger

Hazard statement(s)

H300+H310 Fatal if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H370 Causes damage to organs.

H372 Causes damage to organs through prolonged or repeated exposure.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

Prevention

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P262 Do not get in eyes, on skin, or on clothing.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

P301+P310+P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.

P304+P340+P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.

P305+P351+P338+P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P308+P311 IF exposed or concerned: Call a POISON CENTER/ doctor.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P391 Collect spillage. Hazardous to the aquatic environment

Storage

P405 Store locked up.

Disposal

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Physical and chemical hazards

No data available

2.4 Health hazards

H300 Fatal if swallowed.

H310 Fatal in contact with skin.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H370 Causes damage to organs.

H372 Causes damage to organs through prolonged or repeated exposure.

2.5 Environmental hazards Code

H401 Toxic to aquatic life.

H411 Toxic to aquatic life with long lasting effects.

2.6 Other hazards

No data available

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture: Substance

3.1 Substance

Name Tetramethylammonium hydroxide pentahydrate

Formula $C_4H_{13}NO \cdot 5H_2O$

Molecular Weight	181.23
CAS	10424-65-4
Concentration	98%

4 FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

No data available.

5 FIREFIGHTING MEASURES

5.1 Extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

5.2 Special hazards arising from the substance or mixture

Carbon oxides Nitrogen oxides (NO_x) Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

6.4 Reference to other section

For disposal see section 13.

7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Long term storage: RT

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

No data available.

8.2 Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses.

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.

Body protection

Flame retardant antistatic protective clothing.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	White to off-white solid
b) Odor	ammoniacal
c) pH	14 at ca. 1,000 g/l at 20 ° C
d) Melting point/freezing point	67 – 73 ° C
e) Initial boiling point and boiling range	No data available
f) Upper/lower flammability or explosive limits	No data available
g) Flash point	No data available
h) Evaporation rate	No data available
i) Vapor pressure	No data available
j) Vapor density	No data available
k) Density	No data available
l) Water solubility	2.200 g/l at 15 ° C
m) Partition coefficient: n-octanol/water	No data available
n) Autoignition temperature	No data available
o) Decomposition temperature	No data available
p) Flammability	No data available

10 STABILITY AND REACTIVITY

10.1 Chemical stability

No data available.

10.2 Conditions to avoid

No data available.

10.3 Incompatible materials

No data available

10.4 Hazardous decomposition products

In the event of fire: see section 5.

11 TOXICOLOGICAL INFORMATION

11.1 Acute toxicity

LD50 Oral

– Rat – female – 7.5 – 50 mg/kg

LC50 Inhalation

No data available

LD50 Dermal

– Rat – male and female – 12.5 mg/kg

11.2 Skin corrosion/irritation

Skin – Rabbit Result: Corrosive – 4 h Remarks: (anhydrous substance)

11.3 Serious eye damage/eye irritation

Remarks: Causes serious eye damage.

11.4 Respiratory or skin sensitization

No data available

11.5 Germ cell mutagenicity

Test Type: Ames test Test system: Escherichia coli/Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Remarks: (anhydrous substance) Test Type: Mutagenicity (mammal cell test

11.6 Carcinogenicity

No data available

11.7 Reproductive toxicity

No data available

11.8 Specific target organ toxicity - single exposure

Causes damage to organs. – Central nervous system

11.9 Specific target organ toxicity - repeated exposure

Skin contact – Causes damage to organs through prolonged or repeated exposure. – Liver, thymus

11.10 Aspiration hazard

no data available.

11.11 Additional Information

Repeated dose toxicity – Rat – female – Oral – 28 d – NOAEL (No observed adverse effect level) – 10 mg/kg Cough, Shortness of breath, Headache, Nausea, Vomiting.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish:

flow-through test LC50 – Pimephales promelas (fathead minnow) – 462 mg/l – 96 h

Toxicity to daphnia and other aquatic:

static test EC50 – Daphnia magna (Water flea) – 3 mg/l – 48 h Remarks: (anhydrous substance)

Toxicity to algae:

static test ErC50 – Pseudokirchneriella subcapitata (green algae) – 96.3 mg/l – 72 h Remarks: (anhydrous substance) static test NOEC – Pseudokirchneriella subcapitata (green algae) – 6.25 mg/l – 72 h Remarks: (anhydrous substance)

Toxicity to bacteria:

static test EC50 – activated sludge – > 503 mg/l – 3 h

12.2 Persistence and degradability

Biodegradability aerobic – Exposure time 28 d Result: 100 % – Readily biodegradable. Remarks: (anhydrous substance) Biochemical Oxygen 0.08 mg/g Demand (BOD)

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Other adverse effects

Additional ecological Discharge into the environment must be avoided. information

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Observe all federal, state and local regulations when disposing of the substance.

Contaminated packaging

Disposal must be made according to official regulations.

14 TRANSPORT INFORMATION

14.1 UN number

ADR/RID: 3423 IMDG: 3423 IATA: 3423

14.2 UN proper shipping name

ADR/RID: TETRAMETHYLAMMONIUMHYDROXIDE, SOLID

IMDG: TETRAMETHYLAMMONIUMHYDROXIDE, SOLID

IATA-DGR: TETRAMETHYLAMMONIUMHYDROXIDE, SOLID

14.3 Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA: 8

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

15. REGULATORY INFORMATION

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

Applicable regulations

Please pay attention to waste disposal and meet the requirements of local regulations.

16. OTHER INFORMATION

Abbreviations and acronyms

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Dangerous Goods

IATA: International Air Transport Association

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

CAS: Chemical Abstracts Service (division of the American Chemical Society)

Further information

The above safety technical information is for reference only, because many physical and

chemical properties are not entirely clear. Please consult information carefully before use and use after confirmation.

Anhui Senrise Technology Co., Ltd. shall not be held liable for any damage resulting from handling or from contact with the above product. More terms of use, see invoice information for details.

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