1 Identification

Product identifier

Product name: 5-Amino-1H-tetrazole monohydrate

Stock number: B24018, L06720

CAS Number: 15454-54-3

EC number: 224-581-7

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

Identified use: SU24 Scientific research and development

Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS01 Exploding bomb

Self-react. A H240 Heating may cause an explosion.

GHS02 Flame

Flam. Sol. 2 H228 Flammable solid.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

Hazard pictograms

GHS01 GHS02 GHS07

Signal word Danger

Hazard statements

H228 Flammable solid.

H240 Heating may cause an explosion.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P220 Keep/Store away from clothing/combustible materials.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P307+P360+P353 In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

B4 - Flammable solid

D1B - Toxic material causing other toxic effects

F - Dangerously reactive material

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

Health (acute effects) = 1

Flammability = 2

Physical Hazard = 2

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.
3 Composition/information on ingredients

Chemical characterization: Substances

CAS# Description:
15454-54-3 5-Amino-1H-tetrazole monohydrate

Identification number(s):
EC number: 224-581-7

4 First-aid measures

Description of first aid measures

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing
Seek medical treatment.

Information for doctor

Most important symptoms and effects, both acute and delayed
No further relevant information available.

Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing agents
Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

Advice for firefighters

Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation.

Environmental precautions:
Do not allow product to reach sewage system or any water course.

Methods and material for containment and cleaning up:
Ensure adequate ventilation.

Prevention of secondary hazards:
No special measures required.

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.

7 Handling and storage

Handling

Precautions for safe handling
Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires:
Protect from heat.

Conditions for safe storage, including any incompatibilities

Storage
Requirements to be met by storerooms and receptacles:
Store in a cool location.

Information about storage in one common storage facility:
No information known.

Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

Specific end use(s)
No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information:
No data

Exposure controls

Personal protective equipment

General protective and hygiene measures
The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin. Maintain an ergonomically appropriate working environment.

Breathing equipment:
Use suitable respirator when high concentrations are present.

Recommended filter device for short term use:
Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

Protection of hands:
Impervious gloves
Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Eye protection:
Safety glasses

(Contd. on page 3)
Product name: 5-Amino-1H-tetrazole monohydrate

Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance: Crystalline powder
Color: White
Odor: Not determined
Odor threshold: Not determined.

pH-value (15.2 g/l at 20 °C (68 °F)): 3.7

Change in condition
Melting point/Melting range: ca 203 °C (ca 397 °F) (dec)
Boiling point/Boiling range: Not determined
Sublimation temperature / start: Not determined
Flammability (solid, gaseous) Not determined.
Ignition temperature: Not determined
Decomposition temperature: Not determined
Auto igniting: Not determined.

Danger of explosion: Heating may cause an explosion.

Explosion limits:
Lower: Not determined
Upper: Not determined
Vapor pressure:
Density: Not determined
Relative density: Not determined.
Vapor density: Not applicable.
Evaporation rate: Not applicable.

Solubility in / Miscibility with
Water at 20 °C (68 °F): 15.2 g/l
Partition coefficient (n-octanol/water): Not determined.

Viscosity:
dynamic: Not applicable.
kinematic: Not applicable.
Other information: No further relevant information available.

10 Stability and reactivity

Reactivity Heating may cause an explosion.
Chemical stability Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions No dangerous reactions known
Conditions to avoid: No further relevant information available.
Incompatible materials: No information known.
Hazardous decomposition products: Carbon monoxide and carbon dioxide
Nitrogen oxides

11 Toxicological information

Information on toxicological effects

Acute toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
LD/LC50 values that are relevant for classification: No data
Skin irritation or corrosion: Causes skin irritation.
Eye irritation or corrosion: Causes serious eye irritation.
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: No effects known.
Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
Reproductive toxicity: No effects known.
Specific target organ system toxicity - repeated exposure: No effects known.
Specific target organ system toxicity - single exposure: May cause respiratory irritation.
Aspiration hazard: No effects known.
Subacute to chronic toxicity: No effects known.
Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Additional ecological information:
General notes: Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
Avoid transfer into the environment.
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
### 14 Transport Information

| DOT, IMDG, IATA | UN1325 |

<table>
<thead>
<tr>
<th><strong>UN Number</strong></th>
<th><strong>DOT, IMDG, IATA</strong></th>
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<tbody>
<tr>
<td><strong>UN proper shipping name</strong></td>
<td><strong>DOT</strong> Flammable solids, organic, n.o.s. (5-Amino-1H-tetrazole monohydrate)</td>
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<tr>
<td><strong>IMDG, IATA</strong></td>
<td><strong>FLAMMABLE SOLID, ORGANIC, N.O.S. (5-Amino-1H-tetrazole monohydrate)</strong></td>
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#### Transport hazard class(es)

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<td><strong>Class</strong></td>
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<td><strong>Label</strong></td>
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#### Packing group

- **DOT, IMDG, IATA** III

#### Environmental hazards:

**Not applicable.**

#### Special precautions for user

**Warning:** Flammable solids, self-reactive substances and solid desensitised explosives

**EMS Number:** F-A,S-G

#### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

**Not applicable.**

#### Transport/Additional information:

<table>
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<td><strong>Marine Pollutant (DOT):</strong> No</td>
</tr>
</tbody>
</table>

**UN “Model Regulation”:** UN1325, Flammable solids, organic, n.o.s. (5-Amino-1H-tetrazole monohydrate), 4.1, III

### 15 Regulatory Information

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

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**GHS pictograms**

- GHS01
- GHS02
- GHS07

**Signal word** Danger

**Hazard statements**

- H228 Flammable solid.
- H240 Heating may cause an explosion.
- H315 Causes skin irritation.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.

**Precautionary statements**

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P220 Keep away from clothing/combustible materials.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P370+P380+P375 In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

- All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
- All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).
- SARA Section 313 (specific toxic chemical listings) Substance is not listed.
- California Proposition 65
  - Prop 65 - Chemicals known to cause cancer Substance is not listed.
  - Prop 65 - Developmental toxicity, female Substance is not listed.
  - Prop 65 - Developmental toxicity, male Substance is not listed.

**Other regulations, limitations and prohibitive regulations**

- Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006, Substance is not listed.
- The conditions of restrictions according to Article 57 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
- Substance is not listed.
- Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.
- Information about limitation of use: For use only by technically qualified individuals.
- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

### 16 Other information

**Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees.** This information is furnished without warranty, and any use of the product not in accordance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing SDS:** Global Marketing Department

**Date of preparation / last revision:** 11/24/2015 / -

**Abbreviations and acronyms:**

- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
Product name: 5-Amino-1H-tetrazole monohydrate