1 Identification
Product identifier
Product name: N-Bromosuccinimide
Stock number: A15922
CAS Number: 128-08-5
EC number: 204-877-2

Relevant identified uses of the substance or mixture and uses advised against.
Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet
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)

GHS05 Corrosion
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

GHS07
Acute Tox. 4 H302 Harmful if swallowed.

Hazard pictograms
GHS05 GHS07

Signal word Danger
Hazard statements
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P303+P361+P335 If on skin (or hair). Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P335 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification
D2B - Toxic material causing other toxic effects
E - Corrosive material

Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
Health (acute effects) = 3
Flammability = 1
Physical Hazard = 1

Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients
Chemical characterization: Substances
CAS# Description:
128-08-5 N-Bromosuccinimide
Identification number(s):
EC number: 204-877-2

4 First-aid measures
Description of first aid measures
General information Immediately remove any clothing soiled by the product.
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.

Information for doctor
Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Causes serious eye damage.
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

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

Suitable extinguishing agents

Special hazards arising from the substance or mixture
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)
Hydrogen bromide (HBr)

Advice for firefighters
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 material to be released to the environment without proper governmental permits.

Methods and material for containment and cleaning up:
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
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
No information known.

Conditions for safe storage, including any incompatibilities

Storage
Requirements to be met by storerooms and receptacles
No special requirements.

Information about storage in one common storage facility:
Store in the dark.
Do not store together with acids.
Do not store away from strong bases.
Do not store away from oxidizing agents.
Do not store away from alcohol.
Store away from metals.
Store away from amines.

Further information about storage conditions
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Protect from exposure to light.

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 hygienic 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 P100 (USA) or P3 (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.
9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Information on basic physical and chemical properties</th>
<th>Physical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
<td>Appearance: Powder</td>
</tr>
<tr>
<td></td>
<td>Color: White to pale yellow/cream</td>
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<tr>
<td></td>
<td>Odor: Pungent</td>
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<tr>
<td></td>
<td>Odor threshold: Not Determined.</td>
</tr>
<tr>
<td></td>
<td>pH-value: Not applicable.</td>
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<tr>
<td></td>
<td>Change in condition</td>
</tr>
<tr>
<td></td>
<td>Melting point/Melting range: 175-180 °C (347-356 °F) (dec)</td>
</tr>
<tr>
<td></td>
<td>Boiling point/Boiling range: Not determined</td>
</tr>
<tr>
<td></td>
<td>Sublimation temperature / start: Not determined</td>
</tr>
<tr>
<td></td>
<td>Flammability (solid, gaseous): Not determined.</td>
</tr>
<tr>
<td></td>
<td>Ignition temperature: Not determined</td>
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<tr>
<td></td>
<td>Decomposition temperature: Not determined</td>
</tr>
<tr>
<td></td>
<td>Auto igniting: Not determined.</td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits:</td>
<td>Lower: Not determined</td>
</tr>
<tr>
<td></td>
<td>Upper: Not determined</td>
</tr>
<tr>
<td></td>
<td>Vapor pressure at 20 °C (68 °F): 14.8 hPa (11 mm Hg)</td>
</tr>
<tr>
<td></td>
<td>Density at 20 °C (68 °F): 2.098 g/cm³ (17.508 lbs/gal)</td>
</tr>
<tr>
<td></td>
<td>Relative density: Not applicable.</td>
</tr>
<tr>
<td></td>
<td>Vapor density: Not applicable.</td>
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<tr>
<td></td>
<td>Evaporation rate: Not applicable.</td>
</tr>
<tr>
<td></td>
<td>Solubility in / Miscibility with</td>
</tr>
<tr>
<td></td>
<td>Water at 20 °C (68 °F): 14.8 g/l</td>
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<tr>
<td></td>
<td>Partition coefficient (n-octanol/water): Not determined.</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>dynamic: Not applicable.</td>
</tr>
<tr>
<td></td>
<td>Kinematic: Not applicable.</td>
</tr>
<tr>
<td>Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

Reactivity: No information known.
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: Reacts with strong oxidizing agents
Conditions to avoid: No further relevant information available.

Incompatible materials:
- Acids
- Oxidizing agents
- Bases
- Alcohols
- Metals
- Amines
- Light

Hazardous decomposition products:
- Carbon monoxide and carbon dioxide
- Nitrogen oxides
- Hydrogen bromide

11 Toxicological information

Information on toxicological effects
Acute toxicity:
Harmful if swallowed. Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

LD/LC50 values that are relevant for classification:
- Oral [LD50] 1170 mg/kg (rat)

Skin irritation or corrosion: Causes severe skin burns.
Eye irritation or corrosion: Causes serious eye damage.
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: No effects known.
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.
Product name: N-Bromosuccinimide

Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
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

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, IMDG, IATA</th>
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<tbody>
<tr>
<td>UN3261</td>
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<tr>
<td>DOT</td>
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<tr>
<td>IMDG, IATA</td>
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<tr>
<th>UN proper shipping name</th>
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<tr>
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<tr>
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<th>IMDG, IATA</th>
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<tbody>
<tr>
<td></td>
<td>CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (N-Bromosuccinimide)</td>
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<tr>
<th>Transport hazard class(es)</th>
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<th>Class</th>
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<th>IMDG, IATA</th>
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<td>8</td>
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</table>

Environmental hazards: Not applicable.

<table>
<thead>
<tr>
<th>Special precautions for user</th>
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<tbody>
<tr>
<td>Warning: Corrosive substances</td>
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<tr>
<th>EMS Number:</th>
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<tbody>
<tr>
<td>F-A-S-B</td>
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<table>
<thead>
<tr>
<th>Segregation groups</th>
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<tbody>
<tr>
<td>Acids</td>
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</table>

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

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

UN "Model Regulation":

| UN3261, Corrosive solid, acidic, organic, n.o.s. (N-Bromosuccinimide), 8, 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)
Hazard pictograms

Signal word Danger
Hazard statements
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

Precautionary statements
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P303+P361+P335 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
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 Domestic Substances List (DSL).

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 Substance is not listed.
Prop 65 - Developmental toxicity, female Substance is not listed.
Prop 65 - Developmental toxicity, male Substance is not listed.
Information about limitation of use: For use only by technically qualified individuals.
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.
Product name: N-Bromosuccinimide

The conditions of restrictions according to Article 67 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.

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 conformance 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 11/23/2015 / -

Abbreviations and acronyms:
- RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- ICAO: International Civil Aviation Organization
- 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
- DOT: US Department of Transportation
- IATA: International Air Transport Association
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- HMIS: Hazardous Materials Identification System (USA)
- WHMIS: Workplace Hazardous Materials Information System (Canada)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- vPvB: very Persistent and very Bioaccumulative
- ACGIH: American Conference of Governmental Industrial Hygienists (USA)
- OSHA: Occupational Safety and Health Administration (USA)
- NTP: National Toxicology Program (USA)
- IARC: International Agency for Research on Cancer
- EPA: Environmental Protection Agency (USA)