SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name: Nitroguanidine
Product Number: N17351
Brand: Aldrich
CAS-No.: 556-88-7

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

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable solids (Category 1), H228
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word: Danger
Hazard statement(s): H228 Flammable solid.
Precautionary statement(s): P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No
2.3 **Hazards not otherwise classified (HNOC) or not covered by GHS**

Explosive when dry.
Desensitized explosive

---

**SECTION 3: Composition/information on ingredients**

### 3.1 Substances

<table>
<thead>
<tr>
<th>Formula</th>
<th>CH₄N₄O₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>104.07 g/mol</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>556-88-7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Nitroguanidine</td>
<td>Expl. 1.1; H201</td>
<td>&gt;= 70 - &lt; 90 %</td>
</tr>
</tbody>
</table>

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

---

**SECTION 4: First aid measures**

#### 4.1 Description of first-aid measures

**In case of eye contact**
Remove contact lenses.

**If swallowed**
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

#### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

#### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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**SECTION 5: Firefighting measures**

#### 5.1 Extinguishing media

**Suitable extinguishing media**
Water Foam Carbon dioxide (CO2) Dry powder

**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.
5.2 **Special hazards arising from the substance or mixture**
   Carbon oxides
   Nitrogen oxides (NOx)
   Combustible.
   Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 **Advice for firefighters**
   In the event of fire, wear self-contained breathing apparatus.

5.4 **Further information**
   Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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**SECTION 6: Accidental release measures**

6.1 **Personal precautions, protective equipment and emergency procedures**
   Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert.
   For personal protection see section 8.

6.2 **Environmental precautions**
   Do not let product enter drains.

6.3 **Methods and materials for containment and cleaning up**
   Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 **Reference to other sections**
   For disposal see section 13.

---

**SECTION 7: Handling and storage**

7.1 **Precautions for safe handling**
   **Advice on protection against fire and explosion**
   Keep away from open flames, hot surfaces and sources of ignition.

   **Hygiene measures**
   Change contaminated clothing. Wash hands after working with substance.
   For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**
   **Storage conditions**
   Tightly closed. Keep away from heat and sources of ignition.

   **Storage class**
   Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials

7.3 **Specific end use(s)**
   Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
SECTION 8: Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Ingredient with workplace control parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
</tr>
<tr>
<td>1-Nitroguanidine</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

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. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Respiratory protection**
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.
SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance  Form: powder
                Color: white
b) Odor  No data available
c) Odor Threshold  No data available
d) pH  No data available
e) Melting point/freezing point  Melting point/range: 239 °C (462 °F) - dec.
f) Initial boiling point and boiling range  No data available
g) Flash point  () No data available
h) Evaporation rate  No data available
i) Flammability (solid, gas)  The substance or mixture is a flammable solid with the category 1.
j) Upper/lower flammability or explosive limits  No data available
k) Vapor pressure  No data available
l) Vapor density  No data available
m) Density
                Relative density  No data available
n) Water solubility  No data available
o) Partition coefficient: n-octanol/water  No data available
p) Autoignition temperature  No data available
q) Decomposition temperature  No data available
r) Viscosity  No data available
s) Explosive properties  No data available
t) Oxidizing properties  No data available

9.2 Other safety information  No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).
Contains the following stabilizer(s):
water (25 %)

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong oxidizing agents, Strong bases

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

**Acute toxicity**
Acute toxicity estimate Oral - > 5,000 mg/kg
(Calculation method)
LD50 Oral - Rat - female - 4,345 mg/kg (1-Nitroguanidine)
Remarks: (ECHA)
Inhalation: No data available
Dermal: No data available
No data available

**Skin corrosion/irritation**
Skin - Rabbit (1-Nitroguanidine)
Result: No skin irritation - 4 h
Remarks: (ECHA)

**Serious eye damage/eye irritation**
Eyes - Rabbit (1-Nitroguanidine)
Result: No eye irritation - 72 h
Remarks: (ECHA)

**Respiratory or skin sensitization**
Buehler Test - Guinea pig (1-Nitroguanidine)
Result: Not a skin sensitizer.
Remarks: (ECHA)

**Germ cell mutagenicity**
(1-Nitroguanidine)
Test Type: gene mutation test
Species: Drosophila melanogaster

Application Route: Oral

Result: negative
Remarks: (ECHA)

**Carcinogenicity**
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

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

11.2 Additional Information
RTECS: MF4600000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (1-Nitroguanidine)

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish static test LC50 - Poecilia reticulata (guppy) - > 1,600 mg/l - 96 h (1-Nitroguanidine) (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates static test EC50 - Daphnia magna (Water flea) - > 3,000 mg/l - 48 h (1-Nitroguanidine) (OECD Test Guideline 202)

Toxicity to bacteria static test EC50 - activated sludge - > 300 mg/l - 10.5 min (1-Nitroguanidine) (OECD Test Guideline 209)

Toxicity to fish (Chronic toxicity) flow-through test NOEC - Pimephales promelas (fathead minnow) - 1,050 mg/l - 28 d (1-Nitroguanidine)
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) semi-static test NOEC - Ceriodaphnia dubia (water flea) - 260 mg/l - 7 d (1-Nitroguanidine)
Remarks: (ECHA)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available
12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 1336   Class: 4.1   Packing group: I
Proper shipping name: Nitroguanidine, wetted
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 1336   Class: 4.1   Packing group: I
Proper shipping name: NITROGUANIDINE, WETTED
EMS-No: F-B, S-J

IATA
UN number: 1336   Class: 4.1   Packing group: I
Proper shipping name: Nitroguanidine, wetted

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>water</td>
<td>7732-18-5</td>
<td></td>
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</tbody>
</table>

Pennsylvania Right To Know Components

Aldrich - N17351
1-Nitroguanidine  
CAS-No. 556-88-7  
Revision Date 2007-03-01

water  
CAS-No. 7732-18-5

New Jersey Right To Know Components
1-Nitroguanidine  
CAS-No. 556-88-7  
Revision Date 2007-03-01

water  
CAS-No. 7732-18-5

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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