



SAFETY DATA SHEET

N-Nitroso-N-methylurea stabilized

According to the REACH etc. (Amendment etc.) (EU Exit) Regulations 2020 No. 1577, as amended.

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

1.1. Product identifier

Product name	N-Nitroso-N-methylurea stabilized
Product number	89994768
CAS number	684-93-5
EC number	211-678-4

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

Identified uses	Research and development. Industrial use
Uses advised against	Not suitable for human consumption or veterinary purposes.

1.3. Details of the supplier of the safety data sheet

Supplier	Molekula Ltd. Lingfield Way, Darlington, DL1 4XX, United Kingdom +44 (0) 3302000333 info@molekula.com
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1.4. Emergency telephone number

+44 (0) 7769276927

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (SI 2019 No. 720)

Physical hazards	Flam. Sol. 2 - H228
Health hazards	Acute Tox. 3 - H301 Carc. 1B - H350 Repr. 1B - H360
Environmental hazards	Not Classified

2.2. Label elements

EC number	211-678-4
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Hazard pictograms



Signal word

Danger

N-Nitroso-N-methylurea stabilized

Hazard statements	H228 Flammable solid. H301 Toxic if swallowed. H350 May cause cancer. H360 May damage fertility or the unborn child.
Precautionary statements	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof electrical equipment. P264 Wash contaminated skin thoroughly after handling. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. P308+P313 IF exposed or concerned: Get medical advice/ attention. P330 Rinse mouth. P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish. P405 Store locked up. P501 Dispose of contents/ container in accordance with national regulations.
Contains	N-Nitroso-N-methylurea

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

N-Nitroso-N-methylurea		95-100%
CAS number: 684-93-5		
Classification Flam. Sol. 2 - H228 Acute Tox. 3 - H301 Carc. 1B - H350 Repr. 1B - H360		
Acetic Acid		1-5%
CAS number: 64-19-7		EC number: 200-580-7
Classification Flam. Liq. 3 - H226 Skin Corr. 1A - H314 Eye Dam. 1 - H318		

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	Get medical attention if any discomfort continues. Show this Safety Data Sheet to the medical personnel.
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N-Nitroso-N-methylurea stabilized

Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Loosen tight clothing such as collar, tie or belt. Get medical attention if symptoms are severe or persist.
Ingestion	Get medical attention immediately. Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Never give anything by mouth to an unconscious person. Place unconscious person on their side in the recovery position and ensure breathing can take place. Keep affected person under observation.
Skin contact	Rinse with water.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse with water. Get medical attention if any discomfort continues.
Protection of first aiders	It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.

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

General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.
Inhalation	Prolonged or repeated exposure may cause the following adverse effects: May cause cancer.
Ingestion	May cause stomach pain or vomiting. May cause severe internal injury. Prolonged or repeated exposure may cause the following adverse effects: May cause cancer.
Skin contact	Prolonged contact may cause dryness of the skin. Prolonged or repeated exposure may cause the following adverse effects: May cause cancer.
Eye contact	May be slightly irritating to eyes.

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

Notes for the doctor	Treat symptomatically. Keep affected person under observation.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards	Flammable solid. Dust may form explosive mixture with air. Fire-water run-off in sewers may create fire or explosion hazard. This product is toxic.
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Very toxic or corrosive gases or vapours. Carbon monoxide (CO). Carbon dioxide (CO ₂). Oxides of nitrogen.

5.3. Advice for firefighters

Protective actions during firefighting	Avoid breathing fire gases or vapours. Evacuate area. Keep upwind to avoid inhalation of gases, vapours, fumes and smoke. Ventilate closed spaces before entering them. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.
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N-Nitroso-N-methylurea stabilized

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Firefighter's clothing will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk. Do not touch or walk into spilled material. Evacuate area. Provide adequate ventilation. No smoking, sparks, flames or other sources of ignition near spillage. Promptly remove any clothing that becomes contaminated.

6.2. Environmental precautions

Environmental precautions Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Eliminate all ignition sources if safe to do so. No smoking, sparks, flames or other sources of ignition near spillage. Do not allow material to enter confined spaces, due to the risk of explosion. Provide adequate ventilation. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. For waste disposal, see Section 13.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. The product is flammable. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. This product is toxic. Immediate first aid is imperative. May cause cancer. May damage fertility or the unborn child. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.

Advice on general occupational hygiene Wash promptly if skin becomes contaminated. Take off contaminated clothing. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store away from incompatible materials (see Section 10). Store locked up. Keep away from oxidising materials, heat and flames. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage.
Do not allow to dry out.
Light sensitive

Store at temperatures between -15°C/5°F and -20°C/-4°F.

Storage class Toxic storage.

7.3. Specific end use(s)

N-Nitroso-N-methylurea stabilized

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

Acetic Acid

Long-term exposure limit (8-hour TWA): WEL 10 ppm 25 mg/m³

Short-term exposure limit (15-minute): WEL 20 ppm 50 mg/m³

WEL = Workplace Exposure Limit.

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Ensure the ventilation system is regularly maintained and tested. Good general ventilation should be adequate to control worker exposure to airborne contaminants. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.

Hand protection

Wear protective gloves. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, wear gloves that are proven to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.

Other skin and body protection

Wear appropriate clothing to prevent any possibility of skin contact.

Hygiene measures

Wash after use and before eating, smoking and using the toilet. Do not eat, drink or smoke when using this product.

Respiratory protection

Ensure all respiratory protective equipment is suitable for its intended use and is 'UKCA'-marked. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges suitable for intended use should be used. Full face mask respirators with replaceable filter cartridges suitable for intended use should be used. Half mask and quarter mask respirators with replaceable filter cartridges suitable for intended use should be used.

Environmental exposure controls

Keep container tightly sealed when not in use. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Solid.
Colour	White/off-white.
Odour	Not known.

N-Nitroso-N-methylurea stabilized

Odour threshold	No information available.
pH	No information available.
Melting point	119-124°C/246.2-255.2°F
Initial boiling point and range	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	Flammable solid.
Upper/lower flammability or explosive limits	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	No information available.
Solubility(ies)	No information available.
Partition coefficient	log Pow: -0.03
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.

9.2. Other information

Molecular weight	103.08
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	See the other subsections of this section for further details.
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10.2. Chemical stability

Stability	Stable under the prescribed storage conditions. Contains the following stabilizer: Acetic Acid
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The following materials may react strongly with the product: Oxidising agents.
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10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition. Static electricity and formation of sparks must be prevented.
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10.5. Incompatible materials

N-Nitroso-N-methylurea stabilized

Materials to avoid	Acids - oxidising. Oxidising materials. Strong alkalis. Strong oxidising agents. Some metals. Amines. Strong acids. Alcohols. Peroxides. permanganates potassium permanganate phosphates alkali hydroxides
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10.6. Hazardous decomposition products

Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Toxic gases or vapours. Carbon dioxide (CO ₂). Carbon monoxide (CO). Oxides of nitrogen.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Summary	Toxic if swallowed.
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ATE oral (mg/kg)	103.09
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Acute toxicity - dermal

Summary	Based on available data the classification criteria are not met.
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Acute toxicity - inhalation

Summary	Based on available data the classification criteria are not met.
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Skin corrosion/irritation

Summary	Based on available data the classification criteria are not met.
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Serious eye damage/irritation

Summary	Based on available data the classification criteria are not met.
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Respiratory sensitisation

Summary	Based on available data the classification criteria are not met.
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Skin sensitisation

Summary	Based on available data the classification criteria are not met.
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Germ cell mutagenicity

Summary	Based on available data the classification criteria are not met.
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Carcinogenicity

Summary	May cause cancer.
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IARC carcinogenicity

Summary	None of the ingredients are listed or exempt.
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Reproductive toxicity

Summary	May damage fertility or the unborn child.
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N-Nitroso-N-methylurea stabilized

Specific target organ toxicity - single exposure

Summary Based on available data the classification criteria are not met.

Specific target organ toxicity - repeated exposure

Summary Based on available data the classification criteria are not met.

Aspiration hazard

Summary Not relevant. Solid.

General information

May damage fertility. May cause cancer after repeated exposure. Risk of cancer depends on duration and level of exposure. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation

A single exposure may cause the following adverse effects: Temporary irritation.

Ingestion

May cause stomach pain or vomiting. May cause severe internal injury.

Skin contact

Prolonged contact may cause dryness of the skin.

Eye contact

May be slightly irritating to eyes.

Route of exposure

Ingestion Inhalation Skin and/or eye contact

Target organs

No specific target organs known.

SECTION 12: Ecological information

Ecotoxicity

Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Acute aquatic toxicity

Summary Based on available data the classification criteria are not met.

Chronic aquatic toxicity

Summary Based on available data the classification criteria are not met.

12.2. Persistence and degradability

Persistence and degradability The degradability of the product is not known.

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient

log Pow: -0.03

12.4. Mobility in soil

Mobility No data available.

12.5. Results of PBT and vPvB assessment

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

N-Nitroso-N-methylurea stabilized

General information	The generation of waste should be minimised or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.
Disposal methods	Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labelled with their contents. Incineration or landfill should only be considered when recycling is not feasible.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID)	2926
UN No. (IMDG)	2926
UN No. (ICAO)	2926
UN No. (ADN)	2926

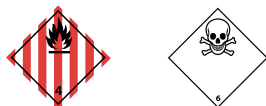
14.2. UN proper shipping name

Proper shipping name (ADR/RID)	FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (CONTAINS N-Nitroso-N-methylurea)
Proper shipping name (IMDG)	FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (CONTAINS N-Nitroso-N-methylurea)
Proper shipping name (ICAO)	FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (CONTAINS N-Nitroso-N-methylurea)
Proper shipping name (ADN)	FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (CONTAINS N-Nitroso-N-methylurea)

14.3. Transport hazard class(es)

ADR/RID class	4.1
ADR/RID subsidiary risk	6.1
ADR/RID classification code	FT1
ADR/RID label	4.1
IMDG class	4.1
IMDG subsidiary risk	6.1
ICAO class/division	4.1
ICAO subsidiary risk	6.1
ADN class	4.1
ADN subsidiary risk	6.1

Transport labels



14.4. Packing group

ADR/RID packing group	III
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N-Nitroso-N-methylurea stabilized

IMDG packing group III

ICAO packing group III

ADN packing group III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

EmS F-A, S-G

ADR transport category 3

Emergency Action Code 1X

Hazard Identification Number 46
(ADR/RID)

Tunnel restriction code (E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78
and the IBC Code Not applicable.

SECTION 15: Regulatory information

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

National regulations Health and Safety at Work etc. Act 1974 (as amended).
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment
Regulations 2009 (SI 2009 No. 1348) (as amended) ["CDG 2009"].
EH40/2005 Workplace exposure limits.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

None of the ingredients are listed or exempt.

SECTION 16: Other information

N-Nitroso-N-methylurea stabilized

Abbreviations and acronyms used in the safety data sheet	<p>ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.</p> <p>ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.</p> <p>RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.</p> <p>IATA: International Air Transport Association.</p> <p>ICAO: Technical Instructions for the Safe Transport of Dangerous Goods by Air.</p> <p>IMDG: International Maritime Dangerous Goods.</p> <p>CAS: Chemical Abstracts Service.</p> <p>ATE: Acute Toxicity Estimate.</p> <p>LC50: Lethal Concentration to 50 % of a test population.</p> <p>LD50: Lethal Dose to 50% of a test population (Median Lethal Dose).</p> <p>EC₅₀: 50% of maximal Effective Concentration.</p> <p>PBT: Persistent, Bioaccumulative and Toxic substance.</p> <p>vPvB: Very Persistent and Very Bioaccumulative.</p>
Classification abbreviations and acronyms	<p>Flam. Sol. = Flammable solid</p> <p>Acute Tox. = Acute toxicity</p> <p>Carc. = Carcinogenicity</p> <p>Repr. = Reproductive toxicity</p>
Classification procedures according to SI 2019 No. 720	<p>Acute Tox. 3 - H301: Carc. 1B - H350: Repr. 1B - H360: : Calculation method. Flam. Sol. 2 - H228: : Expert judgement.</p>
Training advice	<p>Only trained personnel should use this material.</p>
Revision date	<p>01/09/2022</p>
Revision	<p>2</p>
Supersedes date	<p>19/07/2022</p>
SDS number	<p>1184</p>
Hazard statements in full	<p>H226 Flammable liquid and vapour.</p> <p>H228 Flammable solid.</p> <p>H301 Toxic if swallowed.</p> <p>H314 Causes severe skin burns and eye damage.</p> <p>H318 Causes serious eye damage.</p> <p>H350 May cause cancer.</p> <p>H360 May damage fertility or the unborn child.</p>

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.