

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 24.10.2012

Version 9.0

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

1.1 Product identifier

Catalogue No.	801595
Product name	α,α' -Azoisobutyronitrile for synthesis
REACH Registration Number	A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

Identified uses	Chemical for synthesis For additional information on uses please refer to the Merck Chemicals portal (www.merck-chemicals.com).
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1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	LS-QHC * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number **Please contact the regional company representation in your country.**

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Self-reactive substances and mixtures, Type C, H242

Acute toxicity, Category 4, Inhalation, H332

Acute toxicity, Category 4, Oral, H302

Chronic aquatic toxicity, Category 3, H412

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

Classification (67/548/EEC or 1999/45/EC)

E	Explosive	R2
F	Highly flammable	R11
Xn	Harmful	R20/22
		R52/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



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Catalogue No. 801595
Product name α,α' -Azoisobutyronitrile for synthesis

Signal word
Danger

Hazard statements
H242 Heating may cause a fire.
H332 Harmful if inhaled.
H302 Harmful if swallowed.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P273 Avoid release to the environment.

Reduced labelling (≤ 125 ml)
Hazard pictograms



Signal word
Danger

Hazard statements
H412 Harmful to aquatic life with long lasting effects.

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

Index-No. 608-019-00-1

Labelling (67/548/EEC or 1999/45/EC)

Symbol(s) E Explosive
Xn Harmful
R-phrase(s) 2-11-20/22-52/53 Risk of explosion by shock, friction, fire or other sources of ignition. Highly flammable. Harmful by inhalation and if swallowed. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S-phrase(s) 39-41-47-61 Wear eye/face protection. In case of fire and/or explosion do not breathe fumes. Keep at temperature not exceeding 25 °C. Avoid release to the environment. Refer to special instructions/ Safety data sheets.

EC-No. 201-132-3 EC Label

Reduced labelling (≤ 125 ml)

Symbol(s) E Explosive
Xn Harmful
R-phrase(s) 2-20/22-52/53 Risk of explosion by shock, friction, fire or other sources of ignition. Harmful by inhalation and if swallowed. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.3 Other hazards
None known.

SECTION 3. Composition/information on ingredients

Formula $\text{NC}(\text{CH}_3)_2\text{CN}=\text{NC}(\text{CH}_3)_2\text{CN}$ $\text{C}_8\text{H}_{12}\text{N}_4$ (Hill)

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CAS-No. 78-67-1
Index-No. 608-019-00-1
EC-No. 201-132-3
Molar mass 164,21 g/mol

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical Name (Concentration)

CAS-No.	Registration number	Classification
2,2'-dimethyl-2,2'-azodipropionitrile (<= 100 %)		
78-67-1	*)	Self-reactive substances and mixtures, Type C, H242 Acute toxicity, Category 4, H332 Acute toxicity, Category 4, H302 Chronic aquatic toxicity, Category 3, H412

*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

Hazardous components (1999/45/EC)

Chemical Name (Concentration)

CAS-No.	Classification
2,2'-dimethyl-2,2'-azodipropionitrile (<= 100 %)	
78-67-1	E, Explosive; R2 F, Highly flammable; R11 Xn, Harmful; R20/22 R52-53 R52/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

irritant effects, Nausea, Vomiting, Headache, ataxia (impaired locomotor coordination)
The following applies to cyanogen compounds/ nitriles in general: utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration. Cardiovascular disorders, dyspnoea, unconsciousness.

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

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SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, Carbon dioxide (CO₂), Foam, 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

Combustible.

|| Risk of dust explosion.

|| Explosive decomposition possible on heating.

Avoid shock and friction.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

nitrogen oxides, Hydrogen cyanide (hydrocyanic acid)

5.3 Advice for firefighters

Special protective equipment for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Cool closed containers exposed to fire with water spray. Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions

Do not empty into 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

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Observe label precautions.

Advice on protection against fire and explosion

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

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7.2 Conditions for safe storage, including any incompatibilities

Tightly closed and away from sources of ignition and heat. Observe national regulations. Dry.
Protected from light.

Store at +15°C to +25°C.

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

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	> 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet (>,<) supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment

Flame retardant antistatic protective clothing

Respiratory protection

required when dusts are generated.

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Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

Do not empty into drains.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	solid
Colour	white
Odour	odourless
Odour Threshold	No information available.
pH	No information available.
Melting point	97 - 102 °C (decomposition)
Boiling point	No information available.
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	No information available.
Relative vapor density	No information available.
Relative density	1,11 g/cm ³ at 20 °C
Water solubility	0,35 g/l at 25 °C
Partition coefficient: n-octanol/water	log Pow: 1,1 (experimental) Bioaccumulation is not expected. (Lit.)
Auto-ignition temperature	No information available.
Decomposition temperature	Type C

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Viscosity, dynamic No information available.
Explosive properties No information available.
Oxidizing properties No information available.

9.2 Other data

Bulk density ca.400 - 500 kg/m³

SECTION 10. Stability and reactivity

10.1 Reactivity

Explosive
Mechanical sensitivity (friction)
Risk of dust explosion.

10.2 Chemical stability

heat-sensitive
Sensitivity to light

10.3 Possibility of hazardous reactions

A risk of explosion and/or of toxic gas formation exists with the following substances:

Aldehydes, alkalines, Alcohols, Alkali metals, Acids

n-heptane, with

Heat.

Ketones, with

Heat.

10.4 Conditions to avoid

Avoid shock and friction.
Heating (explosive decomposition).

10.5 Incompatible materials

no information available

10.6 Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 rat: 100 mg/kg (RTECS)

Symptoms: Nausea, Vomiting

absorption

Acute inhalation toxicity

absorption

Acute dermal toxicity

LD50 rat: 950 mg/kg (External MSDS) (Regulation (EC) No 1272/2008, Annex VI)

Skin irritation

slight irritation

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Eye irritation

slight irritation

Specific target organ toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Based on available data the classification criteria are not met.

11.2 Further information

Systemic effects:

After absorption:

Headache, ataxia (impaired locomotor coordination)

Damage to:

Liver, Kidney

The following applies to cyanogen compounds/ nitriles in general: utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration. Cardiovascular disorders, dyspnoea, unconsciousness.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

No information available.

12.2 Persistence and degradability

No information available.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 1,1

(experimental)

Bioaccumulation is not expected. (Lit.)

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects

Discharge into the environment must be avoided.

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SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 UN number Not permitted for transport
UN 3234

14.2 Proper shipping name SELF-REACTIVE SOLID TYPE C, TEMPERATURE
CONTROLLED Not permitted for transport

14.3 Class 4.1

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 UN number UN 3234

14.2 Proper shipping name SELF-REACTIVE SOLID TYPE C, TEMPERATURE
CONTROLLED

14.3 Class 4.1

14.4 Packing group

14.5 Environmentally hazardous --

14.6 Special precautions for user yes
Not permitted for transport

Sea transport (IMDG)

14.1 UN number UN 3234

14.2 Proper shipping name SELF-REACTIVE SOLID TYPE C, TEMPERATURE
CONTROLLED

14.3 Class 4.1

14.4 Packing group

14.5 Environmentally hazardous --

14.6 Special precautions for user yes
Not permitted for transport

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

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard 96/82/EC
Legislation Explosive
5
Quantity 1: 10 t
Quantity 2: 50 t

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Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.

National legislation

Storage class 4.1A

German explosives Act applies, C, Ia.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

H242 Heating may cause a fire.
H302 Harmful if swallowed.
H332 Harmful if inhaled.
H412 Harmful to aquatic life with long lasting effects.

Full text of R-phrases referred to under sections 2 and 3

R 2 Risk of explosion by shock, friction, fire or other sources of ignition.
R11 Highly flammable.
R20/22 Harmful by inhalation and if swallowed.
R52 Harmful to aquatic organisms.
R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53 May cause long-term adverse effects in the aquatic environment.

Training advice

Provide adequate information, instruction and training for operators.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.