SAFETY DATA SHEET

KOFASIL® liquid

KOFASIL® liquid contains sodium nitrite and hexamethylene tetramine

1. Identification of the substance / preparation and company / undertaking

Product name	KOFASIL® liquid
Chemical product name	Mixture of sodium nitrite and hexamethylene tetramine in water
Synonyms	
Supplier	ADDCON EUROPE GmbH Kaiserstraße 1 D-53113 Bonn Germany Tel: +49-228-91910-0 Fax: +49-228-91910-60 e-mail: info@addcon.com internet: www.addcon.com
Emergency Telephone number	+49 (0) 3493 737 90 (office: Mo – Fr, 8.00 a.m. – 5.00 p.m., language: German, English)
e-mail-address of person responsible for this SDS	thomas.ohlmann@addcon.com
Recommended use	Silage additive

2. Hazards identification

The preparation is classified as dangerous according to directive 67/548/EEC and its amendments.

Classification	Xn - harmful
Human health hazards	Harmful by inhalation and if swallowed.
Environmental hazards	Based on the available data of this product no hazardous properties are known.
Physical / chemical hazards	Not corrosive. In the case of contact with acidifiers may cause nitrogen oxide gases.

3. Composition / information on ingredients

Substance / preparation : preparation

Chemical name	CAS no.	%	EC- no. *	classification
Sodium nitrite See section 16 for the full text of the R-phrases declared above.	7632-00-0	≤ 25,5	231-555-9	O, T, N – R8-25-50
Methenamine See section 16 for the full text of the R-phrases declared above.	100-97-0	≤ 16,5	202-905-8	F, Xn – R11-43

*** EC-No. means EINECS- or ELINCS-number.**

4. First-aid measures

Effects and symptoms	
Inhalation	Harmful: Over-exposure by inhalation may cause respiratory irritation (coughing). Slight mucosal irritations, after a latency period: Lung oedema
Ingestion	Harmful if swallowed.
Skin contact	No skin irritation
Eye contact	Slight irritation
First-aid measures	
General	Remove contaminated soaked clothing immediately. If you fell unwell, seek medical advice.
Inhalation	Move to fresh air in case of accidental inhalation of vapours or decomposition products. In the event of symptoms refer for medical treatment.
Ingestion	Allow the affected person to vomit themselves, if necessary. Induce vomiting only upon the advice of a physican. Drink plenty of water. Summon a doctor immediately.
Skin contact	Wash off immediately with soap and plenty of water. Treat subsequently with skin cream. Consult a doctor if skin irritation persists.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
First-aid facilities:	Notes to physician: Treatment – Laxative: Sodium sulphate (1 tablespoon / 1/4l water)

5. Fire-fighting measures

Extinguishing media	
Small fire suitable	Foam, water spray jet
Large fire suitable	Dry fire-extinguishing substance, carbon dioxide
Unusual fire / explosion hazards	Not combustible. Cool containers at risk with water spray jet.

5. Fire-fighting measures

Hazardous thermal decomposition products	Fire may produce: carbon monoxide, carbon dioxide, nitrogen oxides (NOx)
Special fire-fighting procedures	Use breathing apparatus with independent air supply. Protective suit.
Protection of fire-fighters	Inhalation of decomposition products in high concentration may cause shortness of breath (lung oedema).

6. Accidental release measures

Personal precautions	In case of vapour formation use respirator. Ensure adequate ventilation. Use personal protective clothing.
Environmental precautions	Do not discharge into the drains / surface water / groundwater.
Clean-up methods	
Small spill and leak	Soak up with inert absorbent material (e. g. sand, silica gel, acid binder, universal binder).
Large spill and leak	Shovel into suitable container for disposal.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling	Handle in accordance with good industrial hygiene and safety practice. Keep away from heat. Use only in thoroughly ventilated areas. Avoid contact with skin, eyes and clothing.
Storage	Keep container tightly closed in a dry, cool and well-ventilated place. Incompatible with acids. Keep away from food and drink. Storage class (VCI): 10
Remarks	No special protective measures against fire required.
Packaging materials	
Suitable	

Note: See section 10 for stability and reactivity.

8. Exposure controls / personal protection

Engineering measures	Ensure adequate ventilation, especially in confirmed areas.
Hygiene measures	Avoid contact with eyes and skin. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke. Take off immediately all contaminated clothing.

Personal protective equipment – Production scale

Respiratory system	if ventilation insufficient, wear respiratory protection. Breathing apparatus in the event of high concentration.
Skin and body	Long sleeved clothing; working protection clothing.
Eyes	Eye wash bottle with pure water. Tightly fitting goggles.
Hands	Solvent-resistant gloves (butyl rubber). Select the appropriate glove material adhering to the breakthrough time, permeation rate and the degradation.
Recommended material(s)	

Advice on personal protection is applicable for high exposure levels. Select proper personal protection based on a risk assessment of the actual situation.

9. Physical and chemical properties

Physical state	Liquid
Colour	Yellowish
Odour	Typical urea
pH	8 – 10
Boiling point	Ca. 100°C
Melting point	Not available.
Flash point	Not available.
Lower explosion limit	Not available.
Upper explosion limit	Not available.
Auto-ignition temperature	Not available.
Density (g/cm$_3$)	1.23

9. Physical and chemical properties

Bulk density	Not available.
Solubility in water	Miscible
Solubility	In water.
Molecular weight	Not available.
Minimum ignition energy	Not available.
Dust explosion class	Not available.
Remarks	More detailed information on the physical and chemical properties can be requested from the supplier.

10. Stability and reactivity

Stability	Stable under recommended storage and handling conditions (see section 7). No decomposition if stored and applied as directed.
Conditions to avoid	With temperatures above 300°C, as well as under action of acids, oxides of nitrogen come into being.
Materials to avoid	Acids
Hazardous decomposition products	In case of fire: see section 5.

11. Toxicological information

Potential acute health effects

Inhalation	Harmful: Over-exposure by inhalation may cause respiratory irritation (coughing). Slight mucosal irritations, after a latency period: Lung oedema
Ingestion	Harmful if swallowed.
Skin contact	No skin irritation
Eye contact	Slight irritation

Acute toxicity

Product / ingredient name	Result	Species	Dose	Exposure
Kofasil liquid	LD50 oral	Rat	>300 - >2000 mg/kg 721 mg/kg	OECD 420 Not GMP
	LD50 dermal	Rat	> 2000 mg/kg > 5000 mg/kg	OECD 402 Not GMP
	LC50 inhalativ	Rat	3,15 mg/l (4h) 3,29 mg/l (4h)	OECD Not GMP

Primary irritation

Product / ingredient name	Test	Species	Evaluation	Method
Kofasil liquid	Skin	Rabbits	Mild irritation, C3	OECD 404

Sensitization	Skin sensitisation(Guinea-pig Maximisation test – Magnusson-Kligman): non-sensitising

Potential chronic health effects

Chronic effects	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.
Chronic toxicity	No specific data.
Carcinogenicity	No specific data.
Mutagenicity	No specific data.
Teratogenicity	No specific data.
Reproductive toxicity	No specific data.
Conclusion / summary	If appropriately handled and if in accordance with the general hygienic rules, no damages to health have become known.

12. Ecological information

Environmental effects

The product has no hazardous properties for water and soil. In the case of large amounts in water and soil eutrophicating.

Aquatic ecotoxicity

Product / ingredient name	Test	Result	Species	Exposure
Kofasil liquid	LC50 (OECD 203) LC0 (NOEC)	> 100 mg/l 100 mg/l	Fish	96h
	EC100 (OECD 202) EC0 (NOEC)	> 100 mg/l	Daphnia	48h
	EC50 (OECD 201) NOEC	>100 mg/l 100 mg/l	Algae	72h
	LC50 (OECD 207) NOEC	>1000 mg/kg 1000 mg/kg	Earthworm (soil)	
	EC50 (OECD 217) NOEC	1600 mg/kg 100 mg/kg	Soil molecular carbon transformation	

Persistence / degradability

Readily biodegradable.

Other adverse effects

No known significant effects or critical hazards.

AOX

The product does not contain organically bound halogens which could lead to an AOX (Absorbable Organically bound Halogens) value in waste water.

Mobility

Dissolves readily in water.

13. Disposal considerations

Methods of disposal (waste of residues; contaminated packaging)

Waste must disposed of in accordance with national and local environmental regulations. Controlled biodegradation in waste water treatment is possible. Where possible recycling is preferred to disposal.
Empty containers should be taken for local recycling, recovery or waste disposal.
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse. Packaging that cannot be cleaned should be disposed of like the product.

14. Transport information

International transport regulations

Regulatory information	UN - Number	Proper shipping name	class	PG*	Label	Additional information
ADR/RID Class	Not regulated.	-	-	-	-	-
ADNR Class	Not regulated	-	-	-	-	-
IMDG Class	Not regulated	-	-	-	-	-
IATA Class	Not regulated	-	-	-	-	-

PG* : Packing group

15. Regulatory information

EC-regulations

According to EU directives 67/548/EEC and 1999/45/EC this product does to labelling as

Xn – harmful

Hazardous components to be indicated on label:
Hexamethylene tetramine, sodium nitrite

Risk phrases

20/22 – harmful by inhalation and if swallowed.

Safety phrases

02 – keep out of the reach of children
23 – do not breathe vapour
46 – if swallowed, seek medical advice immediately and show this container or label

Remarks

Observe employment restrictions for young people. Observe employment restrictions for child bearing mothers and nursing.

Water contaminating class (D): 1

16. Other information

Full text of R phrases referred to in sections 2 and 3 – United Kingdom (UK)	08 – contact with combustible material may cause fire 11 – highly flammable 25 – toxic if swallowed 43 – may cause sensitization by skin contact 50 – very toxic to aquatic organisms O – oxidizing
Full text of classifications referred to in sections 2 and 3 – United Kingdom (UK)	T – toxic N – harmful for environment F – flammable Xn - harmful
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Notice to reader

The information contained in the Safety Data Sheet is based on our data available on the data of publication. The information is intended to aid the user in controlling the handling risks; it is not to be construed as a warranty or specification of the product quality. The information may not be or may not altogether be applicable to combinations of the product with other substances or to particular applications.
The user is responsible for ensuring that appropriate precautions are taken and for satisfying them that the data are suitable and sufficient for the product's intended purpose. In case of any unclarity we advise consulting the supplier or an expert.

Training advice	Handling of this substance or preparation is restricted to skilled personal only.
Source of key data	Literature data and/or investigation reports are available through the manufacturer.
Alterations compared to the previous version	Alterations compared to the previous version are marked with a little (blue) triangle.