SAFETY DATA SHEET

Based upon Regulation (EC) No 1907/2006, as amended by Regulation (EU) No 2015/830

ammonia, liquefied, under pressure

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

1.1. Product identifier

Product name	: ammonia, liquefied, under pressure
Synonyms	: AMFOL; AM-FOL; ammonia-; ammonia gas; ammonia, anhydrous; nitro-sil; R717; spirit of hartshorn
Registration number REACH	: 01-2119488876-14
Product type REACH	: Substance/mono-constituent
CAS number	: 7664-41-7
EC index number	: 007-001-00-5
EC number	: 231-635-3
Molecular mass	: 17.03 g/mol
Formula	: NH3

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

1.2.1 Relevant identified uses

Refrigerant gas
Chemical raw material
Veterinary medicine
Fertiliser: raw material
Laboratory chemical
Chemical intermediate
Coolant
Metal surface treatment

1.2.2 Uses advised against

See heading 15.1: Reach Annex XVII - Restriction

1.3. Details of the supplier of the safety data sheet

Supplier of the safety data sheet

BALCHEM NV
Westvaartdijk 85
B-1850 Grimbergen Belgium
☎ +32 2 251 60 87
+32 2 252 17 51
info.grimbergen@balchem.com

Distributor of the product

BALCHEM NV
Westvaartdijk 85
B-1850 Grimbergen Belgium
☎ +32 2 251 60 87
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info.grimbergen@balchem.com

1.4. Emergency telephone number

24h/24h (Telephone advice: English, French, German, Dutch):
+32 14 58 45 45 (BIG)

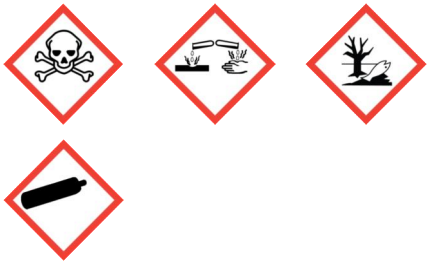
SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classified as dangerous according to the criteria of Regulation (EC) No 1272/2008

Class	Category	Hazard statements
Flam. Gas	category 2	H221: Flammable gas.
Press. Gas	Liquefied gas	H280: Contains gas under pressure; may explode if heated.
Acute Tox.	category 3	H331: Toxic if inhaled.
Skin Corr.	category 1B	H314: Causes severe skin burns and eye damage.
Aquatic Acute	category 1	H400: Very toxic to aquatic life.

2.2. Label elements



Signal word Danger

H-statements

H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.
H331	Toxic if inhaled.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.

P-statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves, protective clothing and eye protection/face protection.
P260	Do not breathe gas.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or 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.
P310	Immediately call a POISON CENTER/doctor.

2.3. Other hazards

Gas/vapour explosive within explosion limits if energy source high

May cause frostbites

SECTION 3: Composition/information on ingredients

3.1. Substances

Name REACH Registration No	CAS No EC No	Conc. (C)	Classification according to CLP	Note	Remark
ammonia, anhydrous 01-2119488876-14	7664-41-7 231-635-3	C>99.98 %	Flam. Gas 2; H221 Press. Gas - Liquefied gas; H280 Acute Tox. 3; H331 Skin Corr. 1B; H314 Aquatic Acute 1; H400	(1)(2)(10)	Mono-constituent

(1) For H-statements in full: see heading 16
(2) Substance with a Community workplace exposure limit
(10) Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.

After inhalation:

Remove the victim into fresh air. Immediately consult a doctor/medical service.

After skin contact:

Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

After eye contact:

Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist.

After ingestion:

Not applicable.

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

4.2.1 Acute symptoms

After inhalation:

Dry/sore throat. Coughing. Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Nausea. Headache. EXPOSURE TO HIGH CONCENTRATIONS: Possible oedema of the upper respiratory tract. Possible inflammation of the respiratory tract. Possible laryngeal spasm/oedema. Rapid respiration. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema. Risk of pneumonia. Respiratory difficulties. Change in the haemogramme/blood composition. Possible esophageal perforation.

After skin contact:

Caustic burns/corrosion of the skin. FOLLOWING SYMPTOMS MAY APPEAR LATER: Shock.

After eye contact:

Corrosion of the eye tissue. Lacrimation.

After ingestion:

Not applicable.

4.2.2 Delayed symptoms

No effects known.

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

If applicable and available it will be listed below.

SECTION 5: Firefighting measures

5.1. Extinguishing media

5.1.1 Suitable extinguishing media:

Small fire: Quick-acting ABC powder extinguisher, Quick-acting BC powder extinguisher.

5.1.2 Unsuitable extinguishing media:

Small fire: Quick-acting CO2 extinguisher, Water (water can be used to control jet flame), Foam.

Major fire: Water (water can be used to control jet flame), Foam.

5.2. Special hazards arising from the substance or mixture

On burning: release of toxic and corrosive gases/vapours (nitrous vapours). On heating: release of toxic/combustible gases/vapours (hydrogen, hydrogen cyanide). Reacts slowly with water (moisture): release of heat. Reacts on exposure to water (moisture) with (some) metals and their compounds.

5.3. Advice for firefighters

5.3.1 Instructions:

If no hazard for/from the surroundings: controlled burning. If hazardous substances are nearby: consider extinguishment. Extinguish only if gas supply/leak can be shut afterwards. Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: extinguish/cool from behind cover. Do not move the load if exposed to heat. After cooling: persistant risk of physical explosion. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.

5.3.2 Special protective equipment for fire-fighters:

Gas-tight suit. Corrosion-proof suit. Compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Keep upwind. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Corrosion-proof appliances. Avoid ingress of water in the containers.

6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

6.1.2 Protective equipment for emergency responders

Gas-tight suit. Corrosion-proof suit.

Suitable protective clothing

See heading 8.2

6.2. Environmental precautions

Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Tip the container on one side to stop the leakage. Try to reduce evaporation. Take account of toxic/corrosive precipitation water. Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

After containing: cover with foam. Liquid spill: cover with sand. Scoop absorbed substance into closing containers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See heading 13.

SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

7.1. Precautions for safe handling

Use spark-/explosionproof appliances and lighting system. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Gas/vapour lighter than air at 20°C. Observe strict hygiene. Remove contaminated clothing immediately. Use corrosionproof equipment.

7.2. Conditions for safe storage, including any incompatibilities

7.2.1 Safe storage requirements:

Storage temperature: < 52 °C. Store in a cool area. Keep container in a well-ventilated place. Fireproof storeroom. Provide for a tub to collect spills. Detached building. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources, ignition sources, oxidizing agents, (strong) acids, halogens.

7.2.3 Suitable packaging material:

Steel, stainless steel, monel steel, lead, iron.

7.2.4 Non suitable packaging material:

Aluminium, copper, tin, zinc, nickel.

7.3. Specific end use(s)

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

EU

Ammonia, anhydrous	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	20 ppm
	Time-weighted average exposure limit 8 h (Indicative occupational exposure limit value)	14 mg/m³
	Short time value (Indicative occupational exposure limit value)	50 ppm
	Short time value (Indicative occupational exposure limit value)	36 mg/m³

Belgium

Ammoniac	Time-weighted average exposure limit 8 h	20 ppm
	Time-weighted average exposure limit 8 h	14 mg/m³
	Short time value	50 ppm
	Short time value	36 mg/m³

The Netherlands

Ammoniak	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	20 ppm
	Time-weighted average exposure limit 8 h (Public occupational exposure limit value)	14 mg/m³
	Short time value (Public occupational exposure limit value)	51 ppm
	Short time value (Public occupational exposure limit value)	36 mg/m³

France

Ammoniac anhydre	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	10 ppm
	Time-weighted average exposure limit 8 h (VRC: Valeur réglementaire contraignante)	7 mg/m³
	Short time value (VRC: Valeur réglementaire contraignante)	20 ppm
	Short time value (VRC: Valeur réglementaire contraignante)	14 mg/m³

Germany

Ammoniak	Time-weighted average exposure limit 8 h (TRGS 900)	20 ppm
	Time-weighted average exposure limit 8 h (TRGS 900)	14 mg/m³

UK

Ammonia, anhydrous	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	25 ppm

Ammonia, anhydrous	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	18 mg/m³
	Short time value (Workplace exposure limit (EH40/2005))	35 ppm
	Short time value (Workplace exposure limit (EH40/2005))	25 mg/m³

USA (TLV-ACGIH)

Ammonia	Time-weighted average exposure limit 8 h (TLV - Adopted Value)	25 ppm
	Short time value (TLV - Adopted Value)	35 ppm

b) National biological limit values

If limit values are applicable and available these will be listed below.

8.1.2 Sampling methods

Product name	Test	Number
Ammonia (organic and inorganic gases by Extractive FTIR)	NIOSH	3800
Ammonia	NIOSH	6015
Ammonia	NIOSH	6015REV
Ammonia	NIOSH	6016
Ammonia	NON	41
Ammonia	OSHA	ID 164
Ammonia	OSHA	ID188

8.1.3 Applicable limit values when using the substance or mixture as intended

If limit values are applicable and available these will be listed below.

8.1.4 DNEL/PNEC values

DNEL/DMEL - Workers

ammonia, liquefied, under pressure

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	47.6 mg/m³	
	Acute systemic effects inhalation	47.6 mg/m³	
	Long-term local effects inhalation	14 mg/m³	
	Acute local effects inhalation	36 mg/m³	
	Long-term systemic effects dermal	6.8 mg/kg bw/day	
	Acute systemic effects dermal	6.8 mg/kg bw/day	

DNEL/DMEL - General population

ammonia, liquefied, under pressure

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	23.8 mg/m³	
	Acute systemic effects inhalation	23.8 mg/m³	
	Long-term local effects inhalation	2.8 mg/m³	
	Acute local effects inhalation	7.2 mg/m³	
	Long-term systemic effects dermal	68 mg/kg bw/day	
	Acute systemic effects dermal	68 mg/kg bw/day	
	Long-term systemic effects oral	6.8 mg/kg bw/day	
	Acute systemic effects oral	6.8 mg/kg bw/day	

PNEC

ammonia, liquefied, under pressure

Compartments	Value	Remark
Fresh water	0.001 mg/l	
Marine water	0.001 mg/l	
Fresh water (intermittent releases)	0.007 mg/l	

8.1.5 Control banding

If applicable and available it will be listed below.

8.2. Exposure controls

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

8.2.1 Appropriate engineering controls

Use spark-/explosionproof appliances and lighting system. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Measure the concentration in the air regularly. Work under local exhaust/ventilation.

8.2.2 Individual protection measures, such as personal protective equipment

Observe strict hygiene. Do not eat, drink or smoke during work.

a) Respiratory protection:

Full face mask with filter type K at conc. in air > exposure limit. High vapour/gas concentration: self-contained respirator.

b) Hand protection:

Insulated gloves.

- materials (excellent resistance)

Butyl rubber, tetrafluoroethylene, viton.

- materials (good resistance)

Nitrile rubber, chloroprene rubber.

- materials (less resistance)

Neoprene, polyethylene, PVA, PVC.

c) Eye protection:

Protective goggles.

d) Skin protection:

Head/neck protection. Corrosion-proof clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical form	Liquefied gas
Odour	Irritating/pungent odour
	Asphyxiating odour
Odour threshold	1 - 50 ppm
Colour	Colourless
Particle size	Not applicable (gas)
Explosion limits	16 - 25 vol %
Flammability	Flammable gas.
Log Kow	0.23 ; Calculated ; 20 °C
Dynamic viscosity	0.475 mPa.s ; -69 °C
	0.317 mPa.s ; -50 °C
	0.276 mPa.s ; -40 °C
	0.255 mPa.s ; -33.5 °C
Kinematic viscosity	No data available
Melting point	-78 °C ; EU Method A.1
Boiling point	-33 °C ; OECD 103
Evaporation rate	No data available
Relative vapour density	0.59
Vapour pressure	8572 hPa ; 20 °C
	20330 hPa ; 50 °C
Solubility	Ethanol ; 13 g/100 ml
	Methanol ; soluble
	Ether ; soluble
	Chloroform ; soluble
	Water ; 48.2 g/100 ml ; 25 °C
Relative density	0.71
Decomposition temperature	498 °C
Auto-ignition temperature	651 °C
Flash point	Not applicable (gas)
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
pH	11.6 ; 2.5 %

9.2. Other information

Minimum ignition energy	680 mJ
Specific conductivity	1.3E7 pS/m ; -79 °C
Critical temperature	132 °C
Critical pressure	112770 hPa
Surface tension	Not applicable (gas)
Dissociation constant	9.25 ; 25 °C ; pKa
Absolute density	710 kg/m³

SECTION 10: Stability and reactivity

10.1. Reactivity

Substance has basic reaction.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts slowly with water (moisture): release of heat. Reacts on exposure to water (moisture) with (some) metals and their compounds. Violent to explosive reaction with many compounds e.g.: with (some) acids, with (strong) oxidizers and with (some) halogens.

10.4. Conditions to avoid

Precautionary measures

Use spark-/explosionproof appliances and lighting system. Keep away from naked flames/heat. Keep away from ignition sources/sparks.

10.5. Incompatible materials

Oxidizing agents, (strong) acids, halogens.

10.6. Hazardous decomposition products

On heating: release of toxic/combustible gases/vapours (hydrogen, hydrogen cyanide). On burning: release of toxic and corrosive gases/vapours (nitrous vapours).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

11.1.1 Test results

Acute toxicity

ammonia, liquefied, under pressure

Route of exposure	Parameter	Method	Value	Exposure time	Species	Value determination	Remark
Oral						Data waiving	
Dermal						Data waiving	
Inhalation	LC50		11590 mg/m³ air	60 minutes	Rat (male/female)	Experimental value	

As the substance is a gas, inhalation is the most likely route of exposure

Conclusion

Toxic if inhaled.

Corrosion/irritation

ammonia, liquefied, under pressure

Route of exposure	Result	Method	Exposure time	Time point	Species	Value determination	Remark
Eye						Data waiving	
Skin	Corrosive	Equivalent to OECD 404	4 h		Rabbit	Experimental value	Aqueous solution

The liquid form can cause frostbites, typical for all liquefied gases

Conclusion

Causes severe skin burns and eye damage.

Respiratory or skin sensitisation

ammonia, liquefied, under pressure

Route of exposure	Result	Method	Exposure time	Observation time point	Species	Value determination	Remark
Skin						Data waiving	
Inhalation						Data waiving	

The study on skin sensitisation does not need to be conducted as the substance is a gas

Conclusion

Not classified as sensitizing for skin

Not classified as sensitizing for inhalation

Specific target organ toxicity

ammonia, liquefied, under pressure

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value determination
Oral (stomach tube)	NOAEL	OECD 422	250 mg/kg bw/day	General	No effect	35 day(s)	Rat (male/female)	Read-across
Oral (stomach tube)	LOAEL	OECD 422	750 mg/kg bw/day	General	Overall effects	35 day(s)	Rat (male/female)	Read-across
Dermal								Data waiving
Inhalation (gases)	LOEL	Subchronic toxicity test	119 mg/m³ air	General	Histopathology	18 weeks (6h/day, 5	Guinea pig (male)	Weight of evidence

As the substance is a gas, inhalation is the most likely route of exposure

Conclusion

Not classified for subchronic toxicity

Mutagenicity (in vitro)

ammonia, liquefied, under pressure

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic activation, negative without metabolic activation	Equivalent to OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value

Mutagenicity (in vivo)

ammonia, liquefied, under pressure

Result	Method	Exposure time	Test substrate	Organ	Value determination
Negative (Oral)	Equivalent to OECD 474		Mouse (male)	Bone marrow	Read-across

Conclusion

Not classified for mutagenic or genotoxic toxicity

Carcinogenicity

ammonia, liquefied, under pressure

Route of exposure	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Oral	NOAEL	Equivalent to OECD 453	3 %	104 weeks (6h/day, 5 days/week)	Rat (male/female)	No carcinogenic effect		Read-across

Conclusion

Not classified for carcinogenicity

Reproductive toxicity

ammonia, liquefied, under pressure

	Parameter	Method	Value	Exposure time	Species	Effect	Organ	Value determination
Developmental toxicity	NOAEL	Equivalent to OECD 414	100 mg/kg bw/day	23 day(s)	Rabbit	No effect		Read-across
Maternal toxicity	NOAEL	Equivalent to OECD 414	1 mg/kg bw/day	23 day(s)	Rabbit	No effect		Read-across
Effects on fertility	NOAEL (P)	OECD 422	1500 mg/kg bw/day	35 day(s)	Rat (male/female)	No effect		Read-across
	LOAEL (P)	OECD 422	> 1500 mg/kg bw/day	35 day(s)	Rat (male/female)	Reproductive performance		Read-across

Conclusion

Not classified for reprotoxic or developmental toxicity

Toxicity other effects

ammonia, liquefied, under pressure

No (test)data available

Chronic effects from short and long-term exposure

ammonia, liquefied, under pressure

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Coughing. Irritation of the respiratory tract. Irritation of the eye tissue. Redness of the eye tissue. Possible inflammation of the respiratory tract. Respiratory difficulties. Affection of the nasal septum.

SECTION 12: Ecological information

12.1. Toxicity

ammonia, liquefied, under pressure

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity fishes	LC50		0.16 mg/l - 1.1 mg/l	96 h	Oncorhynchus mykiss			Literature study
Acute toxicity crustacea	EC50		2.08 mg/l - 4.94 mg/l	48 h	Daphnia magna			Literature study
Toxicity algae and other aquatic plants	ErC50		2700 mg/l	18 day(s)	Chlorella vulgaris	Static system		Similar product
Acute toxicity other aquatic organisms	EC50		2.5 mg/l - 2.8 mg/l		Plankton			Literature study

Conclusion

Very toxic to aquatic life.

12.2. Persistence and degradability

ammonia, liquefied, under pressure

Half-life soil (t1/2 soil)

Method	Value	Primary degradation/mineralisation	Value determination
			Not applicable (gas)

Conclusion

Readily biodegradable in water

12.3. Bioaccumulative potential

ammonia, liquefied, under pressure

Log Kow

Method	Remark	Value	Temperature	Value determination
		0.23	20 °C	Calculated

Conclusion

Low potential for bioaccumulation (Log Kow < 4)

12.4. Mobility in soil

Adsorption to soil is possible

12.5. Results of PBT and vPvB assessment

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

12.6. Other adverse effects

ammonia, liquefied, under pressure

Fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014)

Ozone-depleting potential (ODP)

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

13.1. Waste treatment methods

13.1.1 Provisions relating to waste

European Union

Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997.
Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).
16 05 04* (gases in pressure containers and discarded chemicals: gases in pressure containers (including halons) containing hazardous substances).
Depending on branch of industry and production process, also other waste codes may be applicable.

13.1.2 Disposal methods

Refer to manufacturer/supplier for information on recovery/ recycling. Neutralize. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. May be discharged to wastewater treatment installation. Do not discharge into drains or the environment.

13.1.3 Packaging/Container

European Union

Waste material code packaging (Directive 2008/98/EC).
15 01 10* (packaging containing residues of or contaminated by dangerous substances).

SECTION 14: Transport information

Road (ADR)

14.1. UN number

UN number	1005

14.2. UN proper shipping name

Proper shipping name	Ammonia, anhydrous

14.3. Transport hazard class(es)

Hazard identification number	268
Class	2
Classification code	2TC

14.4. Packing group

Packing group	
Labels	2.3+8

14.5. Environmental hazards

Environmentally hazardous substance mark	yes

14.6. Special precautions for user

Special provisions	23
Special provisions	379
Limited quantities	none.

Rail (RID)

14.1. UN number

UN number	1005

14.2. UN proper shipping name

Proper shipping name	Ammonia, anhydrous

14.3. Transport hazard class(es)

Hazard identification number	268
Class	2
Classification code	2TC

14.4. Packing group

Packing group	
Labels	2.3+8 (+13)

14.5. Environmental hazards

Environmentally hazardous substance mark	yes

14.6. Special precautions for user

Special provisions	23
Special provisions	379
Limited quantities	none.

Inland waterways (ADN)

14.1. UN number

UN number	1005

14.2. UN proper shipping name

Proper shipping name	Ammonia, anhydrous

14.3. Transport hazard class(es)

Class	2
Classification code	2TC

14.4. Packing group

Packing group	
Labels	2.3+8

14.5. Environmental hazards

Environmentally hazardous substance mark	yes

14.6. Special precautions for user

Special provisions	23
Special provisions	379
Limited quantities	none

Sea (IMDG/IMSBC)

14.1. UN number

UN number	1005

14.2. UN proper shipping name

Proper shipping name	Ammonia, anhydrous

14.3. Transport hazard class(es)

Class	2.3

14.4. Packing group

Packing group	
Labels	2.3 + 8

14.5. Environmental hazards

Marine pollutant	P
Environmentally hazardous substance mark	yes

14.6. Special precautions for user

Special provisions	23
Special provisions	379
Limited quantities	none.

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

Annex II of MARPOL 73/78	Not applicable

Air (ICAO-TI/IATA-DGR)

14.1. UN number

Transport	Forbidden
UN number	1005

14.2. UN proper shipping name

Proper shipping name	Ammonia, anhydrous

14.3. Transport hazard class(es)

Class	2.3

14.4. Packing group

Packing group	
Labels	

14.5. Environmental hazards

Environmentally hazardous substance mark	no

14.6. Special precautions for user

Special provisions	A2
Limited quantities: maximum net quantity per packaging	

SECTION 15: Regulatory information

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

European legislation:

VOC content Directive 2010/75/EU

VOC content	Remark
	Not applicable (inorganic)

European drinking water standards (Directive 98/83/EC)

ammonia, liquefied, under pressure

Parameter	Parametric value	Note	Reference
Ammonium	0,5 mg/l		Listed in Annex I, Part C, of Directive 98/83/EC on the quality of water intended for human consumption.

REACH Annex XVII - Restriction

Subject to restrictions of Annex XVII of Regulation (EC) No. 1907/2006: restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

	Designation of the substance, of the group of substances or of the mixture	Conditions of restriction
· ammonia, anhydrous	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact	1. Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following: — metallic glitter intended mainly for decoration,

	with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to that Regulation or not.	— artificial snow and frost, — "whoopee" cushions, — silly string aerosols, — imitation excrement, — horns for parties, — decorative flakes and foams, — artificial cobwebs, — stink bombs. 2. Without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances, suppliers shall ensure before the placing on the market that the packaging of aerosol dispensers referred to above is marked visibly, legibly and indelibly with: "For professional users only". 3. By way of derogation, paragraphs 1 and 2 shall not apply to the aerosol dispensers referred to Article 8 (1a) of Council Directive 75/ 324/EEC. 4. The aerosol dispensers referred to in paragraphs 1 and 2 shall not be placed on the market unless they conform to the requirements indicated.

National legislation Belgium

No data available

National legislation The Netherlands

Waterbezwaarlijkheid	B (1)

National legislation France

No data available

National legislation Germany

WGK	2; Classification in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 and Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV) of 18 April 2017
TA-Luft	5.2.4; III
TRGS900 - Risiko der Fruchtschädigung	Ammoniak; Y; Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes nicht befürchtet zu werden

National legislation United Kingdom

No data available

Other relevant data

No data available

15.2. Chemical safety assessment

SECTION 16: Other information

Full text of any H-statements referred to under heading 3:

H221 Flammable gas.
H280 Contains gas under pressure; may explode if heated.
H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.
H400 Very toxic to aquatic life.

(*)	INTERNAL CLASSIFICATION BY BIG
CLP (EU-GHS)	Classification, labelling and packaging (Globally Harmonised System in Europe)
DMEL	Derived Minimal Effect Level
DNEL	Derived No Effect Level
EC50	Effect Concentration 50 %
ErC50	EC50 in terms of reduction of growth rate
LC50	Lethal Concentration 50 %
LD50	Lethal Dose 50 %
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent, Bioaccumulative & Toxic
PNEC	Predicted No Effect Concentration
STP	Sludge Treatment Process
vPvB	very Persistent & very Bioaccumulative

M-factor

ammonia, liquefied, under pressure	1	Acute	ECHA

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.