

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	: AM-FOL; AMFOL; ammonia-; ammonia, anhydrous; ammonia gas; nitro-sil; R 717; 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
RTECS number	: BO0875000
Molecular mass	: 17.03 g/mol
Formula	: NH ₃

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
Fertilizer: 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

CHEM OGAS NV
Westv aardijk 85
B-1850 Grimbergen Belgium
☎ +32 2 251 60 87
☎ +32 2 252 17 51
info@chemogas.com

Distributor of the product

CHEM OGAS NV
Westv aardijk 85
B-1850 Grimbergen Belgium
☎ +32 2 251 60 87
☎ +32 2 252 17 51
info@chemogas.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:

2.1.1 Classification according to Regulation EC No 1272/2008

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.

2.1.2 Classification according to Directive 67/548/EEC-1999/45/EC

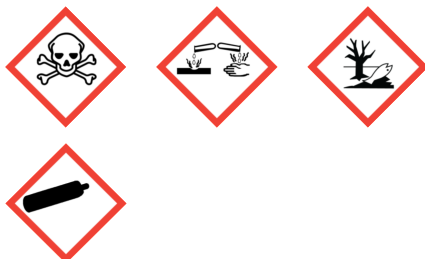
Classified as dangerous in accordance with the criteria of Directives 67/548/EEC and 1999/45/EC

ammonia, liquefied, under pressure

R10 - Flammable.
T; R23 - Toxic by inhalation.
C; R34 - Causes burns.
N; R50 - Very toxic to aquatic organisms.

2.2 Label elements:

Labelling according to Regulation EC No 1272/2008 (CLP)



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/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:

CLP

Gas/vapour explosive within explosion limits if energy source high
Heat may cause pressure rise in tanks/drums: explosion risk
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 DSD/DPD	Classification according to CLP	Note	Remark
ammonia, anhydrous 01-2119488876-14	7664-41-7 231-635-3	C>99 %	T; R23 C; R34 R10 N; R50	Flam. Gas 2; H221 Press. Gas - Liquefied gas; H280 Acute Tox. 3; H331 Skin Corr. 1B; H314 Aquatic Acute 1; H400	(2)(1)(10)	Mono-constituent

(1) For R-phrases and 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.

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

2 / 12

ammonia, liquefied, under pressure

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. 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:

Water spray. Polyvalent foam. BC powder. Carbon dioxide.

5.1.2 Unsuitable extinguishing media:

Solid water jet ineffective as extinguishing medium.

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: persistent 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 substance, 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.

ammonia, liquefied, under pressure

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.

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/m ³	
	Short time value (Public occupational exposure limit value)	51 ppm	
	Short time value (Public occupational exposure limit value)	36 mg/m ³	

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/m ³	
	Short time value (Indicative occupational exposure limit value)	50 ppm	
	Short time value (Indicative occupational exposure limit value)	36 mg/m ³	

Belgium

Ammoniac	Time-weighted average exposure limit 8 h	20 ppm	
	Time-weighted average exposure limit 8 h	14 mg/m ³	
	Short time value	50 ppm	
	Short time value	36 mg/m ³	

USA (TLV-ACGIH)

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

Germany

Ammoniak	Time-weighted average exposure limit 8 h (TRGS 900)	20 ppm	
	Time-weighted average exposure limit 8 h (TRGS 900)	14 mg/m ³	

France

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

4 / 12

ammonia, liquefied, under pressure

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/m ³	
	Short time value (VRC: Valeur réglementaire contraignante)	20 ppm	
	Short time value (VRC: Valeur réglementaire contraignante)	14 mg/m ³	

UK

Ammonia, anhydrous	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	25 ppm	
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	18 mg/m ³	
	Short time value (Workplace exposure limit (EH40/2005))	35 ppm	
	Short time value (Workplace exposure limit (EH40/2005))	25 mg/m ³	

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 - Workers

ammonia, liquefied, under pressure

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	47.6 mg/m ³	
	Acute systemic effects inhalation	47.6 mg/m ³	
	Long-term local effects inhalation	14 mg/m ³	
	Acute local effects inhalation	36 mg/m ³	
	Long-term systemic effects dermal	6.8 mg/kg bw/day	
	Acute systemic effects dermal	6.8 mg/kg bw/day	

DNEL - General population

ammonia, liquefied, under pressure

Effect level (DNEL/DMEL)	Type	Value	Remark
DNEL	Long-term systemic effects inhalation	23.8 mg/m ³	
	Acute systemic effects inhalation	23.8 mg/m ³	
	Long-term local effects inhalation	2.8 mg/m ³	
	Acute local effects inhalation	7.2 mg/m ³	
	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	0.0011 mg/l	
Marine water	0.0011 mg/l	
Aqua (intermittent releases)	0.0068 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.

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

5 / 12

ammonia, liquefied, under pressure

a) Respiratory protection:

Gas 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	105 - 215 g/m ³ 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
Flash point	Not applicable (gas)
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
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	19 µS/m
Critical temperature	132 °C
Critical pressure	112770 hPa
Surface tension	Not applicable (gas)
Dissociation constant	9.25 ; 25 °C
Absolute density	710 kg/m ³

SECTION 10: Stability and reactivity

10.1 Reactivity:

Substance has basic reaction.

10.2 Chemical stability:

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

6 / 12

ammonia, liquefied, under pressure

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:

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 (gases)	LC50	Other	9850 mg/m ³ air	1 h	Rat (male)	Experimental value	
Inhalation (gases)	LC50	Other	13770 mg/m ³ air	1 h	Rat (female)	Experimental value	

As the substance is a gas, inhalation is the most appropriate 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 liquified 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/m ³ air	General	Histopathology	18 weeks (6h/day, 5 days/week)	Guinea pig (male)	Weight of evidence

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

Conclusion

Not classified for subchronic toxicity

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

7 / 12

ammonia, liquefied, under pressure

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 (<i>S.typhimurium</i>)	No effect	Experimental value

Mutagenicity (in vivo)

ammonia, liquefied, under pressure

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

Carcinogenicity

ammonia, liquefied, under pressure

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

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 CMR

Not classified for carcinogenicity
 Not classified for mutagenic or genotoxic toxicity
 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 - 1.1 mg/l	96 h	Oncorhynchus mykiss			Literature study
Acute toxicity invertebrates	EC50		2.08 - 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 - 2.8 mg/l		Plankton			Literature study
Long-term toxicity fish	NOEC	OECD 215	< 48 µg/l	31 day(s)	Ictalurus punctatus	Flow-through system		Literature study

Conclusion

Highly toxic to fishes

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

8 / 12

ammonia, liquefied, under pressure

Toxic to invertebrates (Daphnia)
Not harmful to algae (EC50 >1000 mg/l)
Highly toxic to bacteria
pH shift
Inhibition of activated sludge
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

Global warming potential (GWP)

Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006)

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

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 dangerous substances).

Depending on branch of industry and production process, also other waste codes may be applicable. Hazardous waste according to Directive 2008/98/EC.

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

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

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

9 / 12

ammonia, liquefied, under pressure

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
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
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
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
Limited quantities	none.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 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
----------------------	--------------------

ammonia, liquefied, under pressure

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
Passenger and cargo transport: 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 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.	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, — 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 The Netherlands

Waste identification (the Netherlands)	LWCA (the Netherlands): KGA category 06
Waterbezwaarlijkheid	5

National legislation Germany

Schwangerschaft Gruppe	C
WGK	2; Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)
TA-Luft	5.2.4; III

National legislation France

No data available

National legislation Belgium

No data available

Other relevant data

No data available

15.2 Chemical safety assessment:

A chemical safety assessment has been performed.

Reason for revision: ATP4

Publication date: 2011-11-02

Date of revision: 2014-10-24

Reference number: 0100

Revision number: 0100

Product number: 10249

11 / 12

ammonia, liquefied, under pressure

SECTION 16: Other information

Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Labelling in accordance with 29th adaptation of Directive 67/548/EEC

Labels



Toxic



Dangerous for the environment

R-phrases

10	Flammable
23	Toxic by inhalation
34	Causes burns
50	Very toxic to aquatic organisms

S-phrases

(01/02)	(Keep locked up and out of the reach of children)
09	Keep container in a well-ventilated place
16	Keep away from sources of ignition - No smoking
26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
36/37/39	Wear suitable protective clothing gloves, and eye/face protection
45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
61	Avoid release to the environment. Refer to special instructions/safety data sheets.

Full text of any R-phrases referred to under headings 2 and 3:

R10	Flammable
R23	Toxic by inhalation
R34	Causes burns
R50	Very toxic to aquatic organisms

Full text of any H-statements referred to under headings 2 and 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

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

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.