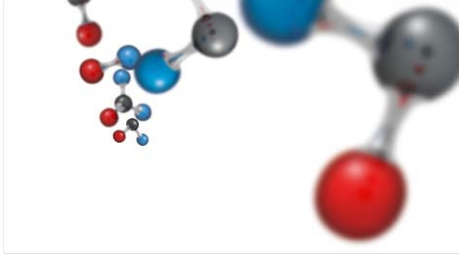
SAFETY DATA SHEET (SDS)
AMMONIA



1. Identification of the substance and of the company

1.1. **Product identifier**
Substance name: **ammonia, anhydrous**
Product name: **Ammonia**
Index number: **007-001-00-5**
EC number: **231-635-3**
CAS number: **7664-41-7**
CAS name: **Anhydrous ammonia**
IUPAC name: **ammonia**
Type of substance:
Composition: **mono constituent substance**
Origin: **inorganic**
REACH registration number: 01-2119488876-14-0051

1.2. **Relevant identified uses of the substance:** fertilizers, intermediates.
Starting material for inorganic synthesis, raw material of artificial fertilizers and is fertilizer in itself, working medium in coolers, etc.

1.2.1. **Uses by workers in industrial settings**

ES 1: Manufacturing of anhydrous ammonia

ES 2: Distribution and formulation of anhydrous ammonia

ES 3: Industrial uses of anhydrous ammonia as an intermediate.

ES 4: Industrial end-use of anhydrous and aqueous ammonia (processing, non-processing aids, auxiliary agent

1.2.2. **Uses by professional workers**

ES 5: Wide dispersive end-use :Professional uses of anhydrous and aqueous ammonia.

1.2.3. **Uses by consumers**

ES6: Wide-dispersive end-use -consumer use of aqueous ammonia

1.2.4. **Uses advised against:** The use of the substance should be limited to those specified in ES.

1.2.5. **Additional information**:
Full text of ES see as an Annex.

1.3. **Details of the supplier of the safety data sheet**
Company identification:
BorsodChem Zrt.
H-3700 Kazincbarcika
Bolyai tér 1.
Phone: **+36 48 511 211 (0-24)**
Other comments:
Language(s) of the phone service: Hungarian, English.

E-mail of responsible person for SDS: **sds@borsodchem.hu**

1.4. **Emergency telephone number**
SGS Emergency Response Services
Phone: +32 3 575 55 55 (International, 0-24)
Asia Pacific: +800 ALERTSGS (+800-2537-8747) (free of charge, 0-24)
+65-6542-9595 (Singapore, 0-24)

Health Toxicological Information Service (HTIS)
Phone: +36 80 20 1199 (green number, free of charge, 0-24)
+36 1 476 6464 (0-24)
Other comments:
Language(s) of the phone service: Hungarian, English.

2. Hazards identification

2.1 **Classification of the substance**
2.1.1 **Classification according to Regulation (EC) No 1272/2008 (CLP)**

Remarks: Self-Classification according to CLP

Hazard classes / categories	Hazard statement	Remarks
Flam. Gas 2	H221 Flammable gas.	
Press. Gas	H280 Contains gas under pressure; may explode if heated.	
Skin Corr. 1B	H314 Causes severe skin burns and eye damage.	
Acute Tox. 3	H331 Toxic if inhaled.	
Aquatic Acute 1	H400 Very toxic to aquatic life.	M-Factor: 1

Specific concentration limits:
Concentration range > 25%
Hazard categories
Aquatic Acute 1

Specific concentration limits:
Concentration range >= 5%
Hazard categories
Skin Corr. 1B
STOT SE 3a

Specific concentration limits:
Concentration range >= 1 - <5%
Hazard categories
Skin Irrit. 2

2.1.2 **Classification according to 67/548/EEC**

Classification	R-phrases
	R10 Flammable.
T – Toxic	**R23** Toxic by inhalation.
C - Corrosive	**R34** Causes burns.
N – Dangerous for the environment	**R50** Very toxic to aquatic organisms.

S-phrases:

S1	Keep locked up.
S2	Keep out of the reach of children.
S9	Keep container in a well-ventilated place.
S16	Keep away from sources of ignition – No smoking.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61	Avoid release to the environment, refer to special instructions/safety data sheets.

2.2. **Label elements**

2.2.1. **Labeling according to Regulation (EC) No 1272/2008 (CLP)**

Product identifier: **Ammonia**
Substance: **ammonia, anhydrous**
Index No: **007-001-00-5**
Hazard pictograms:

GHS04 **GHS05** **GHS06** **GHS09**

Signal word: Danger

Hazard statements:

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.

Precautionary statements:

P210	Keep away from heat/sparks/open flames/…/hot surfaces … No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container to hazardous or special waste collection point.

Supplemental Hazard information (EU): EUH071: Corrosive to the respiratory tract.

Notes:
Note U - When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case.

2.3. **Other hazards:**
The substance does not meet the criteria for persistent, bioaccumulation and toxicity (PBT) or the criteria for Very Persistent and Very Bioaccumulative (vPvB) in accordance with Annex XIII of 1907/2006/EC.

3. Composition/information on ingredients

3.1. **Substance**
Substance name: **ammonia, anhydrous**
Index number: **007-001-00-5**

Chemical name	EC number	CAS number	Typical concentration % (w/w)
Anhydrous ammonia	231-635-3	7664-41-7	> 99.5

4. First aid measures

4.1. **Description of first aid measures**
Obtain immediately medical attention in every case.

4.1.1. **In case of inhalation:**
Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis. Administer artificial respiration if patient is not breathing.

4.1.2. **In case of skin contact:**
Immediately flush exposed area with copious amounts of water for at least 15 minutes followed by washing area thoroughly with soap and water. Remove contaminated clothing. The patient should be seen in a health care facility if irritation or pain persists.
Caution: Clothing frozen to the skin should be thawed before being removed.

4.1.3. **In case of eye contact:**
Immediately flush eyes with copious amounts of water for at least 15 minutes. If irritation, pain, swelling, excessive tearing, or light sensitivity persists, the patient should be seen in a health care facility and referral to an ophthalmologist considered.

4.1.4. **In case of ingestion:**
Call a physician. If conscious, give the patient milk or water to drink immediately. Do not induce vomiting.

4.1.5. **Information to physician:**
Fresh air, rest. Half-upright position. Artificial respiration may be needed. Refer for medical attention.

4.2. **Most important symptoms and effects, both acute and delayed**
The substance is corrosive to the eyes, the skin and the respiratory tract. Inhalation of high concentrations may cause lung oedema. Rapid evaporation of the liquid may cause frostbite.

4.3. **Indication of any immediate medical attention and special treatment needed**
The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate inhalation therapy by a doctor or a person authorized by him/her, should be considered.

5. Fire-fighting measures

5.1. **Extinguishing media**

Suitable extinguishing media:

Stopping the flow of gas rather than extinguishing the fire is usually the best procedure to follow when escaping gas is burning. Dry chemical or CO_2, water spray, fog or foam.

Unsuitable extinguishing media:

Tight water jet is not recommended.

5.2. **Special hazards arising from the substance**

Use of open flame or smoking is prohibited.

5.3. **Advice for firefighters**

Special protective equipment

Positive pressure self-contained breathing apparatus (SCBA) should be used when there is a potential for inhalation of vapors and/or fumes. Chemical protective clothing that is safe for use with ammonia involved in a fire should be worn.

Further information

Do not get water inside container. Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks due to exploding potential when tanks are involved in a fire. Isolate area until gas has dispersed. Use water spray or foam to control vapour.

Fire hazard class in Hungary: "B" (Flammable and explosive)

6. Accidental release measures

6.1. **Personal precautions, protective equipment and emergency procedures**

6.1.1. Advice for non-emergency personnel

Stop leak if you can do so without risk. Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.

6.1.2. Advice for emergency responders:

Keep non-affected people away, isolate hazard area and deny entry. Stay upwind, out of low areas, and ventilate closed spaces before entering.

Evaluate the affected area to determine whether to evacuate or shelter-in-place by taping windows and doors, shutting off outside air intakes (attic fans, etc.), and placing a wet towel or cloth over the face (if needed).

With proper training, self-contained breathing apparatus (SCBA) and firefighter's protective clothing used in conjunction with water spray will provide limited protection in outdoor releases for short-term exposure.

Fully encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Use water spray or foam to control vapours. Mixing of water and liquid ammonia will increase vaporization rate. Do not put water on liquid ammonia unless more than 100 volumes of water are available for each volume of liquid ammonia.

6.2. **Environmental precautions**

Avoid release to the environment. Close up danger area, notify authorities. Close leaking spots, if it is possible without human risks. Spilled ammonia should be closed round.

6.3. **Methods and material for containment and cleaning up**

The spill should be soaked up with suitable absorbent, like dry earth or sand and removed in closed container to safe disposal site. Residual material should be washed up with water.

6.4. **Reference to other sections**

Not applicable.

7. Handling and storage

7.1. **Precautions for safe handling**

When handling the substance wear of means of personal protection is compulsory. Transloading and similar operations shall be made in closed system. There is a danger of electrostatic charge accumulation.

7.2. **Conditions for safe storage, including any incompatibilities**

In pressurized steel vessels. Storage vessels shall be provided with pressure gauge and safety valve. Electrical accessories shall be of explosion proof design.

7.3. **Specific end use(s):**

Technical function of substance (what it does): fertilisers, intermediates.

8. Exposure controls/personal protection

The recommended control strategies:

1. Employ good industrial hygiene practice.
2. Use local exhaust ventilation.
3. Enclose the process.
4. Seek the advice of a specialist.

8.1. **Control parameters**

Substance name: **Ammonia**
CAS number: **7664-41-7**

Countries	Limit value (8 hours)		Limit value (short term)	
	ppm	mg/m^3	ppm	mg/m^3
Austria	20	14	50	36
Belgium	20	14	50	36
Denmark	20	14	40	28
France	10	7	20	14
Germany	20	14	40	28
Hungary		14		36
Italy	20	14	50	36
Poland		14		28
Spain	20	14	50	36
Sweden	25	18	(50)	(35)
Switzerland	20	14	40	28
United Kingdom	25	18	35	25

Source: http://bgia-online.hvbg.de/LIMITVALUE/WebForm_gw.aspx

8.1.1. **DNEL/PNEC-values:**

Workers

Acute/short-term exposure - systemic effects (dermal):	DNEL 68 mg/kg bw/day
Acute/short-term exposure - systemic effects (inhalation):	DNEL 47.6 mg/m^3
Acute/short-term exposure - local effects (dermal):	Not available.
Acute/short-term exposure - local effects (inhalation):	DNEL 36 mg/m^3
Long term exposure - systemic effects (dermal)	DNEL 68 mg/kg bw/day
Long term exposure - systemic effects (inhalation)	DNEL 47.6 mg/m^3
Long-term exposure - local effects (dermal)	Not available.
Long-term exposure - local effects (inhalation):	DNEL 14 mg/m^3

General population:

Acute/short-term exposure - systemic effects (dermal):	DNEL 68 mg/kg bw/day
Acute/short-term exposure - systemic effects (inhalation):	DNEL 23.8 mg/m^3
Acute/short-term exposure - systemic effects (oral):	DNEL 6.8 mg/kg bw/day
Acute/short-term exposure - local effects (dermal):	Not available.
Acute/short-term exposure - local effects (inhalation):	DNEL 7.2 mg/m^3
Long term exposure - systemic effects (dermal)	DNEL 68 mg/kg bw/day
Long term exposure - systemic effects (inhalation)	DNEL 23.8 mg/m^3
Long term exposure - systemic effects (oral)	DNEL 6.8 mg/kg bw/day
Long-term exposure - local effects (dermal)	Not available.
Long-term exposure - local effects (inhalation):	DNEL 2.8 mg/m^3

PNEC aqua (freshwater): 0.0011 mg/l
PNEC aqua (marine water): 0.0011 mg/l
PNEC aqua (intermittent releases): 0.0068 mg/l
PNEC STP: Ammonia is utilised as a nitrogen source by bacteria and is also produced by bacteria as a breakdown product of other nitrogenous compounds. The derivation of a PNEC STP is therefore not required.
PNEC sediment (freshwater, marine water): Ammonia does not accumulate in sediments. The derivation of a PNEC STP is therefore not required.
PNEC oral: There is no evidence that ammonia bioaccumulates, the derivation of PNECs to protect against secondary poisoning is not required.

8.2. **Exposure controls**

8.2.1. **Appropriate engineering controls**

Exposure should be limited using appropriate engineering controls (containment, Local Exhaust Ventilation) and protective equipment (safety gloves, goggles, protecitve clothing) as appropriate. Engineering controls should be maintained to keep ammonia concentrations within acceptable exposure levels, or respiratory protection will be required to reduce inhalation exposure.

8.2.2. **Personal protection equipment**

8.2.2.1. **Eye / Face protection**

Use chemical goggles when there is a potential for contact with liquid or mist. A full-face shield is recommended in addition to goggles for added protection.

8.2.2.2. **Skin and body protection**

Use proper personal protective equipment when working with or around ammonia. Skin protection is required for exposure to liquid, mist, and gas or vapour. Neoprene or rubber gloves, ammonia resistant clothing (overalls, jacket, and boots) or vapor suit, as required.

Hand protection

Alkaline resistant gloves.

8.2.2.3. **Respiratory protection**

Gas mask equipped with "K" filter, or self-contained breathing apparatus.

8.2.2.4. **General safety and hygiene measures**

Wearing of closed work clothing is required and additionally to the stated personal protective equipment. Keep away from drink, food and animal feeding stuffs. No eating, drinking, smoking or tobacco use at the place of work. Take off immediately all contaminated clothing. Hands and face should be washed before breaks and at the end of shift. At the end of the shift the skin should be cleaned and skin-care agents applied.

8.2.3. **Environmental exposure controls**

In accordance with local and national regulations.

9. Physical and chemical properties

9.1. **Information on basic physical and chemical properties**

9.1.1. **Appearance:**

Physical state: gaseous (at 20°C, 1013 hPa)
Colour: colourless
Odour: ammonia-like
Odour threshold: No data.

9.1.2. **Basic data:**

pH (20°C):	Not applicable.
Melting point:	-78°C (at 1013 hPa)
Boiling point:	-33°C (at 1013 hPa)

Flash point (°C): Not applicable. This endpoint is waived in accordance with Column 2 of Annex VII of the REACH as the substance is an inorganic gas.

Evaporation rate:	No data.
Flammability (gas):	Flammable gas.
Upper/lower flammability or explosive limits:	lower explosion limit is 16% upper explosion limit is 25%.

Vapour pressure: 8611 hPa (at 20°C)
Vapour density (air=1): No data.
Relative density (water=1): Not relevant for gas.
Water solubility: 510-530 g/l (at 25°C)
Partition coefficient: (n-octanol/water): Not applicable. This endpoint is waived in accordance with Column 2 of Annex VII of the REACH Regulation, as the substance is inorganic.
Auto-ignition temperature: 651°C (at 1013 hPa)
Decomposition temperature: Hydrogen is released on heating above 454°C.
Viscosity: The substance is a gas at room temperature: this endpoint is not relevant. However the viscosity of anhydrous ammonia was measured to 0.475, 0.317, 0.276 and 0.255 cP at -69, -50, -40 and -33.5°C respectively.
Explosive properties: Non explosive. There are no chemical groups associated with explosive properties.
Oxidising properties: Not applicable. There are no chemical groups associated with oxidising properties.

9.2. **Other information**

Surface tension: Not applicable. This endpoint is waived in accordance with Column 2 of Annex VII of the REACH as the substance is a gas at room temperature.
Granulometry: Not applicable. This endpoint is waived in accordance with Column 2 of Annex VII of the REACH Regulation, as the substance is a gas.
Oxidation reduction potential: -3.09 V (at 20°C). Anhydrous ammonia is a strong reducing agent.
Stability in organic solvents and identity of relevant degradation products: Not applicable. This endpoint is waived in accordance with Column 2 of Annex VII of the REACH as the substance is inorganic.
Dissociation constant: pKa = 9.25 (at 25°C)

10. Stability and reactivity

10.1. **Reactivity**
Atmospheric ammonia reacts with ozone, hydroxyl radical, and atomic oxygen.

10.2. **Chemical stability**
This is a stable material; hazardous polymerisation will not occur.

10.3. **Possibility of hazardous reactions**
Ammonia has potentially explosive or violent reactions with interhalogens, strong oxidisers, nitric acid, fluorine and nitrogen oxide. Ammonia forms sensitive explosive mixtures with air and hydrocarbons, ethanol and silver nitrate and Chlorine. Explosive products are formed by the reaction of ammonia with silver chloride, silver oxide, bromine, iodine, gold, mercury and tellurium halides.

10.4. **Conditions to avoid**
Keep away from heat and ignition sources.

10.5. **Incompatible materials**
Ammonia is incompatible or has potentially hazardous reactions with silver, acetaldehyde, acrolein, boron, halogens, perchlorate, chloric acid, chlorine monoxide, chlorites, nitrogen tetroxide, tin and sulphur, coloured metals (e.g. copper, aluminum, etc.).

10.6. **Hazardous decomposition products**
Hydrogen.

11. Toxicological information

11.1 **Information on toxicological effects**

Acute toxicity – oral
Data waiving. The substance is a gas, therefore oral toxicity is neither relevant nor technically feasible. Not classified. Based on available data, the classification criteria are not met.
Read across (ammonium hydroxide – aqueous ammonia):

Rat	LD50=350 mg/kg bw

Acute toxicity – dermal
Data waiving. The substance is classified as corrosive. Dermal exposure to anhydrous ammonia will be dominated by local effects at the site of contact and significant systemic toxicity is unlikely. Not classified.

Acute toxicity – inhalation: Acute Tox. 3

Rat (male)	LC50=9850mg/m³
Rat (female)	LC50=13770 mg/m³

Acute toxicity – other routes

Data waiving. The acute toxicity of ammonia has been well characterised by other (more relevant) routes of exposure.

Skin irritation / corrosion: Skin Corr. 1B

Skin corrosive category 1B at a concentration ≥ 5%.

Skin irritative category 2 at a concentration range >= 1 - < 5%

(ammonium hydroxide – aqueous ammonia)

Eye irritation

Anhydrous ammonia is listed on Annex I of Directive 67/548/EEC with classification as (R34) 'Causes burns'.

Respiratory and skin sensitization

Not classified. There is no evidence that ammonia causes skin or respiratory tract sensitisation.

Mutagenicity: Not classified. Based on available data, the classification criteria are not met. Anhydrous ammonia is not considered to be genotoxic based on the results of studies in vitro and in vivo with the substances aqueous ammonia, ammonium chloride and ammonium sulphate.

Carcinogenicity

Not classified. Based on available data, the classification criteria are not met.

Reproductive toxicity

Not classified. Based on available data, the classification criteria are not met.

STOT-single exposure: STOT SE 3a

Concentration range >= 5%

(ammonium hydroxide – aqueous ammonia)

STOT-repeated exposure

Not classified. Based on available data, the classification criteria are not met.

Toxicokinetics

Gaseous ammonia is rapidly absorbed through the lungs. Significant dermal absorption is not considered likely. Ammonia is generated in the gastrointestinal tract by the bacterial flora and is readily absorbed. Ammonia is metabolised to urea in mammalian species and is excreted in the urine.

12. Ecological information

12.1. **Toxicity**

12.1.1. **Aquatic toxicity**

Short-term toxicity to fish

Oncorhynchus gorbuscha (pink salmon)	LC50 = 0.068 mg/l (96 h, ammonia)

Long-term toxicity to fish

Oncorhynchus mykiss (rainbow trout)	LC50 = 0.022 mg/l (73 days, ammonia)

Short-term toxicity to aquatic invertebrates

Daphnia magna (water flea)	LC50= 101 mg/l (48h)

Long-term toxicity to aquatic invertebrates

Daphnia magna (water flea)	NOEC=0.79 mg/l

Toxicity to aquatic algae and cyanobacteria

Chlorella vulgaris (unicellular green alga)	LC50=2700 mg/l

Toxicity to microorganisms

Data waiving. Ammonia is used as a source of nitrogen by microorganisms and is also produced by bacteria from other nitrogenous compounds.

12.1.2. **Sediment toxicity**

Data waiving. Ammonia does not accumulate in sediments.

12.1.3. **Terrestrial toxicity**

Toxicity to soil macroorganisms except arthropods: Data waiving. Ammonia applied directly to the soil is rapidly converted to other forms by bacteria in the nitrate cycle. Exposure is therefore not predicted.

Toxicity to terrestrial arthropods: Data waiving. Ammonia applied directly to the soil is rapidly converted to other forms by bacteria in the nitrate cycle. Exposure is therefore not predicted.

Toxicity to terrestrial plants: Data waiving. Ammonia is used as a component of fertilisers, therefore toxicity to terrestrial plants is not predicted

Toxicity to soil microorganisms: Data waiving. Toxicity to soil microorganisms is unlikely: ammonia is an intrinsic part of the nitrate cycle.

Toxicity to birds: Data waiving. A waiver is proposed on grounds of exposure.

12.2. **Persistence and degradability**

Hydrolysis: Ammonia will not hydrolyse. The substance is highly soluble in water and will be present in an equilibrium as ammonia and the ammonium ion. The balance of the equilibrium will be influenced by concentration and pH, however the ammonium ion will be predominant at relevant pH and low concentrations.

Phototransformation in air: Ammonia reacts with ozone, hydroxyl radical, and atomic oxygen. Oxidation by ozone is a first order reaction with respect to the concentration of ammonia and is catalyzed by hydroxide ions over the pH range 7-9. Ammonia and ozone react to produce ammonium nitrate aerosols. Photolytic degradation and reaction with photolytically produced hydroxyl radicals (·OH) in the troposphere are major pathways for the removal of atmospheric ammonia.

Phototransformation in water and soil: This information is not available.

Biodegradation in water: Data show that ammonia is rapidly biodegraded in the environment.

Biodegradation in water and sediment: Ammonia is readily biodegrades in water and sediment under aerobic conditions.

Biodegradation in soil: Ammonia is rapidly biodegraded in soil by the process of ammonification or mineralisation.

12.3. **Bioaccumulative potential**

Ammonia does not bioaccumulate and is a product of normal metabolism.

12.4. **Mobility in soil**

Adsorption/desorption: Ammonia is strongly adsorbed on soil, sediment particles and colloids in water.

12.5. **Results of PBT and vPvB assessment**

PBT and vPvB assessment is not relevant and is not required for inorganic substances.

12.6. **Other adverse effects**

No data.

13. Disposal considerations

13.1 **Waste treatment methods**

Waste must be disposed of in line with local regulations and ammonia solution should not be discharged to surface water without prior treatment by Sewage Treatment Plant (STP).

Release to the environment or sewage system is prohibited. Shall be treated as hazardous waste.

13.1.1. **Contaminated packaging**

Packaging materials may be re-used after decontamination.

14. Transport information

Land transport (ADR/RID/GGVSE)

Marine transport (IMGD-Code/GGVSee)

Air transport (ICAO/IATA/DGR)

14.1. **UN number**

UN-number: 1005

Chemical name: Ammonia, anhydrous

Language: English

Air transport (ICAO/IATA/DGR)

Transport forbidden on passenger aircraft - cargo aircraft only.

14.2. **UN proper shipping name**

Proper shipping name: AMMONIA, ANHYDROUS

Language: English

14.3. **Transport hazard class(es)**
Class: 2.3 + 8

14.4. **Packing group**
Packaging group: None

14.5. **Environmental hazards**
Marine pollutant: no

14.6. **Special precautions for users:**
EmS number: F-C, S-U

14.7. **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
Not relevant.

15. Regulatory information

15.1. **Safety, health and environmental regulations/legislation specific for the substance**
Ammonia is not listed in Annex I of Directive 96/82/EC (Seveso II).

15.1.1. **EU regulations**

- COUNCIL DIRECTIVE of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC).
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
- REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
- Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances.
- Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
- International Chemical Safety Cards (WHO/IPCS/ILO)
- ESIS - European Chemical Substances Information System (http://ecb.jrc.ec.europa.eu/esis)

15.1.2. **Hungarian regulations**

- Act XXV of 2000 on Chemical Safety
- Decree No. 44/2000 (27 Dec) of EüM (Ministry of Health) on the detailed regulation of some processes and activities applied to treat hazardous substances and preparations.
- Decree No. 25/2000 (30 Sept) EüM-SZCSM (Ministry of Health - Ministry of Social and Family Affairs) on the chemical safety of workplaces
- Decree No. 16/2001 (18 July) of KöM (Ministry of Environment Protection) on the register of wastes
- Act LVIII of 2009 on the publication of standardization of the texts for the amendments and supplements of 2009 to annexes A and B of ADR (International Carriage of Dangerous Goods by Road by the European Agreement) in a harmonized system .
- Act LIX of 2009 of 19 May 1980, in Bern, on the publication of standardization of the texts for the amendment of COTIF (Convention on International Carriage by Rail) accepted in Vilnius and the amendments and supplements of 2009 to annex of Appendix C of the Protocol of 3 June 1999 in a harmonized system.
- 98/2001. (VI. 15.) Government Decree on the conditions of execution for activities related to hazardous waste.

15.2 **Chemical Safety Assessment**:
Chemical Safety Assessment has been carried out for the substance by the supplier.

16. Other information

Indication of changes: This version replaces all previous versions.

Abbreviations and acronyms:
ATP: Adaptation to Technical Progress
bw: bodyweight
CAS number, name: Chemical Abstracts Service number, name
CLP: Classification Labelling Packaging Regulation
Corr.: Corrosive
CSR: Chemical Safety Report
DNEL: Derived No Effect Level
ES: Exposure scenario
EC: European Commission
EC number: European Chemical number: EINECS, ELINCS or NLP
EEC: European Economic Community
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
ERC: Enviromental Release Category
EU: European Union
Flam.: Flammable
Irrit.: Irritation
IUPAC: International Union of Pure and Applied Chemistry
LC50: Lethal concentration, 50%
LD50: Median Lethal dose
NH_3: Nitrogen hydride (Ammonia)
NLP: No-Longer Polymer
NOEC: No Observed Effect Concentration
PBT: Persistent, Bioaccumulative and Toxic
PC: Product Category
PNEC: Predicted No Effect Concentration
Press. Gas: Gases under pressure
PROC: Process category
PVC: poly-vinyl-chloride
REACH: Registration, Evaluation, Authorisation and restrictions of Chemicals
SDS: Safety Data Sheet
STOT SE: Specific Target Organ Toxicity - single exposure
STP: Sewage Treatment Plant
SU: Sector of use
Tox.: Toxicity
vPvB: Very Persistent and Very Bioaccumulative

Key literature references and sources for data: Registration dossier for Ammonia (EC 231-635-3).

Classification for mixtures and used evaluation method according to Regulation (EC) 1207/2008 (CLP):

Classification according to Regulation (EC) 1207/2008	Classification procedure
Flam. Gas 2	Minimum classification.
Press. Gas	On basis of test data.
Skin Corr. 1B	On basis of test data.
Acute Tox. 3	On basis of test data.
Aquatic Acute 1	On basis of test data.

Relevant R-, S-, H- and P-phrases (number and full text)

R-phrases:

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

S-phrases:

S1	Keep locked up.
S2	Keep out of the reach of children.
S9	Keep container in a well-ventilated place.
S16	Keep away from sources of ignition – No smoking.
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S61	Avoid release to the environment, refer to special instructions/safety data sheets.

H-phrases:

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.

P-phrases:

P210	Keep away from heat/sparks/open flames/…/hot surfaces … No smoking.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container to hazardous or special waste collection point.

Annex 1. Exposure Scenario (ES)

Language: English
Date: 30.11.2010
Safety Data Sheet
AMMONIA

www.borsodchem-group.com

This SDS is prepared for the purpose of providing health, safety and environmental data. The information given corresponds with our actual knowledge and experience. While the descriptions, data and information contained in the present datasheet are provided in good faith, these are to be considered as guidance only. Thus, this SDS shall not constitute a guarantee for any specific properties or quality standards.

This information is meant to describe our product in view of possible safety requirements, but it remains the responsibility of the customer to determine the applicability of the information and suitability of any product for its own particular purpose, to provide a safe workplace and comply with all applicable laws and regulations.

Since handling, storage, use and disposal is of the product are beyond our control and our knowledge, we do exclude any responsibility connecting to handling, storage, use or disposal of this product.

Please note that if the product used as a component of another product, this SDS information may not be applicable.

Manufactured by:

BorsodChem Zrt.
Bolyai tér 1.
H-3700 Kazincbarcika
Hungary
Phone: +36-48 511 211
Fax: +36-48 511 511