



AMMONIA

MATERIAL SAFETY DATA SHEET

1. Identification of the substance and the company

1.1. Identification of the substance:

Name: Ammonia

1.2. Use of the substance: starting material for inorganic synthesis, raw material of artificial fertilizers and is fertilizer in itself, working medium in coolers, etc.

1.3. Company identification:

BorsodChem Zrt.

H - 3700 Kazincbarcika

Bolyai tér 1.

Emergency information: **+36 48 511 211 (0-24)**

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

1.4. Emergency telephone:

Health Toxicological Information Service (HTIS)

/Egészségügyi Toxikológiai Tájékoztató Szolgálat (ETTSZ)/

+36 80 201 199 (green number, free of charge)

+36 1 476 6464 (0-24)

2. Hazards identification

Flammable.

Toxic by inhalation.

Causes burns.

Very toxic to aquatic organisms.

3. Composition

Chemical name	CAS number	EC number	Composition m/m %	Classification
ammonia	7664-41-7-	231-635-3	99,8	T, N, C R10-23-34-50



4. First-aid measures

- 4.1. **Skin contact:** Remove contaminated clothes and shoes. Wash the affected skin surface thoroughly with abundant water. Seek medical attendance.
- 4.2. **Eye contact:** Flush the eyes with abundant water for minimum 15 minutes. While flushing the eyes should be kept open. Seek medical attendance.
- 4.3. **Inhalation:** Move the injured person to fresh air. If breathing fails apply immediate breathing support, preferably with oxygen. Without delay take the injured to physician.
- 4.4. **Ingestion:** Rinse mouth, refer for medical attention immediately.
- 4.5. **Other:** Evaporation of liquid ammonia causes heat removal therefore represents a danger of freezing. Do not chafe frozen body parts.

5. Fire-fighting measures

- 5.1. **Suitable media:** Containers shall be cooled with water spray. To extinguish fire of gaseous ammonia use water mist or extinguishing powder.
- 5.2. **Extinguishing media which shall not be used for safety reasons:** tight water jet is not recommended.
- 5.3. **Particular risk sources, combustion product or derivatives:** Combustion of ammonia generates (NO_x) nitrogen oxides.
- 5.4. **Special protective equipment:** Protective equipment recommended. Use self-contained breathing apparatus.
- 5.5. **Remarks:** Use of open flame or smoking is prohibited. Fire hazard class: "B".

6. Accidental release measures

- 6.1. **Personal precautions:** Remove non-competent personnel. Protective clothes with breathing apparatus recommended.
- 6.2. **Environmental precautions:** 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 for 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. **Remarks:** Any ignition sources shall be removed.

7. Handling and storage

- 7.1. **Handling:** When handling the substance wear of means of personal protection is compulsory. Trans-loading and similar operations shall be made in closed system. There is a danger of electrostatic charge accumulation.
- 7.2. **Storage:** In pressurized steel vessels. Storage vessels shall be provided with pressure gauge and safety valve. Electrical accessories shall be of explosion proof design.

8. Exposure controls – personal protection

- 8.1. **Occupational exposure limit:**
Allowable peak conc.: 36mg/m³
Allowable average conc.: 14 mg/m³
- 8.2. **Exposure controls**
 - 8.2.1. Occupational exposure controls:
Technical HSE measures:
Provide appropriate ventilation..
Provide emergency shower and eye wash.
Provide first aid kit.
Means of personal protection:
 - a) Respiratory protection: gas mask equipped with "K" filter, or self-contained breathing apparatus.
 - b) Hand protection: alkaline resistant gloves.
 - c) Eye protection: safety goggles or face-shield.
 - d) Skin protection: closed protective clothes and shoes.
 - e) Other: careful personal hygiene.

9. Physical and chemical properties

9.1. General information

Appearance: liquefied gas

Odour: pungent

9.2. Important health, safety and environmental information

Boiling point: -33.4°C

Melting point: -77,7°C

Flash-point: hard to combust gas

Ignition temperature: 651 °C

At temperatures over 450°C decomposition is induced involving liberation of highly combustible gaseous hydrogen

Self-ignition: -

Concentration limits of ignitable mixture with air: 16 through 27 v/v%

Oxidizing power: -

Vapor pressure: 48,3 MPa .

Specific gravity: 0,61 g/cm³ (0.87 MPa)

Solubility in water: 517 g/cm³

10. Stability and reactivity

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

10.2. **Incompatible with:** Non-ferrous metals, galvanized items, acids, oxidizing agents.

10.3. **Hazardous decomposition products:** hydrogen.

11. Toxicological information

11.1. Acute toxicity:

Inhalation LC₅₀ (rat): 2000 ppm / 4h

Inhalation LC₅₀ (mouse): 4230 ppm / 1h

11.2. Skin irritation: Irritant and causes severe burns and frosting.

11.3. Sensitivity: Causes lachrymation and aching sensation in the eyes and on mucous membranes of the nose and throat. Coughing, shortness of breath or convulsions may occur. Convulsion of the rima glottidis or edema in the larynx may lead to death. Edema in the lungs may also develop.

12. Ecological information

12.1 Acute ecotoxicity: Toxic to aquatic life

LC₅₀ (rainbow fish): 0,97 mg/l / 24h

LC₅₀ (water flea): 189 mg/l / 48h

12.2. Biological degradability: -

12.3. WGK: 2 (German classification of the substance in respect of risk to water quality)

13. Disposal considerations

Dispose in accordance with applicable international, national and local laws.

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

13.2. **Package:** Packaging materials may be re-used after decontamination.

14. Transport information

ADR/RID/GGVSE
ADN/ADNR/IMDG-Code
IATA-DGR/ICAO-TI

UN-number: 1005
Hazard classification: 2.3
Proper shipping name: AMMONIA, WATERLESS
Hazard mark number: 268
ICAO/IATA-DGR: Not transportable.

15. Regulatory information

No Chemical Safety Analysis has been made for this material so far.

Hazard symbol:



T, Toxic



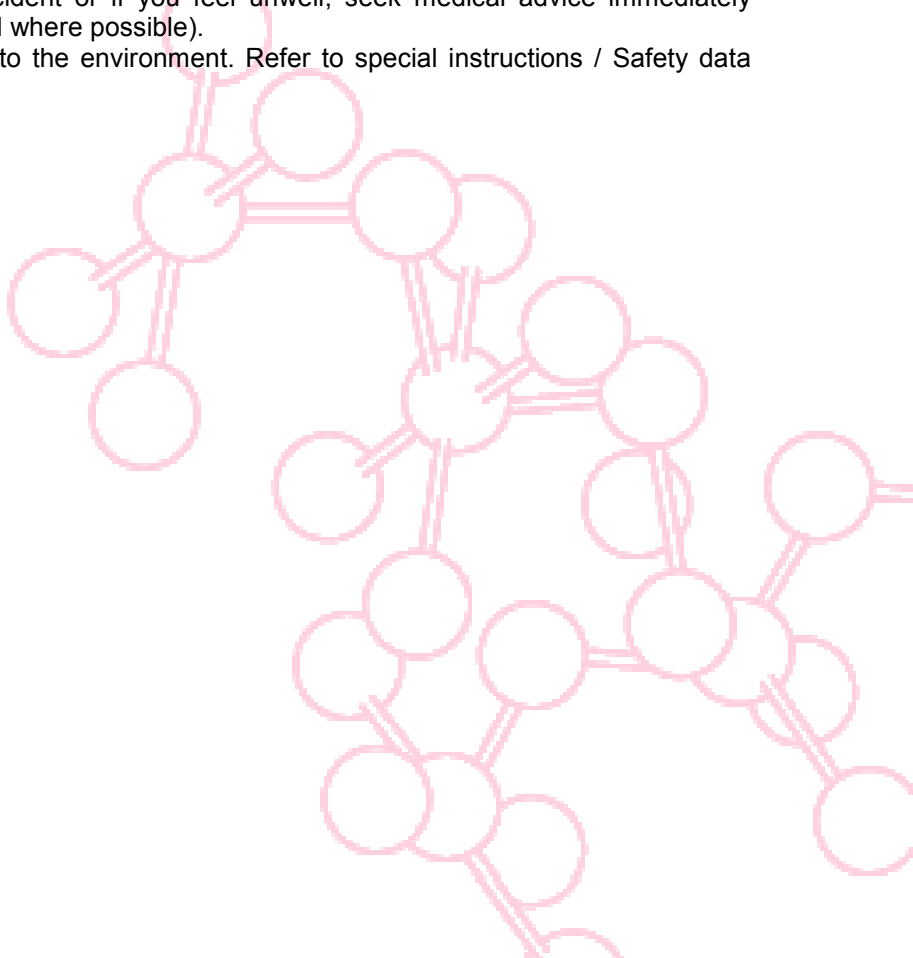
N, Dangerous for the environment

Risk phrases:

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

Safety phrases:

S1/2	Keep locked up and 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.



16. Other information

T, Toxic
C, corrosive
N, Dangerous for the environment

Risk phrases:

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

Sources:

1. Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances and its amendments to the 31st ATP inclusive.
2. 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.
3. Regulation (EC) No 2006/1907 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.
4. International Chemical Safety Cards (WHO/IPCS/ILO)
5. ESIS - European Chemical Substances Information System (<http://ecb.jrc.ec.europa.eu/esis>)

The data given here is based on current knowledge, experience and belief accurate at the date of publication. The above details do not imply any guarantee concerning composition, properties or performance. In all cases, it is the responsibility of the user to determine the applicability of such information and recommendations and the suitability of any product for its own particular purpose. Hazards, toxicity and behaviour of the product may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

Changes since the previous version (C0) have been made in sections 3, 4, 8, 12 and 16.

This version replaces all previous versions.