

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

Product identifier

Name of substance	Ammonia
Optional name	Anhydrous ammonia
WE number	231-635-3
CAS number	7664-41-7
REACH registration number	01-2119488876-14-0019
Chemical formula	NH ₃

Relevant identified uses of the substance and uses advised against

Identified uses:

- Ammonia production
- Distribution and formulation of anhydrous ammonia
- Industrial uses of anhydrous ammonia as an intermediate
- Industrial end-use - use of ammonia as a processing aid, non-processing aid and auxiliary agent
- Wide dispersive end-use: professional uses
- Wide-dispersive end-use - consumer use of aqueous ammonia

Anhydrous ammonia is used in the chemical industry as an intermediate for the production of other substances, for the production of fertilizers, ammonia solutions, explosives, for saponification of fats and oils, it is a cooling medium in the refrigerating systems, it is used in the pharmaceutical industry, in electronic engineering for printed circuit board etching, in metallurgy, etc.

Uses advised against: None.

Details of the supplier of the safety data sheet

Name	Grupa Azoty Zakłady Azotowe Kędzierzyn Spółka Akcyjna
Address	skr. poczt. 163, ul. Mostowa 30A, 47-220 Kędzierzyn-Koźle, Poland
Telephone number	+48 77 481 20 00 (head office)
Person in charge of this MSDS, e-mail	karta_nawozy@grupaazoty.com

Emergency telephone number

Poland	997	Police
	998	Fire service
	999	Emergency medical services
	112	Rescue number in Poland
	+48 77 481 34 01	Shift Dispatcher at the Company Grupa Azoty ZAK S.A. (24h/7, only in Polish)
France	+33 14 542 59 59	Centres Antipoison et de Toxicovigilance
Iceland	+35 45 43 22 22	Landspítali
Lithuania	+37 05 236 20 52 +37 06 875 33 78	Lithuanian Poison Information Bureau
Malta	112	
Romania	+40 21 318 36 06	
Slovakia	+42 12 547 741 66	Národné Toxikologické Informačné Centrum
Slovenia	112	

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance

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

<i>Hazard Category 2, Annex III, Part 1, Table 1.1</i>	H221	Flammable gas.
<i>Hazard Category 2,3 Annex III, Part 1, Table 1.1</i>	H280	Contains gas under pressure; may explode if heated.
<i>Hazard Category 3, Annex III, Part 1, Table 1.1</i>	H331	Toxic if inhaled.
<i>Hazard Category 1B, Annex III, Part 1, Table 1.1</i>	H314	Causes severe skin burns and eye damage.
<i>Hazard Category 1, Annex III, Part 1, Table 1.1</i>	H400	Very toxic to aquatic life.
<i>Hazard Category 2, Annex III, Part 1, Table 1.1</i>	H411	Toxic to aquatic life with long lasting effects

2.2. Label elements

Identification data: name, address and telephone number of the supplier or suppliers

Product identifier:

Name of the substance: "Ammonia"

EC number: "EC number 231-635-3"

CAS number: "CAS number 7664-41-7"

Hazard pictograms:



GHS04



GHS05



GHS06



GHS09

Signal word: "Danger"

Hazard 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.
H411:	Toxic to aquatic life with long lasting effects.

Precautionary statements:

P210:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260:	Do not breathe gas/mist/vapours/spray.
P264:	Wash hands thoroughly after handling.
P271:	Use only outdoors or in a well-ventilated area.
P273:	Avoid release to the environment.
P280:	Wear protective gloves/protective clothing/face protection
P301+P330+P331:	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353:	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304+P340:	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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.
P377:	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381:	In case of leakage, eliminate all ignition sources.
P403+P233:	Store in a well-ventilated place. Keep container tightly closed.
P405:	Store locked up.

2.3. Other hazards

EUH071:	Corrosive to the respiratory tract.
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SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

3.1. Substances

Name of substance	EC number	CAS number	Content [%]
Anhydrous ammonia	231-635-3	7664-41-7	> 99.85

3.2. Mixtures

Not applicable.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General information:	Use a gas mask with the ammonia respirator cartridge to escape from the hazard zone. Members of the rescue team (who need to enter the hazard zone) must wear the gas-tight protective clothing and use the isolating breathing apparatus.
Inhalation:	Evacuate the affected person from the place of exposure and provide access of fresh air. Place in the comfortable half-upright position or sitting position, keep at rest and completely motionless (any physical exertion may cause pulmonary oedema). Monitor the breathing function. If the affected person can breathe, oxygen should be administered through a respiratory mask. When breathing has stopped, apply artificial respiration - use mouth-to-mouth resuscitation. Provide medical assistance immediately.
Skin:	Flush the affected skin area immediately with plenty of water and soap for at least 15 minutes. In case of persistent symptoms, seek medical assistance.
Eyes:	Rinse immediately with plenty of lukewarm water for at least 15 minutes. In every instance, seek medical assistance and assistance from the eye specialist immediately.
Ingestion:	After incidental ingestion, call a doctor/physician immediately. Do not induce vomiting unless instructed to do so by medical personnel.

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

Intoxication, skin burns, eye damage, respiratory irritation.

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

No data available.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: dry chemical powders or CO₂, water spray, fire foam.

Unsuitable extinguishing media: none.

Use dry chemical powders, fire foams or water spray to put out the tanks which are on fire. The tanks which are exposed to open flames or high temperatures should be cooled down with water (to be supplied from a safe distance - risk of explosion) until the fire is put out completely. If possible, such tanks (containers) should be removed from the hazard zone.

Warning: Water MAY NOT get into the tanks which are being cooled down.

5.2. Special hazards arising from the substance

Ammonia is a toxic, corrosive and flammable gas. It will burn slowly in air but will burn readily in oxygen. It burns with a greenish flame. It is lighter-than-air, hence it will accumulate in upper sections in rooms and confined spaces. The ammonia tanks may explode when exposed to open flames or high temperatures. Liquid ammonia will boil at atmospheric pressure and its temperature will go down to reach about -33°C. Hence, any direct contact with the skin may cause frostbites.

5.3. Advice for firefighters

Wear the gas-tight protective clothing and use the isolating breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Stop the product escape as far as possible - close the discharge valve, seal the leaking container, transfer ammonia to another leak-proof container. Avoid any direct contact with the escaping substance. Use personal protective equipment (refer to SECTION 8 in this SDS).

Never direct the water jet at the place of product escape.

6.2. Environmental precautions

Prevent product uncontrolled entry to water courses and ground water. In case of large spills, embank the place where the liquid accumulates, pump the collected liquid into tight containers. Then rinse the contaminated surface thoroughly with water.

6.3. Methods and material for containment and cleaning up

No data available.

6.4. Reference to other sections

Refer to Sections 8 and 13 in this SDS.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Do not eat, drink or smoke when using this product. Avoid inhalation of gas. Observe the rules of personal hygiene. Provide good ventilation for indoor work places. Protect this substance against any open flames or high temperatures. Use personal protective equipment.

Wear protective clothing; use protective gloves made of polyacrylonitrile rubber, latex, poly(vinyl chloride) or poly(vinyl alcohol); use protective footwear (e.g. made of neoprene); use goggles which protect your eyes against exposure to gas (when a half-face respirator is used); use respiratory protection: mask or half-face respirator and type K respirator cartridge. When the oxygen content drops down below 17 % vol., or when the ammonia concentration is higher than 0.5 % vol., use self-contained breathing apparatus or other isolating type breathing equipment. In potentially explosive atmospheres/areas, the protective clothing, gloves and boots must be anti-static. Under emergency conditions or when the ammonia concentration in the work place atmosphere is not known, use isolating personal protective equipment (gas-tight suit and isolating type respiratory protection).

7.2. Conditions for safe storage, including any incompatibilities

Storage: Store in original, properly marked and leak-proof cylinders/containers, in cool, dry, well-ventilated and fire-resisting store houses.

7.3. Specific end use(s)

Use 1 Ammonia production

See: Exposure Scenario ES1

Use 2 Distribution and formulation of ammonia

See: Exposure Scenario ES2

Use 3 Industrial uses of anhydrous ammonia as an intermediate

See: Exposure Scenario ES3

Use 4 Industrial end-use - use of ammonia as a processing aid, non-processing aid and auxiliary agent or add-on agent

See: Exposure Scenario ES4

Use 5 Wide dispersive end-use: professional uses

See: Exposure Scenario ES5

Use 6 Wide-dispersive end-use - consumer use of aqueous ammonia

See: Exposure Scenario ES6

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Maximum permissible concentrations (NDS) of health harmful agents in working environment			
Area	Substance	WEL-TWA	WEL-STEL
PL	Ammonia	14 mg/m ³	28 mg/m ³
EU	Ammonia	14 mg/m ³	36 mg/m ³

Derived No-Effect Levels (DNELs) - employees	
Short-term exposure	<u>Systemic effects</u>
	<i>Skin</i> 6.8 mg/kg bw/d
	<i>Inhalation</i> 47.6 mg/m ³
	<u>Local effects</u>
Long-term exposure	<i>Inhalation</i> 36.0 mg/m ³
	<u>Systemic effects</u>
	<i>Skin</i> 6.8 mg/kg bw /d
	<i>Inhalation</i> 47.6 mg/m ³
	<u>Local effects</u>
	<i>Inhalation</i> 14.0 mg/m ³

Derived No-Effect Levels (DNELs) - general population	
Short-term exposure	<u>Systemic effects</u>
	<i>Skin</i> 68.0 mg/kg bw /d
	<i>Inhalation</i> 23.8 mg/m ³
	<i>Ingestion</i> 6.8 mg/kg bw /d
	<u>Local effects</u>
	<i>Inhalation</i> 7.2 mg/m ³
Long-term exposure	<u>Systemic effects</u>
	<i>Skin</i> 68.0 mg/kg bw /d
	<i>Inhalation</i> 23.8 mg/m ³
	<i>Ingestion</i> 6.8 mg/kg bw /d
	<u>Local effects</u>
	<i>Inhalation</i> 2.8 mg/m ³

Predicted No-Effect Concentration (PNEC)	
Fresh water	0.0011 mg/l
Water (sea water)	0.0011 mg/l
Water (discontinuous emissions)	0.089 mg/l

8.2. Exposure controls

Technical control measures: Special equipment and systems, with low or zero exposure for workers, are required for the production of anhydrous ammonia. The plants are usually located outdoors while the operators control the process from the control rooms.

All the process equipment is quality certified and it is validated on a regular basis to prevent any uncontrolled escape of ammonia. Good occupational hygiene practices and controlling minimize the hazards to which the personnel is exposed.

Personal protection measures: See below table



EYE/FACE PROTECTION

Well-fitting glasses or protective goggles. In addition to protective goggles, wear a face shield if there is a reasonable chance of spraying on the face.



Equipment compliant with EN 166.



HAND PROTECTION

Use protective gloves made of polyacrylonitrile rubber, latex, polyvinyl chloride, polyvinyl alcohol.



Used protective gloves must meet the specifications of EU Directive 89/686/EEC and/or standard EN374. Use anti-electrostatic gloves in explosive area.



SKIN/BODY PROTECTION

Wear protective clothing. Wear safety shoes (e.g. of neoprene). In potentially explosive area use anti-electrostatic clothing, gloves and footwear.



In an emergency situation or unknown substance concentration, use personal protective equipment insulating the body (gas-tight suit and isolating respiratory equipment).



RESPIRATORY PROTECTION

In small concentrations (below 0,5%) or during short-term exposure, use respiratory protective equipment in the form of a complete mask with a class K absorber.

At higher concentrations and/or oxygen depletion below 17%, or at unknown concentrations, use an overpressure air device or other insulating equipment.

GENERAL RULES FOR INDUSTRIAL HYGIENE



Wash your hands after work.

Do not eat, drink or smoke while working with ammonia.

HYGIENE MEASURES

Safety shower and eyewash station should be easily accessible.

Environmental exposure control: All process operations, inclusive of sampling, are conducted in the enclosed system. The forced ventilation system protects the places in which higher ammonia concentrations can be reasonably expected.

Ammonia is stored in enclosed and leak-proof tankers and tanks, and it is transported under the same conditions. All the process equipment is quality certified and it is validated on a regular basis to prevent any uncontrolled escape of ammonia.

Inform relevant environmental authorities when this substance is released to the atmosphere, water reservoirs, soil or sewage systems.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<i>Physical state:</i>	in 20°C, 1013 hPa	gas
<i>Colour:</i>		colourless
<i>Odour:</i>		distinctive, sharp
<i>Odour threshold:</i>		no data
<i>Melting/freezing point:</i>		-77.7°C (1013 hPa)

<i>Boiling point:</i>		-33 °C (1013hPa)
<i>Flammability:</i>		flammable
<i>Evaporation rate:</i>		no data
<i>Lower and upper explosion limit:</i>	lower	16%
	upper	25 %
<i>Flash point:</i>		not applicable, substance is a gas at room temperature
<i>Auto-ignition temperature:</i>		651 °C
<i>Decomposition temperature:</i>		no data
<i>pH:</i>		no data
<i>Kinematic viscosity:</i>		not applicable
<i>Solubility:</i>	in 20 °C	510-531 g/l of water
<i>Partition coefficient n-octanol/water (log):</i>		inorganic substance, testing is not required
<i>Vapour pressure:</i>	in 20 °C	8611 hPa (20 °C)
<i>Vapour density:</i>		no data
<i>Relative density:</i>		no data
<i>Relative vapour density</i>		no data
<i>Particle characteristics:</i>		not applicable

9.2. Other information

<i>Density:</i>	in 20 °C	6,96 g/L
<i>Surface tension:</i>		The substance is a gas at room temperature, the data is not relevant
<i>Dissociation constant:</i>		9,25 (in 25 °C)
<i>Explosive properties:</i>		ammonia does not have any chemical groups associated with explosive properties
<i>Oxidizing properties:</i>		no oxidizing properties; the substance has no oxygen or halogen atoms

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Ammonia is chemically active and it poses the risk of fire and/or explosion in its reactions with: acetaldehyde, acrylaldehyde, boron trifluoride, bromine, chlorine, chloric acid, chlorine trifluoride, chlorates, chlorosilane, ethylene oxide, fluorine, hydrogen bromide, hypochlorous acid, iodine, nitric acid, nitrogen dioxide, nitrogen trichloride, nitrosyl chloride, diphosphorus pentoxide, picric acid, phosphorus, hydrogen phosphide, arsenic hydride, antimony hydride, sodium and sulphur dichloride. It will attack on copper, zinc, tin and their alloys, especially in humid atmospheres.

10.2. Chemical stability

No need to conduct tests for an inorganic substance.

10.3. Possibility of hazardous reactions

Hazardous combustion/decomposition products: nitrogen oxides will be released in a fire.

10.4. Conditions to avoid

Sources of ignition, high temperatures.

10.5. Incompatible materials

The ability of ammonia to react with halogens, interhalogen compounds and oxidizers is more hazardous than its flammability. Those reactions may be violent and/or they may yield explosive products. Ammonia should be stored in cool and well-ventilated rooms/places, away from sources of ignition and other chemical substances, in particular away from oxidising gases (chlorine, bromine, iodine) and acids.

10.6. Hazardous decomposition products

Refer to point 10.3.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicokinetics

Ammonia in the aquatic environment has the form of ammonium hydroxide. Toxicity of ammonia solutions to aquatic life is dependent on physical-chemical parameters, and in particular on pH. Acute toxicity of ammonia is also affected, in a lesser degree, by temperature, carbon dioxide content, dissolved oxygen content and salinity. Ammonia is present in two forms in the aqueous solution: undissociated ammonia (NH₃) and ammonium ion (NH₄⁺) which remain in equilibrium. For increasing pH, the share of undissociated ammonia increases, too. That form of ammonia is considered to be primarily responsible for its toxicity in aquatic systems.

Absorption

Ammonia is produced by the bacterial flora in the gastrointestinal system (~4 g/day). As this molecule is very small and it is water-soluble, it can be quickly and extensively absorbed.

The findings from the tests in rats (Schaerdel et al, 1983) indicate that the gaseous substance is taken up to the blood circulation system through inhalation which is connected with water-solubility and low molecular size of that substance.

Distribution

Ammonia is transported to all tissues throughout the body and it can cross the blood-brain border.

Metabolism

No studies are available on metabolism of ammonia. However, the physiological role of ammonia as a product of normal metabolism (protein catabolism) has been well characterised. Ammonia is subjected to quick metabolic conversion in the liver in the urea cycle.

Excretion

In mammalian organisms, ammonia is quickly converted in the urea cycle in the liver cells and then it is excreted (as urea) in urine. Ammonium ions (NH₄⁺) are also excreted by kidneys.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

a) Acute toxicity

Acute toxicity for dermal exposure - no data available. However, this substance has been classified as corrosive to skin. Skin exposure to anhydrous ammonia involves first of all local effects over the exposed skin area, and any considerable systemic effects are hardly possible.

Acute toxicity of anhydrous ammonia:

Acute toxicity of anhydrous ammonia	Dose
LD50 /rat, oral/	350 mg/kg bw
LC50 /rat, inhalation/	7035 mg/m ³ of air (30 min)
LC50 /rat, inhalation/	7939 mg/m ³ of air (1h)

b) Skin corrosion/irritation

Classification according to the CLP Regulation for anhydrous ammonia: Skin Corr.1B (H314: causes severe skin burns and eye damage). No tests in animals are conducted as regards the effect(s) of anhydrous ammonia on eyes.

c) Serious eye damage/irritation

See *Skin corrosion/irritation*.

d) Respiratory or skin sensitisation

Skin sensitisation - no data available. No tests in animals are conducted as regards sensitisation through skin contact. Local effects involve first of all dermal irritation, and any skin sensitisation is hardly possible.

It is considered hardly possible that ammonia causes respiratory sensitisation. Inhalation of ammonia causes respiratory irritation. No tests are available to show whether ammonia causes asthma or not.

e) Germ cell mutagenicity

No tests available. Considerable amounts of ammonia are produced in the body as a product of protein catabolism, and it is hardly probable that it can be genotoxic.

f) Carcinogenicity

No tests available. Considerable amounts of ammonia are produced in the body as a product of protein catabolism, and it is hardly probable that it can be carcinogenic.

g) Reproductive toxicity

No tests available. Considerable amounts of ammonia are produced in the body as a product of protein catabolism, and it is hardly probable that it can be toxic to reproduction.

h) STOT-single exposure

No data available.

i) STOT-repeated exposure

No data available.

j) Aspiration hazard

No data available.

11.2. Information on other hazards

No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Water	<u>Acute toxicity</u>	
	<i>Fish</i>	<i>Freshwater fish</i> : LC50 (96h) = 0,89 mg/L
	<i>Aquatic invertebrates</i>	EC50 (48 h): 110 mg/L
	<u>Chronic toxicity</u>	
	<i>Fish</i>	<i>Freshwater fish</i> : LOEC (73 d): 0,022 mg/L
	<i>Aquatic invertebrates</i>	NOEC (96h): 0,79 mg/L
	<i>Algae</i>	<i>Algae</i> : EC50/LC50 (18 days) = 2700 mg/L
	<i>Microorganisms</i>	-
Sediment	No data available. Ammonia does not accumulate in sediments.	
Land	Soil micro and macro-organisms	In the soil, ammonia is readily processed by a variety of bacteria, fungi and fungi into ammonium ions (NH ₄ ⁺) in the process of ammonification or mineralization.
	<i>Land plants</i>	Ammonia is used as a component of fertilizers for many species of land plants, therefore toxic properties are excluded.

12.2. Persistence and degradability

Stability in organic solvents

According to Annex IX to the REACH Regulation, column 2, ammonia is an inorganic substance and this property is not considered to be of determining importance.

Biodegradation

Biodegradation in water

In the aquatic environment and under aerobic conditions, ammonia is quickly converted to other nitrogen compounds. The processes involve bonding, assimilation, ammonification, nitrification and denitrification. Under aerobic conditions, aquatic ammonia is quickly converted in the nitrification reaction to nitrates. Ammonia-oxidizing bacteria *Nitrosomonas* oxidize ammonia to nitrites and *Nitrobacter* further convert nitrites to nitrates. The presence of ammonium ions increases pH of the aquatic environment. The temperature, oxygen content and pH of water affect the rate of the oxidation process. Aerobic biological treatment (which is used in sewage treatment plants) completely converts ammonia to nitrates through nitrification. Ammonia is absorbed by aquatic algae and macrophytes as a source of nitrogen.

Biodegradation in soil Ammonia undergoes biodegradation easily in soil through ammonification or mineralization processes.

Ammonia is an important transmitter in assimilation of nitrogen by plants from the soil.

12.3. Bioaccumulative potential

Log K_{ow} = 0,23

Ammonia undergoes no bioaccumulation and it is a normal metabolic product.

12.4. Mobility in soil

Adsorption/desorption Ammonia is strongly adsorbed in soil, in sediment particles and in aqueous colloidal systems.

12.5. Results of PBT and vPvB assessment

Assessment of PBT and/or vPvB properties is not essential and it is not applicable to inorganic substances.

12.6. Endocrine disrupting properties

No data available.

12.7. Other adverse effects

No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste treatment methods should follow the national and local regulations for waste management/disposal. The suitable method should be selected depending on local conditions and possibilities within disposal/recovery of wastes. Any waste should be classified as hazardous.

Ammonia can be neutralized by its absorption in a suitable volume of sulfuric acid (concentration of 10-20 %). Diluted solutions may be discharged to sewage treatment plants which are capable of converting (removing) nitrogen compounds. Spent packages, which make hazardous waste, should be disposed of in accordance with the national and local regulations for waste management/disposal. The wastes should be transferred to an authorised waste processing company, first of all for recovery.

Legislation on wastes

1. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ of 2008, Volume 51, L312, as amended).
2. The Act of 14 December 2012 on waste (consolidated text: Journal of Laws of 2020, item 797, as amended) together with executive acts.
3. Act of 13 June 2013 on the management of packaging and packaging waste (consolidated text: Journal of Laws of 2020, item 1114, as amended) together with executive acts.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number or ID number

<i>RID/ADR</i>	UN 1005
<i>IMDG</i>	UN 1005
<i>ADN</i>	UN 1005
<i>ICAO/IATA</i>	UN 1005

14.2. UN proper shipping name

<i>RID/ADR</i>	Ammonia anhydrous
<i>IMDG</i>	Ammonia anhydrous
<i>ADN</i>	Ammonia anhydrous
<i>ICAO/IATA</i>	Ammonia anhydrous

14.3. Transport hazard class(es)

<i>RID/ADR</i>	2
<i>IMDG</i>	2

ADN 2
ICAO/IATA 2

14.4. Packing group

No data available.

14.5. Environmental hazards

Yes.

14.6. Special precautions for user

No data available.

14.7. Maritime transport in bulk according to IMO instruments

No data available.

SECTION 15: REGULATORY INFORMATION

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

European Union

1. Regulation (EC) № 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) № 793/93 and Commission Regulation (EC) № 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 (Official Journal of EU, of 2006, Vol. 49, L396, with further amendments).

Ammonia anhydrous is not listed in Annex XIV of REACH, so it is not subject to authorization.

Ammonia anhydrous is subject to restrictions according to Annex XVII of REACH (point 40).

2. Regulation (EC) № 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) № 1907/2006 (Official Journal of EU, of 2008, Vol. 51, L353, with further amendments).
3. Commission Directives: 2000/39/EC, of 08 June 2000, and 2006/15/EC, of 07 February 2006, establishing a first list and a second list of indicative occupational exposure limit values.
4. Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (SEVESO III) (OJ EU, L 197, 24 July 2012).

Anhydrous ammonia is listed in Annex I, part 2, therefore, having qualifying quantities may qualify establishment for a 'lower-tier establishment or 'upper-tier establishment' of major accident hazard.

National

Local laws

15.2. Chemical safety assessment

Chemical safety assessment has been performed.

15.3. Changes introduced

Adaptation of the safety data sheet to the requirements of the CLP Regulation

15.4. List of abbreviations and acronyms as used throughout this SDS

CLP	Classification, Labelling and Packaging of chemical substances and mixtures
WE	The EC inventory is composed of three European lists which have been developed by virtue of earlier EU statutory regulations on chemicals: EINECS, ELINCS and "No-longer polymers" (NLP) list.
CAS	This is a number which has been assigned to a substance by Chemical Abstracts Service.
WEL-TWA	Workplace exposure limit Time-Weighted Average Najwyższe Dopuszczalne Stężenie Chwilowe
WEL-STEL	Workplace exposure limit Short-term exposure
DNEL	Derived No Effect Level
LDx	Lethal Dose x%

LCx	Lethal Concentration x%
ECx	Effective Concentration x; concentration of a substance which produces x% of the maximum possible effect response
LOEC	Lowest Observable Effect Concentration
NOEC	No Observable Effect Concentration
REACH	Registration, Evaluation and Authorisation of Chemicals
PBT	(Substance) Persistent, Bioaccumulative, Toxic
vPvB	(Substance) very Persistent and very Bioaccumulative
UN	United Nations Organization
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
ADR	Agreement Concerning the International Carriage of Dangerous Goods by Road

15.5. Key literature and data sources

Registration dossier for anhydrous ammonia.

15.6. Advice on training

- a/ Employer is obliged to inform all employees who are in contact with ammonia about the hazards and personal protection measures specified herein.
- b/ Distributor is obliged to provide the recipient with anhydrous ammonia information contained herein.

15.7. Replaces

PZ-001-02-1.4

This Safety data sheet is NOT a quality specification of the product and can NOT be regarded as a guarantee of its quality or compliance with customer requirements in individual applications. Its task is to provide guidance in the safe handling of the mixture (work safety and environmental protection), its transport and storage. The data contained herein are based on the current state of our knowledge and on current legal regulations. Recipients should ensure that this information complies with the laws and/or regulations that apply in their countries and/or enterprises.