

Danger



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

1.1. Product identifier

Trade name : ammonia, anhydrous
 SDS no : Ammoniak, wasserfrei
 Chemical description : ammonia, anhydrous
 CAS-No. : 7664-41-7
 EC-No. : 231-635-3
 EC Index-No. : 007-001-00-5
 REACH registration No : 01-2119488876-14
 Chemical formula : NH₃

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

Relevant identified uses : See the list of identified uses and exposure scenarios in the annex of the safety data sheet.
 Perform risk assessment prior to use.
 Uses advised against : Consumer use.
 Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

Company identification : SWF Gase AG
 Altgasse 63
 CH-6340 - Schweiz
 T +41 415100420
www.swf-gase.ch
info@swf-gase.ch

1.4. Emergency telephone number

Emergency telephone number : +41 415100421
 24 hours a day, 7 days a week

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

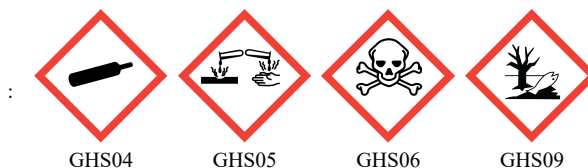
Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical hazards	Flammable gases, Category 2	H221
	Gases under pressure : Liquefied gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 3	H331
	Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
	Serious eye damage/eye irritation, Category 1	H318
Environmental hazards	Hazardous to the aquatic environment – Acute Hazard, Category 1	H400
	Hazardous to the aquatic environment – Chronic Hazard, Category 2	H411

2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

: H221 - Flammable gas.
H280 - Contains gas under pressure; may explode if heated.
H314 - Causes severe skin burns and eye damage.
H331 - Toxic if inhaled.
H410 - Very toxic to aquatic life with long lasting effects.
EUH071 - Corrosive to the respiratory tract.

Precautionary statements (CLP)

- Prevention

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P260 - Do not breathe gas, vapours.

P273 - Avoid release to the environment.

P280 - Wear eye protection, face protection, protective clothing, protective gloves.

- Response

: P303+P361+P353+P315 - IF ON SKIN : (or hair) Take off immediately all contaminated clothing. Rinse skin with water or shower. Get immediate medical advice.

P304+P340+P315 - IF INHALED : Remove person to fresh air and keep comfortable for breathing. Get immediate medical advice.

P305+P351+P338+P315 - IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice.

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 - In case of leakage, eliminate all ignition sources.

- Storage

: P403 - Store in a well-ventilated place.

P405 - Store locked up.

2.3. Other hazards

Not classified as PBT or vPvB.

Not classified as PMT or vPvM .

The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
ammonia, anhydrous	CAS-No.: 7664-41-7 EC-No.: 231-635-3 EC Index-No.: 007-001-00-5 REACH registration No: 01-2119488876-14	100	Flam. Gas 2, H221 Press. Gas (Liq.), H280 Acute Tox. 3 (Inhalation:gas), H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 2, H411

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

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

Prolonged exposure to small concentrations may result in pulmonary oedema.
May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product.
Material is destructive to tissue of the mucuous membranes and upper respiratory tract.
Cough, shortness of breath, headache, nausea.
See section 11.

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

Obtain medical assistance.
Treat with corticosteroid spray as soon as possible after inhalation.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam.
Water spray or fog.
Shutting off the source of the gas is the preferred method of control.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : Nitric oxide/nitrogen dioxide.

5.3. Advice for firefighters

- Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.
- Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel
- : Act in accordance with local emergency plan.
 - Try to stop release.
 - Evacuate area.
 - Ensure adequate air ventilation.
 - Eliminate ignition sources.
 - Stay upwind.
 - See section 8 of the SDS for more information on personal protective equipment
- For emergency responders
- : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
 - Use chemically protective clothing.
 - Monitor concentration of released product.
 - Consider the risk of potentially explosive atmospheres.
 - See section 5.3 of the SDS for more information.

6.2. Environmental precautions

- Reduce vapour with fog or fine water spray.
- Try to stop release.

6.3. Methods and material for containment and cleaning up

- Ventilate area.
- Hose down area with water.
- Wash contaminated equipment or sites of leaks with copious quantities of water.

6.4. Reference to other sections

- See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Safe use of the product
- : Take precautionary measures against static discharge.
 - Keep away from ignition sources (including static discharges).
 - Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
 - Purge air from system before introducing gas.
 - Avoid exposure, obtain special instructions before use.
 - Do not smoke while handling product.
 - Avoid suck back of water, acid and alkalis.
 - Only experienced and properly instructed persons should handle gases under pressure.
 - Ensure the complete gas system was (or is regularly) checked for leaks before use.
 - Installation of a cross purge assembly between the container and the regulator is recommended.
 - Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service.
 - Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
 - Consider the use of only non-sparking tools.
 - The product must be handled in accordance with good industrial hygiene and safety procedures.
 - Consider pressure relief device(s) in gas installations.
 - Do not breathe gas.
 - Avoid release of product into work area.
 - Ensure equipment is adequately earthed.
 - Use only lubricants and sealings approved for the specific gas service.

Safe handling of the gas receptacle

- : Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps, when provided, in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

- Store locked up.
- Segregate from oxidant gases and other oxidants in store.
- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.
- Observe all regulations and local requirements regarding storage of containers.
- Containers should not be stored in conditions likely to encourage corrosion.
- Container valve guards or caps, when provided, should be in place.
- Containers should be stored in the vertical position and properly secured to prevent them from falling over.
- Stored containers should be periodically checked for general condition and leakage.
- Keep container below 50°C in a well ventilated place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

ammonia, anhydrous (7664-41-7)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Ammonia, anhydrous
IOEL TWA	14 mg/m ³
	20 ppm
IOEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
Albania - Occupational Exposure Limits	
Local name	Amoniak, anhidër

ammonia, anhydrous (7664-41-7)	
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES “PËR MBROJTJEN E SIGURISË DHE SHËNDETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË”
Austria - Occupational Exposure Limits	
Local name	Ammoniak
MAK (OEL TWA)	14 mg/m ³
	20 ppm
MAK (OEL STEL)	36 mg/m ³ (4x 15(Miw) min)
	50 ppm (4x 15(Miw) min)
Regulatory reference	BGBI. II Nr. 330/2024
Belgium - Occupational Exposure Limits	
Local name	Ammoniac # Ammoniak
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Амоняк
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Croatia - Occupational Exposure Limits	
Local name	Amonijak, bezvodni
GVI (OEL TWA)	14 mg/m ³
	20 ppm
KGV I (OEL STEL)	36 mg/m ³
	50 ppm



ammonia, anhydrous

Reference number: Ammoniak, wasserfrei

ammonia, anhydrous (7664-41-7)	
Remark	Direktiva: 2000/39/EZ
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
Cyprus - Occupational Exposure Limits	
Local name	Αμμωνία, άνυδρη
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)
Czech Republic - Occupational Exposure Limits	
Local name	Amoniak bezvodý
PEL (OEL TWA)	14 mg/m ³
	20 ppm
NPK-P (OEL C)	36 mg/m ³
	50 ppm
Remark	I - dráždí sliznice (oči, dýchací cesty), resp. kůže.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 20/2025 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Ammoniak
8-timers grænseværdi (OEL TWA)	14 mg/m ³
	20 ppm
Korttidsgrænseværdi (OEL STEL)	36 mg/m ³
	50 ppm
Remark	E (betyder, at stoffet har en EU-grænseværdi)
Regulatory reference	BEK nr 1619 af 19/12/2024
Estonia - Occupational Exposure Limits	
Local name	Ammoniaak
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Vedetön ammoniakki
HTP (OEL TWA)	14 mg/m ³

ammonia, anhydrous (7664-41-7)	
	20 ppm
HTP (OEL STEL)	36 mg/m ³
	50 ppm
Regulatory reference	HTP-ARVOT 2025 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Ammoniac anhydre
VLEP 8h (OEL TWA)	7 mg/m ³
	10 ppm
VLEP CT (OEL STEL)	14 mg/m ³
	20 ppm
Remark	Valeurs réglementaires contraignantes
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 6443, 2022; Outil65; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849; Décret n° 2024-307)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Ammoniak
AGW (OEL TWA)	14 mg/m ³
	20 ppm
Peak exposure limitation factor	2(I)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Local name	Ammonia, anhydrous
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Αμμωνία
OEL TWA	35 mg/m ³
	50 ppm
OEL STEL	35 mg/m ³



ammonia, anhydrous

Reference number: Ammoniak, wasserfrei

ammonia, anhydrous (7664-41-7)	
	50 ppm
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	AMMÓNIA
AK (OEL TWA)	14 mg/m³
CK (OEL STEL)	36 mg/m³
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármát); EU1 (2000/39/EK irányelvben közölt érték); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Ammonia, anhydrous
OEL TWA	14 mg/m³
	20 ppm
OEL STEL	36 mg/m³
	50 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Italy - Occupational Exposure Limits	
Local name	Ammoniaca anidra
OEL TWA	14 mg/m³
	20 ppm
OEL STEL	36 mg/m³
	50 ppm
Regulatory reference	Allegato XXXVIII del D.Lgs. 9 aprile 2008, n. 81 e s.m.i. (D.Lgs. 4 settembre 2024, n. 135)
Latvia - Occupational Exposure Limits	
Local name	Amonjaks
OEL TWA	14 mg/m³
	20 ppm
OEL STEL	36 mg/m³
	50 ppm
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Lithuania - Occupational Exposure Limits	
Local name	Amoniakas (bevandenis)

ammonia, anhydrous (7664-41-7)	
IPRV (OEL TWA)	14 mg/m ³
	20 ppm
TPRV (OEL STEL)	36 mg/m ³
	50 ppm
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Ammoniac anhydre
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Mémorial A N° 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail
Malta - Occupational Exposure Limits	
Local name	Ammonia, anhydrous # Ammonia, anidru
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Aġenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)
Netherlands - Occupational Exposure Limits	
Local name	Ammoniak
TGG-8u (OEL TWA)	14 mg/m ³
	20 ppm
TGG-15min (OEL STEL)	36 mg/m ³
	50 ppm
Regulatory reference	Arbeidsomstandighedenregeling 2024
Poland - Occupational Exposure Limits	
Local name	Amoniak
NDS (OEL TWA)	14 mg/m ³
NDSch (OEL STEL)	28 mg/m ³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Romania - Occupational Exposure Limits	
Local name	Amoniac
OEL TWA	14 mg/m ³

ammonia, anhydrous (7664-41-7)	
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Serbia - Occupational Exposure Limits	
Local name	амонијак, анхидровани
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Remark	ЕУ* – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2000/39/ЕЗ (прва листа); К – напомена да хемијска материја може штетно деловати на кожу
Regulatory reference	ПРАВИЛНИК о превентивним мерама за безбедан и здрав рад при излагању хемијским материјама („Службени гласник РС”, бр. 106/09, 117/17 и 107/21)
Slovakia - Occupational Exposure Limits	
Local name	Amoniak
NPHV (OEL TWA)	14 mg/m ³
	20 ppm
NPHV (OEL STEL)	36 mg/m ³
	50 ppm
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	amonijak, brezvodni
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU
Regulatory reference	Uradni list RS, št. 26/2025 z dne 18.4.2025 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
Sweden - Occupational Exposure Limits	
Local name	Ammoniak
NGV (OEL TWA)	14 mg/m ³
	20 ppm
KGV (OEL STEL)	36 mg/m ³ (Korttidsgränsvärdet för en 5-minutersperiod)

ammonia, anhydrous (7664-41-7)	
	50 ppm (Korttidsgränsvärdet för en 5-minutersperiod)
Remark	23 (Ämnet har ett indikativt EU-gränsvärde)
Regulatory reference	Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:14) om gränsvärden för luftvägsexponering i arbetsmiljön
United Kingdom - Occupational Exposure Limits	
Local name	Ammonia, anhydrous
WEL TWA (OEL TWA)	18 mg/m ³
	25 ppm
WEL STEL (OEL STEL)	25 mg/m ³
	35 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Ammóníak
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³ Þakgildið er miðað við fimm mínútna tímabil
	50 ppm Þakgildið er miðað við fimm mínútna tímabil
Remark	H (efnið getur auðveldlega borist inn í líkamann gegnum húð)
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Ammoniakk
Grenseverdi (OEL TWA)	11 mg/m ³
	15 ppm
Korttidsverdi (OEL STEL)	36 mg/m ³
	50 ppm
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2024-04-05-581
Switzerland - Occupational Exposure Limits	
Local name	Ammoniac / Ammoniak
MAK (OEL TWA)	14 mg/m ³
	20 ppm
KZGW (OEL STEL)	28 mg/m ³
	40 ppm
Notation	SS _C / SS _C
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 18.06.2025

ammonia, anhydrous (7664-41-7)	
Turkey - Occupational Exposure Limits	
Local name	Amonyak, susuz
OEL TWA	14 mg/m ³
	20 ppm
OEL STEL	36 mg/m ³
	50 ppm
Regulatory reference	12 Ağustos 2013 Tarihli ve 28733 Sayılı Resmi Gazete (Değişik:RG-20/10/2023-32345)
USA - ACGIH® - Threshold Limit Values	
Local name	Ammonia
ACGIH® TLV® TWA	17 mg/m ³
	25 ppm
ACGIH® TLV® STEL	24 mg/m ³
	35 ppm
Remark (ACGIH®)	TLV® Basis: Eye & URT irr
Regulatory reference	ACGIH 2025

ammonia, anhydrous (7664-41-7)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	36 mg/m ³
Acute - systemic effects, inhalation	47,6 mg/m ³
Long-term - local effects, inhalation	14 mg/m ³
Long-term - systemic effects, inhalation	47,6 mg/m ³
Acute - systemic effects, dermal	6,8 mg/kg bw/day
Long-term - systemic effects, dermal	6,8 mg/kg bw/day

ammonia, anhydrous (7664-41-7)	
PNEC: Predicted no effect concentration	
Aqua (freshwater)	0,0011 mg/l
Aqua (marine water)	0,0011 mg/l

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
 Product to be handled in a closed system.
 Consider the use of a work permit system e.g. for maintenance activities.
 Gas detectors should be used when toxic gases may be released.
 Systems under pressure should be regularly checked for leakages.
 Ensure exposure is below occupational exposure limits (where available).

8.2.2. Individual protection measures, e.g. personal protective equipment

- A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.
- Eye/face protection
 - : Wear goggles and a face shield when transfilling or breaking transfer connections.
Provide readily accessible eye wash stations and safety showers.
Standard EN 166 - Personal eye-protection - specifications, or
Standard EN ISO 16321-1 Eye and face protection for occupational use Part 1 : General requirements.
 - Skin protection
 - Hand protection
 - : Wear working gloves when handling gas containers.
Wear chemically resistant protective gloves.
Standard EN 374 - Protective gloves against chemicals.
Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher. Recommended types include wrist gloves from leather or synthetic material with equivalent performance, fabric gloves, fabric gloves with leather palms.
Permeation time: minimum >30min short term exposure: material / thickness Chloroprene rubber (Neoprene®) (CR) / 0,5 [mm].
Permeation time: minimum >480min long term exposure : material / thickness Butyl rubber (IIR) / 0,7 [mm].
Consult glove manufacturer's product information on material suitability and material thickness.
The breakthrough time of the selected gloves must be greater than the intended use period.
 - Other
 - : Keep suitable chemically resistant protective clothing readily available for emergency use.
Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
 - Respiratory protection
 - : Recommended: Filter K (green).
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Gas filters do not protect against oxygen deficiency.
Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
Keep self contained breathing apparatus readily available for emergency use.
 - Thermal hazards
 - : None in addition to the above sections.

8.2.3. Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state at 20°C / 101.3kPa : Gas
- Colour : Colourless.

Odour

: Ammoniacal.

Odour threshold

: Odour threshold is subjective and inadequate to warn of overexposure.

pH

: If dissolved in water pH-value will be affected.

Melting point / Freezing point

: -77,7 °C

Boiling point

: -33 °C

Flash point

: Not applicable for gases and gas mixtures.

Flammability	: Flammable gas.
Explosive limits	:
Vapour pressure [20°C]	: 8,6 bar(a)
Vapour pressure [50°C]	: 20 bar(a)
Vapour density	: Not applicable.
Relative density, liquid (water=1)	: 0,7
Relative density, gas (air=1)	: 0,6
Water solubility	: 517 g/l
Partition coefficient n-octanol/water (Log Kow)	: Not applicable for gas mixtures.
Auto-ignition temperature	: 630 °C
Decomposition temperature	: Not applicable.
Viscosity	: No reliable data available.
Oxidising properties	: No oxidising properties.

9.2. Other information

Molar mass	: 17 g/mol
Critical temperature [°C]	: 132 °C

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Avoid moisture in installation systems.

10.5. Incompatible materials

Reacts with water to form corrosive alkalis.
May react violently with acids.
Air, Oxidisers.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Toxic if inhaled.
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LC50 Inhalation - Rat [ppm]	4000 ppm/1h (ADR) 2000 ppm/4h (CLP)
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Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.

Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: May cause inflammation of the respiratory system. Severe corrosion to the respiratory tract at high concentrations.
Target organ(s)	: Respiratory tract.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas mixtures.
Other information	: Inhalation of large amounts leads to bronchospasm, laryngeal oedema and pseudomembrane formation. The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment	: Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.
EC50 48h - Daphnia magna [mg/l]	: 101 mg/l
EC50 72h - Algae [mg/l]	: No data available.
LC50 96 h - Fish [mg/l]	: 0,89 mg/l

12.2. Persistence and degradability

Assessment	: The substance is readily biodegradable. Unlikely to persist.
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12.3. Bioaccumulative potential

Assessment	: No data available.
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12.4. Mobility in soil

Assessment	: Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.
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12.5. Results of PBT and vPvB assessment

Assessment	: Not classified as PBT or vPvB.
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12.6. Other adverse effects

Other adverse effects	: May cause pH changes in aqueous ecological systems. Not classified as PMT or vPvM.
Effect on the ozone layer	: No effect on the ozone layer.
Global warming potential [CO ₂ =1]	: 0
Effect on global warming	: No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.
Gas may be scrubbed in sulphuric acid solution.
Gas may be scrubbed in water.
Contact supplier if guidance is required.
Must not be discharged to atmosphere.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No. : 1005

14.2. UN proper shipping name

Transport by road/rail/inland waterways (ADR/RID/ADN) : AMMONIA, ANHYDROUS

Transport by air (ICAO-TI / IATA-DGR) : Ammonia, anhydrous

Transport by sea (IMDG) : AMMONIA, ANHYDROUS

14.3. Transport hazard class(es)

Labelling



2.3 : Toxic gases.

8 : Corrosive substances.

Environmentally hazardous substances

Transport by road/rail/inland waterways (ADR/RID/ADN)

Class : 2
 Classification code : 2TC
 Hazard identification number : 268
 Tunnel Restriction : C/D - Tank carriage: Passage forbidden through tunnels of category C, D and E. Other carriage: Passage forbidden through tunnels of category D and E

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.3 (8)
 Emergency Schedule (EmS) - Fire : F-C
 Emergency Schedule (EmS) - Spillage : S-U

14.4. Packing group

Transport by road/rail/inland waterways (ADR/RID/ADN) : Not applicable
 Transport by air (ICAO-TI / IATA-DGR) : Not applicable
 Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail/inland waterways (ADR/RID/ADN) : Environmentally hazardous substance / mixture.
 Transport by air (ICAO-TI / IATA-DGR) : Environmentally hazardous substance / mixture.
 Transport by sea (IMDG) : Marine pollutant

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail/inland waterways (ADR/RID/ADN) : P200
 Transport by air (ICAO-TI / IATA-DGR) : Forbidden.
 Passenger and Cargo Aircraft

Cargo Aircraft only	: Forbidden.
Transport by sea (IMDG)	: P200
Special transport precautions	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

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

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use	: None.
Seveso Directive : 2012/18/EU (Seveso III)	: Listed.

National regulations

Water hazard class (WGK)	: 2 - Significantly hazardous to water
Kenn-Nr.	: 211
Storage class (LGK, TRGS 510)	: Exclude.
Regulatory reference	: Ensure all national/local regulations are observed.

15.2. Chemical safety assessment

A CSA has been carried out.

SECTION 16: Other information

Indication of changes	: Safety data sheet in accordance with commission regulation (EU) No 2020/878.
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Abbreviations and acronyms

: ATE - Acute Toxicity Estimate
 CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
 EINECS - European Inventory of Existing Commercial Chemical Substances
 CAS# - Chemical Abstract Service number
 PPE - Personal Protection Equipment
 LC50 - Lethal Concentration to 50 % of a test population
 RMM - Risk Management Measures
 PBT - Persistent, Bioaccumulative and Toxic
 vPvB - Very Persistent and Very Bioaccumulative
 STOT- SE : Specific Target Organ Toxicity - Single Exposure
 CSA - Chemical Safety Assessment
 EN - European Standard
 UN - United Nations
 ADR - Agreement concerning the International Carriage of Dangerous Goods by Road
 IATA - International Air Transport Association
 IMDG code - International Maritime Dangerous Goods
 RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
 WGK - Water Hazard Class
 STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
 UFI : Unique Formula Identifier
 ADN -International Carriage of Dangerous Goods by Inland Waterways
 PROC -Process category
 ERC – Environmental release category
 PMT - Persistent, Mobile and Toxic
 vPvM – very Persistent and very Mobile

Training advice

: Users of breathing apparatus must be trained.
 Ensure operators understand the flammability hazard.
 Ensure operators understand the toxicity hazard.

Further information

: Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).
 Key literature references and sources of data are maintained in EIGA Doc 169 :
 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .

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