Ehsan International Gases

Ammonia NH_3

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

Product identifier	
Name of product	Ammonia Art-Nr (n). 0100-0104, 0106, 0107
Name of substance	ammonia, anhydrous
Index No	007-001-00-5
EC No	231-635-3
REACH registration number	01-2119488876-14
CAS No	7664-41-7

Manufacturer / Distributor:

Ehsan International Gases
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Relevant identified uses of the substance or mixture and uses advised against

Identified uses

Sector of uses [SU]

SU1 – Agriculture, forestry, fishery
SU10 – Formulation [mixing] of preparation and/or re=packing (excluding alloys)
SU11 – Manufacture of rubber product
SU12 – Manufacture of plastic products, including compounding and conversion
SU13 – Manufacture of other non-metallic mineral products, e.g. plasters, cement
SU15 – Manufacture of fabricated metal products, except machinery and equipment
SU16 – Manufacture of computer, electronic and optical products, and electrical equipment
SU17 – General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU23 – Electricity, steam, gas water supply and sewage treatment
SU24 – Scientific research and development
SU4 – Manufacture of food products
SU5 – Manufacture of textile leather, fur
SU6a – Manufacture of wood and wood products
SU6b- Manufacture of pulp, paper and paper products
SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)
SU9- Manufacture of fine chemicals

Process categories

PROC1 – use in closed process, no likelihood of exposure
PROC2 – use in closed, continuous process with occasional controlled exposure
PROC3 – use in closed batch process (synthesis or formulation)
PROC4 – use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 – mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a – transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9 – transfer or substance or preparation into small containers (dedicated filling line, including weighting)
PROC10 – roller application or brushing
PROC8b – transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC11 – non-industrial spraying
PROC13 – treatment of articles by dipping and pouring
PROC15 – use as laboratory regent
PROC19 – hand-mixing with intimate contact and only PPE available
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems

ERC2 – formulation or preparations (mixtures)
ERC4 – industrial use of processing aids in on processes and products, not becoming part of articles
ERC5 – industrial use resulting in inclusion into or onto a matrix
ERC6a –industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b – industrial use of reactive processing aids

Recommended intended purpose (s)

Fuel gas
Welding gas

SECTION 2: Hazards identification

Classification of the substance or mixture

Classification according to 67/548/EEC or 1999/45/EC

T: R23
N: R50

R-phrases

Ammonia NH_3

10	flammable
23	toxic by inhalation
34	cause burn
50	very toxic to aquatic organisms

Classification according to regulation (EC) no 1272/2008 [CLP/GHS]

Hazard classes and hazard Hazard statements classification procedure

Categories

Flam. Gas 2	**H221**
Liquef. Gas	**H280**
Acute tox.3	**H331**
Skin. Corr.1b	**H314**
Eye dam. 1	**H318**
Aquatic acute 1	**H400**
Aquatic Chronic 2	**H411**

Hazard statements for physical hazard

H221	Flammable gas
H280	contain gas under pressure: may explode it heated

Hazard statement for health hazards

H314	causes severe skin burn and eye damage
H318	causes serious eye damage
H331	toxic if inhaled

Hazard statement for environmental hazards

H400	very toxic to aquatic life
H411	toxic to aquatic life with long lasting effects

Label elements

Labeling according to regulation (EC) no 1272/2008 [CLP/GHS]

GHS05 GHS06 GHS09

Ammonia NH_3

Signal words
Danger

Hazard statement for physical hazard

H221	Flammable gas
H280	contains gas under pressure: may explode if heated

Hazard statement for health Hazards

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H331	toxic if inhaled

Hazard statement for environmental hazard

H400	very toxic to aquatic life
H411	toxic to aquatic life with long lasting effects

Precautionary statements

Prevention

P210	keep away from heat/ sparks/open flames/hot surface – no smoking
P260	do not breathe gas vapors
P280	wear protective gloves /protective clothing/ eye protection /face protection

Response

P303 + P 361 + P353	if on skin (or hair): remove /take off immediately all contaminated clothing. Rinse skin with water shower
P304 + P340	if inhaled: remove to fresh air and keep at rest in a position 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
P315	Get immediate medical advice / attention

Storage

P403	store in a well-ventilated place
P405	store locked up

Hazardous ingredients for labeling
Ammonia, anhydrous

Supplemental hazard information (EU)

Health properties
Corrosive to the respiratory tract

Other hazard

Adverse human health effects and symptoms

Contact with liquid may cause cold burn /frostbite

Information pertaining to special danger for human and environment

Can from explosive mixture with air

SECTION 3: Composition /information on ingredients

Substance

CAS No 7664-41-7 **ammonia, anhydrous**

EC No 231-635-3

Index No 007-001-00-5

REACH registration number 01-2119488876-14

SECTION 4: first aid measures

Description of first aid measure

General information

Remove contaminated soaked clothing immediately

Adhere to person protective measures when giving first aid

Seek medical treatment immediately

In case of inhalation

Remove the casually into fresh air and keep him immobile.

In case of breathing difficulties give oxygen.

In the event of pulmonary irritation treat initially with corticoid spray, e.g. Vento lair- or pulmicort- metered-dose Aerosol (Vento lair and pulmicort are registered trademarks).

No mouth to mouth resuscitation by first aid.

In case of respiratory standstill give artificial respiration by bag (ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

Refer for medical treatment.

In case of eye contacts

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed
Physician's information/possible dangers
Risk of pulmonary oedema

Indication of any immediate medical attention and special treatment needed
Treatment (advice to doctor)
Treat symptoms.
Pulmonary oedema prophylaxis.

SECTION 5: firefighting measures

Extinguishing media
Suitable extinguishing media
Water
Foam
ABC powder
Carbon dioxide
Water spray jet
Water mist

Extinguishing media which must not be used for safety reason
Full water jet

Special hazard arising from the substance of mixture
Formation of explosive gas mixtures in air.
Explosion hazard

Advice for firefighters
Special protective equipment for firefighters
Use breathing apparatus with independent air supply (isolated).
Wear full protective clothing

Additional information
Cool endangered containers to rupture/ explode.
Collect contaminated firefighting water separately, must not be discharged into the drains.

SECTION 6: firefighting measures

Personal precautions, protective equipment and emergency procedures
See chapter 8
Remove persons to safety.
Keep people away and stay on the upwind side/

Eliminate all ignition sources of ignition.

Environmental precautions
Collect contaminated water/firefighting water separately.
If possible, stop flow of products.
Do not discharge into the drains/surface waters/ground water.
If necessary, secure leaky pressure receptacles in a salvage packaging.
Suppress gasses/vapor's/mists with water spray jet
Do not discharge into the subsoil/soil

Methods and material for containment and cleaning up
Ensure adequate air ventilation.
Flush away residues with water.

Additional information
No water on the leaks
Reference to other sections
Information's for sale handling see chapter 7.
Information for personal protective equipment see chapter 8.

SECTION 7:handling and storage

Precautions for sale handling

Advice on safe handling

Care for thoroughly room ventilation if necessary use in well-ventilated area with local exhaust ventilation at Workspace.
Use only in thoroughly ventilated areas.
Transfer and handle only enclosed systems.
Prevent cylinders from falling over.
Ensure valve protection device is correctly fitted.
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
Open valve slowly to avoid pressure shock.
Do not allow back feed into the container must be prevented.
No water to values, flanges and other fittings.
Purging of pipes and valves with insert gases – to avoid: water, solvents.

Advice on protection against fire and explosion

Keep away from sources of ignition – no smoking
Vapors can form an explosive mixture with air.
Take precautionary measures against static discharges.
Do not use sparking tools.

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Keep in closed original container.
Ventilate store-rooms thoroughly.
Use transportable pressure equipment.

Suitable materials: normalized steel and carbon steel, tempered steel, aluminum alloys, stainless steel.
Valve: suitable material: carbon steels, aluminum alloys, stainless steel.
Unsuitable materials: brass, copper alloys.

Advice on storage compatibility

Do not store with acids.
Do not store with spontaneously flammable materials.
Do not store together with animal feedstuffs.
Do not store together with explosives
Do not store together with infectious substances
Do not store together with radioactive materials
Do not store together with toxic liquid or toxic solids.
Do not store together with food.
Do not store together with oxidizing liquids or oxidizing solids

Further information on storage conditions

Keep container tightly closed.
Store only in original container at temperature of 50°C maximum (=122°F).
Keep locked up.
Keep container in a well-ventilated place
Protect of heat.

Specific and use (s)

Recommendation(s) for intended uses

See exposure scenario(s).

SECTION 8: Exposure controls/personal protection

Control parameters

Ingredients with occupation exposure limits to be monitored

CAS NO	NAME	CODE	[MG/M3]	[PPM]	REMARK
7664-41-7	Ammonia, anhydrous	Well, 8 hours short-term	18 25	25 35	EH40/2005

Indicative occupation exposure limit values (91/322/EEC, 2000/39/EC, 2006/15/EC or 2009/161/EC)

CAS NO	NAME	CODE	[MG/M3]	[PPM]	REMARK
7664-41-7	Ammonia, anhydrous	Well, 8 hours short-term	14 36	25 35	EH40/2005

Additional advice

DNEL (workers, dermal, long-and short-term, systemic effects): 6.8 mg/kg.

DNEL (consumers, dermal, long- and short-term, systemic effects): 6, 8 mg/m (9, 62 ppm).
DNEL (consumers, inhalation, long- and short term, systemic effects): 23, 8 mg/m (33, 68 ppm).
DNEL (workers, inhalation, long-term, local effects): 14, 0 mg/m (19, 8 ppm).
DNEL (consumers, inhalation, long term. Local effects): 2, 8 mg/m (3, 9 ppm)
DNEL (consumers, inhalation, short-term, local effects): 7, 2 mg/m (10, 2 ppm).

Exposure controls

Respiratory protection

Short term: filter apparatus, filter K
Keep self-contain breathing apparatus readily available for emergency use.

Hand protection

Chemical-resistant gloves
Glove material specification [make/type, thickness, permeation time/life]: NBR; 0.4 mm; >= 30 min
Glove material specification [make/type, thickness, permeation time/life]: CR; 0.5 mm; >= 30 min
Glove material specification [make/type, thickness, permeation time/life]: IIR; >= 0.7 mm; > 480 min
Glove material specification [make/type, thickness, permeation time/life]: FKM; >= 0.7 mm; > 480 min

Eye protection

Safety goggles, in case of increased risk add protective face shield

Skin protection

Safety shoes with steel toe.
Body covering work clothing, or chemical resistant suit at increased risk.

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink and smoke.

Limitation and surveillance e of the environment

PNEC (fresh water): 0, 0011 mg/I
PNEC (sea water): 0, 0011 mg/I / 089 mg/ (intermittent emission)
See chapter 7

Additional advice on system design

See chapter 7.

SECTION 9: physical and chemical properties

In formation on basic physical and chemical properties

Form	**color**	**odour**
Gaseous / liquefied under pressure	colorless, clear	pungent

Ammonia NH_3

Important health, safety and environmental information

	Value	Temperature	At	Method	remark
PH value in delivery states	11,6	20°C	17 g/l		Aqueous solution
Boiling point	-33,4 °C		1013 hpa		
Melting point	-77,7 °C				
Flash point	Not applicable				
Flammability (gas)					flammable
Ignition temperature	651 °C			DIN 51794	
Auto ignition	no				
Lower explosion limit	15,4 vol-%				
Upper explosion limit	33,6 vol-%				
Vapour pressure	8570 hpa	20 °C			
density	0,682 g/cm	-33 °C			Liquid phase
Rel. vapour density	0,596	20 °C			
Solubility in water	515 g/l	20 °C			
Partition coefficient (log pow)	0.23	20 °C			
Viscosity dynamic	0.225 mpa*s	-33 °C			Liquid phase
Viscosity kinematic	9.417 mm2/s				
Oxidizing properties	no				

Explosive properties
Due to its structure the product is not classified as explosive

SECTION 10: stability and reactivity

Reactivity
See section "possibility of hazardous reaction".

Chemical stability
Stable under normal conditions

Possibility of hazardous reaction
May react violently with oxidants.
Reaction with acids
Reaction with halogenated compounds
Addition of water leads to increase in temperature
Corrodes copper and its alloy

Condition to avoid
Heat sources/heat – risk of bursting
Sources of ignition

Incompatible materials/Material to avoid
Copper, brass and other copper alloys.
Acids
Oxidants

Hazardous decomposition products
Hydrogen

Thermal decomposition
Remark > 450 ^{o}C

SECTION 11: Toxicological information

Information on toxicological effects
Acute toxicity/irritability/sensitization

	Value	species	method	remark
LC 50 acute inhalation	7338	Rat		After short term inhalation of high toxicity
Irritability skin	irritant	Rabbit	OECD 404	
Irritability eye	irritant	Rabbit eye	BASF- Test	

Skin sensitization	Not sensitizing	Guinea pig		

Sub-acute toxicity – carcinogenicity

	Value	Species	Method	validation
Subchronic toxicity	NOAEL 886 – 1975 mg/kg Subchronic oral toxicity (feed)	Rat (male/female)	Calculated	Also in case of a repeated intake the main effect is the corrosive effect

	Value	species	method	remark
mutagenicity			OECD 471 / $74	No experimental information no genotoxicity in vitro and in vivo available
Reproduction-toxicity	NOAEL	Rat	OECD TG 422	No indication of teratogenicity effects (conclusion by analogy)
Carcinogenicity	67 mg/kg (2 a)	Rat	OECD	No indication of carcinogenic effects are available from long term trials.

Experience made from practice

Corrosive effects on skin and eyes
Irritates respiratory tract
Gases have a suffocating effects

SECTION 12: ecological information

Toxicity

Eco toxicological effects

	Value	species	method	remark

Fish	LC 50 0,16- 1.1 mg/l (96h)	Onchorhynchus mikiss		After short term inhalation of high toxicity
Daphnia	EC50 25,4mg/l(48h)	Daphnia magna		
algae	EC50 2700 mg/l (18d)	Chlorella vulgaris		

Persistence and degradability

Biological
Degradability inorganic product, cannot be eliminated from the water by biological purification processes

Bio accumulative potential
Because of the n-octanol/water distribution coefficient (log K o/w) accumulation in organisms is not expected

Mobility in soil
Not applicable

Other adverse effects
Not known

Behavior in sewage plant
When discharged into biological sewage treatment plants, interference with the degradation activity of activated Sludge is possible, depending on the local conditions and concentrations involved.
When low concentration are discharged correctly into adapted biological sewage treatment plants, interference With the degradation activity of activity of activated sludge is not likely.
Due to the ph-value normally a neutralization is necessary before water is discharged into sewage treatment plants
General regulation
Avoid release to the environment
Product is not allowed to be discharged in to aquatic environment

SECTION 13: disposal considerations

Waste treatment methods

Waste code No	name of waste
16 05 04*	gases in pressure containers (including halons) containing dangerous substance

Wastes marked with an asterisk are considered to be hazardous waste pursuant to directive 91/689/EEC on hazardous waste

Recommendation of the products
Dispose os as hazardous waste
Return to manufacturer

Recommendation for packaging
Transportable pressure equipment (empty, residual pressure): return to supplier/manufacturer

Section 14: Transport information

Land and inland navigation transport ADR/RID
UN 1005 AMMONIA, ANHYDROUS, 2.3(8), ENVIRONMENTALLY HAZARDOUS, CLASSIFICASTION CODE: 2TC

Marine transport IMDG
UN 1005 AMMONIA, ANHYDROUS, 2.3 (8)
MARINE POLLUTANT: yes
Ems: F-C, S-U

Air transport ICAO/IATA-DGR
UN 1005 ammonia, anhydrous, 2.3 (8)
Environmentally hazardous: yes
Forbidden

Special precautions for user
The protective measures listed in sections 6, 7 and 8 of the safely data sheet have to be considered
Transport in bulk according to annex II of MARPOL 73/78 and the IBC code
no transport as bulk according IBC - code

SECTION 15: regulatory information

Safety, health and environment regulations/legislation specific for the substance or mixture
Other regulations (EU)
Regulation (EC) no 1907/2006 concerning the registration, evaluation, authorization and restriction of chemicals (reach),annex XVII no 40.
Directive 96/82/EC on the control of major-accident hazards involving dangerous substances

Chemical safety assessment
For this substance a chemical safety assessment has been carried out
Exposure scenarios (ESs) see http://www.ehsan.com.pk

SECTION 16: other information

Ammonia NH_3

Recommended uses and restrictions

National and local regulations concerning chemicals shall be observed

Further information

All declaration of safety-data-sheet refer to pure substance

The information contained herein is based on the state of our knowledge, it characterizes the product with regard to the appropriate safety precautions, and it does not represent a guarantee to the properties of the product

Wording of the R/H phrases specified in chapter 3 (not the classification of the mixture)

R 10 flammable
R23 toxic by inhalation
R34 causes burn
R 50 very toxic to aquatic organisms
H221 flammable gas
H280 contains gas under pressure: may explode if heated
H314 causes severe skin burn and eye damage
H311 toxic if inhaled
H400 very toxic to aquatic life
H411 toxic to aquatic life with long lasting effects.