

Conforms: GHS (rev 4) (2011)

(This Safety Data Sheet conforms to the requirements of the Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)), revised in 2012.) - United States

Date of issue/ Date of revision : 08/22/2018
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Version : 1.1



SAFETY DATA SHEET

Anhydrous Ammonia

Section 1. Identification

Product identifier : Anhydrous Ammonia
Product type : gas (Liquefied gas.)
Product code : PA001U

Uses

Area of application : Industrial applications

Supplier

Supplier's details : Yara North America, Inc.

Address

Street : 100 North Tampa Street, Suite 3200
Postal code : 33602
City : TAMPA
Country : United States

Telephone number : +1 813 222 5700
Fax no. : +1 813 875 5735
e-mail address of person responsible for this SDS : yna-hesq@yara.com

Emergency telephone number (with hours of operation) : US: Chemtrec 24-hours Emergency Response: 1-800-424-9300
Canada: 24 Hour Emergency Service, (Canutec 613-996-6666)

National advisory body/Poison Center

Name : The National Poisons Emergency number
Telephone number : 1 800 222 1222

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture. : FLAMMABLE GASES - Category 2
GASES UNDER PRESSURE - Liquefied gas
ACUTE TOXICITY (inhalation) - Category 3
SKIN CORROSION/IRRITATION - Category 1B
AQUATIC TOXICITY (ACUTE) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 2

GHS label elements**Hazard pictograms****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**Prevention**

: P280-d Wear protective gloves/clothing and eye/face protection.

Response

: P260-b Do not breathe gas or vapour.
 P305 IF IN EYES:
 P351 Rinse cautiously with water for several minutes.
 P338 Remove contact lenses, if present and easy to do. Continue rinsing.
 P304 IF INHALED:
 P340 Remove person to fresh air and keep comfortable for breathing.
 P310 Immediately call a POISON CENTER or doctor/physician.
 P303 IF ON SKIN (or hair):
 P361-a Take off immediately all contaminated clothing.
 P353 Rinse skin with water.
Storage : P410 + P403 Protect from sunlight and store in well-ventilated place.

Hazards not otherwise classified

: Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients**Substance/mixture**

: Substance

CAS number/other identifiers**Other means of identification**

: ammonia, anhydrous

CAS number : 7664-41-7

Ingredient name	CAS number	%
Ammonia	7664-41-7	100

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open. Check for and remove any contact lenses. Get medical attention immediately.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention immediately. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Flush contaminated skin with plenty of water. Do not rub affected area. Get medical attention immediately. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Chemical burns must be treated promptly by a physician.
- Ingestion** : Not applicable (gas). Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage. Liquid can cause burns similar to frostbite.
- Inhalation** : Toxic if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion : May cause burns to mouth, throat and stomach. Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness
frostbite (Cryogenic burn)

Inhalation : Adverse symptoms include the following:
wheezing and breathing difficulties
asthma

Skin contact : Adverse symptoms may include the following:
pain or irritation
frostbite (Cryogenic burn)
blistering may occur

Ingestion : Adverse symptoms may include the following:
frostbite (Cryogenic burn)

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : In case of fire, allow gas to burn if flow cannot be shut off immediately. Use an extinguishing agent suitable for the surrounding fire. Apply water from a safe distance to cool container and protect surrounding area.

Unsuitable extinguishing media : None identified.

Specific hazards arising from the chemical : Contains gas under pressure. Flammable gas. In a fire or if heated, a pressure increase will occur and the container may

- burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
Avoid breathing dusts, vapors or fumes from burning materials.
In case of inhalation of decomposition products in a fire, symptoms may be delayed.
- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.
- Remark** : Flammable
Remark : Non-explosive.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.
Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Do not breathe gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Ammonia	<p>OSHA PEL 1989 (1989-03-01) STEL 27 mg/m³ 35 ppm</p> <p>OSHA PEL (1993-06-30) TWA 35 mg/m³ 50 ppm</p> <p>NIOSH REL (1994-06-01) TWA 18 mg/m³ 25 ppm STEL 27 mg/m³ 35 ppm</p> <p>ACGIH TLV (1994-09-01) TWA 17 mg/m³ 25 ppm STEL 24 mg/m³ 35 ppm</p>

Appropriate engineering controls

- : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

- : A washing facility or water for eye and skin cleaning purposes should be present.

Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If inhalation hazards exist, a full-face respirator may be required instead. Recommended: full-face mask

Skin protection

Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. For general applications, we recommend gloves with a thickness typically greater than 0.35 mm. It should be emphasized that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn.
 > 8 hours (breakthrough time): butyl rubber, PTFE, Viton®
 < 1 hour (breakthrough time): Insulated gloves suitable for low temperatures

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: ammonia filter (Type K) self-contained breathing apparatus (SCBA)
- Personal protective equipment (Pictograms)** :



Section 9. Physical and chemical properties

Appearance

- Physical state** : gas [Liquefied gas.]
- Color** : Colorless.
- Odor** : Pungent.
- Odor threshold** : 5 ppm
- pH** : Not determined.
- Melting/freezing point** : -78 °C (-108 °F)
- Boiling/condensation point** : -33 °C
(-27 °F)
- Sublimation temperature** : Not determined.
- Flash point** : Not determined.
- Fire point** : Not determined.
- Evaporation rate** : Not determined.
- Flammability (solid, gas)** : Flammable
- Lower and upper explosive (flammable) limits** : **Lower:** 15 %(V)
Upper: 27 %(V)
- Vapor pressure** : 8,611 hPa @ 20 °C (68 °F)
- Vapor density** : 0.6 [Air = 1]
- Relative density** : 0.682 @ -33.4 °C (-28.1 °F)
- Solubility** : Not determined.
- Solubility in water** : 510 - 531 g/l @ 20 °C (68 °F)

Partition coefficient: n-octanol/water	:	Not determined.
Auto-ignition temperature	:	651 °C (1204 °F)
Decomposition temperature	:	Not determined.
Viscosity	:	Dynamic: 0.22 mPa.s
		Kinematic: Not determined.
Molecular weight	:	17.04 g/mol
Explosive properties	:	Non-explosive.
Oxidizing properties	:	None

Section 10. Stability and reactivity

Reactivity	:	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Incompatible materials	:	Reacts violently with halogens. Reactive with acids and oxide. Corrosive to galvanized metal. Corrosive to brass, Cu, Zn, Ag and Hg.
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	References
Ammonia					
	LC50 Inhalation	Rat	9.85 mg/l	1 h	IUCLID 5
	LC50 Inhalation	Rat	7.939 mg/l	1 h	IUCLID 5

Conclusion/Summary : Toxic by inhalation.

Irritation/Corrosion**Conclusion/Summary**

- Skin** : Corrosive.
- Eyes** : Causes serious eye damage.
- Respiratory** : Corrosive to the respiratory system.

Sensitization**Conclusion/Summary**

- Skin** : Not sensitizing
- Respiratory** : Not sensitizing

Mutagenicity

- Conclusion/Summary** : No known significant effects or critical hazards.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure	References
Ammonia	Negative - Oral - NOAEL OECD 453	Rat	67 mg/kg bw/day	Not applicable.	IUCLID 5

- Conclusion/Summary** : No known significant effects or critical hazards.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Developmental toxin	Species	Dose	Exposure	References
Ammonia	Not applicable.	Negative	Not applicable.	Rat	Oral: 408 mg/kg bw/day OECD 422	28 days	IUCLID 5
	Not applicable.	Not applicable.	Negative	Rabbit	Oral: 100 mg/kg bw/day OECD 414	28 days	IUCLID 5
	Not applicable.	Not applicable.	Negative	Pig	Inhalation: 25 mg/m ³	6 weeks	IUCLID 5

Conclusion/Summary : No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

No known significant effects or critical hazards.

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage. Liquid can cause burns similar to frostbite.
- Inhalation** : Toxic if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.
- Ingestion** : May cause burns to mouth, throat and stomach. Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
 - pain
 - watering
 - redness
 - frostbite (Cryogenic burn)
- Inhalation** : Adverse symptoms include the following:
 - wheezing and breathing difficulties
 - asthma
- Skin contact** : Adverse symptoms may include the following:
 - pain or irritation
 - frostbite (Cryogenic burn)
 - blistering may occur
- Ingestion** : Adverse symptoms may include the following:
 - frostbite (Cryogenic burn)

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Effects on or via lactation : No known significant effects or critical hazards.

Other effects : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain
watering
redness
frostbite (Cryogenic burn)

Inhalation : Adverse symptoms include the following:
wheezing and breathing difficulties
asthma

Skin contact : Adverse symptoms may include the following:
pain or irritation
frostbite (Cryogenic burn)
blistering may occur

Ingestion : Adverse symptoms may include the following:
frostbite (Cryogenic burn)

Numerical measures of toxicity**Acute toxicity estimates**

Route	ATE value
Inhalation (vapors)	3.97 mg/l

Section 12. Ecological information**Toxicity**

Product/ingredient	Result	Species	Exposure	References
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name				
Ammonia				
	Acute LC50 0.89 mg/l Fresh water	Fish	96 h	IUCLID 5
	Acute LC50 101 mg/l Fresh water	Daphnia	48 h	IUCLID 5
	Acute EC50 2,700 mg/l Fresh water	Algae	18 d	IUCLID 5
	Chronic NOEC < 0.048 mg/l Fresh water 215 Fish, Juvenile Growth Test	Channel catfish	31 d	IUCLID 5
	Chronic NOEC 0.79 mg/l Fresh water	Daphnia	96 h	IUCLID 5

Conclusion/Summary : Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Persistence and degradability

Conclusion/Summary : The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Ammonia	0.23	Not applicable.	

Conclusion/Summary : No known significant effects or critical hazards.

Mobility in soil

Soil/water partition coefficient (KOC) : Not available.

Mobility : Not available.

Other adverse effects : No known significant effects or critical hazards.


Section 13. Disposal considerations


Product

Methods of disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with


jurisdiction. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.


Section 14. Transport information


Regulation: UN Class	
14.1 UN number	1005
14.2 UN proper shipping name	AMMONIA, ANHYDROUS
14.3 Transport hazard class(es)	2.3 
14.4 Packing group	
14.5 Environmental hazards	Yes.
Additional information <u>Environmental hazards</u> : Yes.	

Regulation: IMDG	
14.1 UN number	1005
14.2 UN proper shipping name	AMMONIA, ANHYDROUS
14.3 Transport hazard class(es)	2.3 
14.4 Packing group	
14.5 Environmental hazards	Yes.
Additional information <u>Marine pollutant</u> : Yes. <u>IMDG Code Segregation group</u> : SG18 <u>Emergency schedules (EmS)</u> : F-C, S-U	

Regulation: IATA	
14.1 UN number	1005
14.2 UN proper shipping name	AMMONIA, ANHYDROUS

14.3 Transport hazard class(es)	2.3 
14.4 Packing group	
14.5 Environmental hazards	Yes.
Additional information <u>Marine pollutant</u> : Yes.	

Regulation: DOT Classification	
14.1 UN number	1005
14.2 UN proper shipping name	AMMONIA, ANHYDROUS
14.3 Transport hazard class(es)	2.2 
14.4 Packing group	
14.5 Environmental hazards	Yes.
Additional information <u>Marine pollutant</u> : Yes.	

Regulation: TDG Class	
14.1 UN number	1005
14.2 UN proper shipping name	AMMONIA, ANHYDROUS
14.3 Transport hazard class(es)	2.3 
14.4 Packing group	
14.5 Environmental hazards	Yes.
Additional information Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.7 (Marine pollutant mark) <u>Environmental hazards</u> : Yes.	

14.6 Special precautions for : Transport within user's premises: Ensure that persons

user : transporting the product know what to do in the event of an accident or spillage.

IMSBC : Not applicable.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not applicable.

Section 15. Regulatory information

United States

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States - EPA Clean water act (CWA) section 311 - Hazardous substances: Ammonia;
United States - EPA Clean air act (CAA) section 112 - Accidental release prevention - Toxic substances: Ammonia;

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302/304
Ammonia	100	Yes.	SARA 302 TPQ: 500 lb(s) SARA 304 RQ: 100 lb(s)

SARA 304 RQ : 100 lbs

SARA 311/312

Classification : Fire hazard
 Sudden release of pressure
 Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Classification
Ammonia	100	F, PF, P, AH

SARA 313**Form R - Reporting requirements**

Product name	CAS number	%
Ammonia	7664-41-7	100

Supplier notification

Product name	CAS number	%
Ammonia	7664-41-7	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

- Massachusetts** : The following components are listed:
Ammonia
- New York** : The following components are listed:
Ammonia
- New Jersey** : The following components are listed:
Ammonia
- Pennsylvania** : The following components are listed:
Ammonia

California Prop. 65

⚠ WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

Inventory list

Philippines inventory (PICCS): All components are listed or exempted.

New Zealand Inventory of Chemicals (NZIoC): All components are listed or exempted.

Korea inventory: All components are listed or exempted.

Japan inventory: All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted.

Australia inventory (AICS): All components are listed or exempted.

Canada inventory: All components are listed or exempted.

Malaysia Inventory (EHS Register): All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.

Taiwan Chemical Substances Inventory (TCSI): All components are listed or exempted.

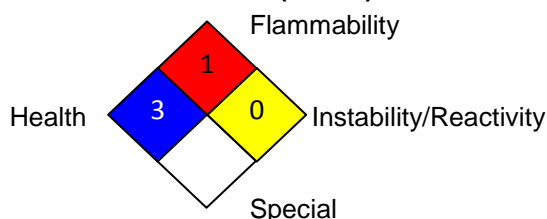
United States inventory (TSCA 8b): All components are listed or exempted.

EC INVENTORY (EINECS/ELINCS): All components are listed or exempted.

Canada: All components are listed or exempted.

Section 16. Other information

National Fire Protection Association (U.S.A.)



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 2	Expert judgment
GASES UNDER PRESSURE - Liquefied gas	On basis of test data
ACUTE TOXICITY (inhalation) - Category 3	Calculation method
SKIN CORROSION/IRRITATION - Category 1B	Calculation method
AQUATIC TOXICITY (ACUTE) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 2	Calculation method

History

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Version	: 1.1
Prepared by	: Yara Chemical Compliance (YCC).
Key to abbreviations	: ATE = Acute Toxicity Estimate
	: BCF = Bioconcentration Factor
	: GHS = Globally Harmonized System of Classification and Labelling of Chemicals
	: IATA = International Air Transport Association
	: IBC = Intermediate Bulk Container

Key data sources

IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
: EU REACH IUCLID5 CSR.
National Institute for Occupational Safety and Health, U.S. Dept. of Health, Education, and Welfare, Reports and Memoranda Registry of Toxic Effects of Chemical Substances.
Sphera Solutions Inc., 4777 Levy Street, St Laurent, Quebec HAR 2P9, Canada.

|| Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.