

MATERIAL SAFETY DATA SHEET

GREEN AAG (Anhydrous Ammonia Gas)



Section-1 : Identification

Product Name: -	: Ammonia
Chemical Formula: -	: NH ₃
Other means of Identification: -	: Green Ammonia; Anhydrous Ammonia; Green AAG
Product Type: -	: Gas
Product Use: -	: Green Fuel; Green Fertilizer; Precursor of Various Chemicals;
Synonym: -	: Green Ammonia; Green AAG;
Supplier's Details: -	: BAREGREEN INDIA LIMITED
Emergency Telephone: -	: Police (100) Fire (101) Ambulance (102)

Section-2 : Hazards Identification

OSHA/HCS Status: - : Hazardous (OSHA Hazard Communication Standard (29CFR1910.1200))

Classification of Substance: -

- : FLAMMABLE GASES - : Category 2
- : FGASES UNDER PRESSURE - : Liquefied Gas
- : ACUTE TOXICITY (inhalation) - : Category 4
- : SKIN CORROSION - : Category 1
- : SERIOUS EYE DAMAGE - : Category 1
- : AQUATIC HAZARD (ACUTE) - : Category 1

GHS Label Elements: -
(Hazard Pictograms)



GHS04 Compressed Gas



GHS05 Corrosive



GHS07 Harmful



GHS09 Environmental Hazard

Signal Word: -

: Danger;

Hazard Statements: -

- : Flammable Gas;
- : May form explosive mixtures with air;
- : Contains gas under pressure; may explode if heated;
- : May displace Oxygen and Cause Rapid Suffocation;
- : Harmful if Inhaled;
- : Causes Severe Skin Burns & Eye Damage;
- : Very Toxic to Aquatic Life;

- :PRECAUTIONARY STATEMENTS: -

General: -

: Read and follow all Safety Data Sheets (SDS'S) before use. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention: -

: Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing gas. Wash hands thoroughly after handling.

Response: -

: Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician. Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.

Storage: -

: Store locked up, Protect from sunlight, Store in a well-ventilated place.

Disposal: -

: Dispose of contents and container in accordance with all local, regional, national and international regulations.

Otherwise Unclassified Hazards: - : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section-3 : Composition/ Information on Ingredients

Substance/ Mixture: -

: Substance

Chemical Name: -

: Ammonia

Other Means of Identification: -

: Green Ammonia; Green AAG

Product Code: -

: 001003

Ingredient Name	%	CAS Number
Ammonia	100	7664-41-7

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, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately. Chemical burns must be treated promptly by a physician.
- Inhalation: -** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately. Call medical doctor or poison control center immediately. 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.
- Skin Contact: -** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion: -** : As this product is a gas, refer to the inhalation section.

MOST IMPORTANT SYMPTOMS

(Effects, Acute Delayed Potential Acute Health Effects)

- Eye contact: -** : Causes serious eye damage.
- Inhalation: -** : Harmful if inhaled.
- Skin contact: -** : Causes severe burns.
- Frostbite: -** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion: -** : As this product is a gas, refer to the inhalation section.

(Over-exposure Signs/ Symptoms)

- Eye contact: -** : Adverse symptoms may include the following:, pain, watering, redness
- Inhalation: -** : No specific data.
- Skin contact: -** : Adverse symptoms may include the following:, pain or irritation, redness, blistering may occur.
- Ingestion: -** : Adverse symptoms may include the following:, stomach pains.

**INDICATION OF IMMEDIATE MEDICAL ATTENTION
AND
SPECIAL TREATMENT NEEDED, IF NECESSARY**

- Notes to Physician: -** : 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.
- More Information: -** : See toxicological information (Section 11)

Section-5 : Fire-Fighting Measures

- : EXTINGUISHING MEDIA : -

- Suitable Extinguisher: -** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguisher: -** : None known.
- Specific Hazards: -** : 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. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
(Arising from the Chemical)
- Hazardous Products: -** : Decomposition products may include the following materials: nitrogen oxides
(Thermal Decomposition)
- Special Protective actions: -** : 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.
(For Fire-Fighters)
- Special Protective Equipment: -** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
(For Fire-Fighters)

Section-6 : Accidental Release Measures

- :Personal Precautions, Protective Equipment & Emergency Procedures: -

- 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. 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 nonemergency personnel".
- Environmental Precautions: -** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. 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 & Materials for Containment and Cleaning Up: -

- Small Spill: -** : Ensure 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. Avoid release to the environment. 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. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement;

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 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. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Refer to ANSI/CGA G-2.1, Section 5.13 for electrical classification of anhydrous ammonia storage and handling areas. Where anhydrous ammonia is stored indoors, use electrical (ventilating, lighting and material handling) equipment with the appropriate electrical classification rating and use only non-sparking tools;

Section-8 : Exposure Controls/ Personal Protection

- : Control Parameters: -

Occupational Exposure Limits: -

Ingredient Name	Exposure Limits
Ammonia	California PEL for Chemical Contaminants (Table AC-1) (United States) PEL: 25 PPM 8 Hours. STEL: 35 PPM 15 Minutes. ACGIH TLV (United States, 3/2017) TWA: 25 ppm 8 hours. TWA: 17 mg/m ³ 8 hours. STEL: 35 ppm 15 minutes. STEL: 24 mg/m ³ 15 minutes. OSHA PEL 1989 (United States, 3/1989). STEL: 35 ppm 15 minutes. STEL: 27 mg/m ³ 15 minutes. NIOSH REL (United States, 10/2016). TWA: 25 ppm 10 hours. TWA: 18 mg/m ³ 10 hours. STEL: 35 ppm 15 minutes. STEL: 27 mg/m ³ 15 minutes. OSHA PEL (United States, 6/2016). TWA: 50 ppm 8 hours. TWA: 35 mg/m ³ 8 hours.

- 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: -** : 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;
- 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 contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/ or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated;
- Body Protection: -** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear antistatic protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves;
- 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: -** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. 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

Section-9 : Physical and Chemical Properties

Appearance: -

Physical state: -	: Gas [Compressed gas.]
Colour: -	: Colourless
Odour: -	: Pungent
Odour Threshold: -	: 5 ppm
pH: -	: Approx 11.6
Melting Point: -	: -77 °C
Boiling Point: -	: -33°C5
Critical Temperature: -	: 132.85°C
Flash Point: -	: 651°C
Evaporation Rate: -	: Not Available
Flammability (Solid, gas) : -	: Extremely flammable in the presence of the following materials or conditions: oxidizing materials.
Lower & Upper Limit: - (Ignition Mixture)	: Lower (16%); Upper (25%)
Vapour Pressure: -	: 114.1 (psig)
Vapour Density: -	: 0.59 (Air=1)
Specific Volume: -	: 0.02435, m ³ /mol
Gas Density: -	: 0.769 kg/m ³
Relative Density: -	: @ 70°F (21.1°C) = 0.59 (Air=1)
Solubility: -	: Soluble in Water, Alcohol and Ether
Solubility in Water: -	: 540gm/Ltr
Partition Coefficient: -	: 0.13,
Auto Ignition Temperature: -	: 651°C (1203.8°F)
Decomposition Temperature: -	: 500°C to 900°C
Viscosity: -	: Not Available
Flow Time(ISO-2431) : -	: Not Available
Molecular Weight: -	: 17.03 g/mole
Aerosol Product: -	: Ammonium Nitrate (NH ₄ NO ₃) Ammonium Sulphate (NH ₄) ₂ SO ₄
Heat of Combustion: -	: -18589392 J/kg

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: -	: Oxidizers and Yellow Metals (brass & copper)
Hazardous Decomposition Products: -	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous Polymerization: -	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section-11 : Toxicological Information

Information on Toxicological Effects

Acute Toxicity: -

Oral: -	: Ammonia ingestion can severely impact oral swallowing due to its corrosive nature, causing burns and inflammation in the mouth and throat. This can lead to difficulty in swallowing, pain, and potential damage to the tissues involved in the swallowing process.
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LC50 Inhalation: - Remarks: (ECHA)

: Rat - male - 4 h - 4,93 mg/l – vapor

Dermal: -

: Ammonia can cause significant damage to the dermis, leading to burns, blisters, and tissue necrosis. Exposure to concentrated ammonia, especially in the form of liquid or gas, can result in alkali burns that penetrate deeply into the skin, unlike acid burns which cause coagulation necrosis. Available

Skin Corrosion/ Irritation: -

Skin: - : Rabbit

Result: - : Corrosive - 4 h
(OECD Test Guideline 404)
Remarks: (Regulation (EC) No 1272/2008, Annex VI)

Serious Eye Damage/ Eye Irritation: -

Remarks: - : Causes serious eye damage.

Respiratory or Skin Sensitization: - : No data available

Germ Cell Mutagenicity: -

Test Type: -	: Ames test
Test System: -	: Escherichia coli/ Salmonella typhimurium
Metabolic Activation: -	: With and without metabolic activation
Method: -	: OECD Test Guideline 471
Result: -	: Negative
Test Type: -	: Micronucleus test
Species: -	: Mouse
Cell type: -	: Bone marrow
Application Route: -	: Intra-peritoneal
Method: -	: OECD Test Guideline 474
Result: -	: Negative
Remarks: -	: (in analogy to similar products) The value is given in analogy to ammonium chloride
Carcinogenicity: -	: No data available
Reproductive Toxicity: -	: No data available
Specific Target Organ Toxicity: - (Single exposure)	: No data available
Specific Target Organ Toxicity: - (Repeated exposure)	: No data available
Aspiration Hazard: -	: No data available

Section-12 : Ecological Information

12.1 Toxicity: -

Toxicity to Fish: -	Flow-through test LC50 Pimephales promelas (fathead minnow) - 0,068 mg/l- 96 h Remarks: (in analogy to similar products)(ECHA) The value is given in analogy to the following substances: ammonium sulphate
Toxicity to daphnia and other aquatic invertebrates	Static Test LC50 - Daphnia magna (Water flea) - 101 mg/l - 48 h Remarks: (ECHA) EC50 - Daphnia Pulicaria - 1,16 mg/l - 48 h Remarks: (Lit.)
Toxicity to fish(Chronic toxicity)	Flow-through test NOEC - Ictalurus punctatus - 0,048 mg/l - 31 d (OECD Test Guideline 215)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	flow-through test LC50 - Daphnia magna (Water flea)- 4,07 mg/l - 96 h (US-EPA) Remarks: (in analogy to similar products) The value is given in analogy to the following substances: ammonium Chloride flow-through test NOEC - Daphnia magna (Water flea) - 0,79 mg/l - 96 h (US-EPA) Remarks: (in analogy to similar products) The value is given in analogy to the following substances: ammonium chloride
12.2 Persistence and degradability	
Biodegradability	Result: - rapidly biodegradable Remarks: Readily biodegradable.
Bio-accumulative potential	No data available
Mobility in soil	No data available
Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be persistent, bio-accumulative and toxic (PBT), or very persistent and very bio-accumulative (vPvB) at levels of 0.1% or higher.
Endocrine disrupting properties of Product:	The substance/ mixture do not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Other Adverse Effects	No data available

Section-13 : Disposal Considerations

Waste treatment Method	Pressurized gas bottle: dispose of only in empty condition!
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Section-14 : Transport Information

UN number	ADR/RID: 1005;	IMDG: 1005;	IATA: 1005
UN proper Shipping Name	ADR/RID: AMMONIA, ANHYDROUS IMDG: AMMONIA, ANHYDROUS IATA: Ammonia, anhydrous Passenger Aircraft: Not permitted for transport Cargo Aircraft: Not permitted for transport		
Transport hazard class(es)	ADR/RID: 2.3 (8) IMDG: 2.3 (8) IATA: 2.3 (8)		
Packaging group	ADR/RID: -	IMDG: -	IATA: -
Environmental hazards	ADR/RID: yes	IMDG Marine Pollutant: Yes IATA: No	
Special precautions for user	Tunnel Restriction Code : (C/D) Further information : No data available		
Maritime transport in bulk according to IMO instruments	Not applicable for product as supplied.		

Section-15 : Regulatory Information

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

UNITED STATES: -

Sara Title Iii (Superfund Amendments And Reauthorization Act) 311/312 Hazard Categories:

Fire:

Pressure Generating:

Reactivity:

Acute:

Chronic:

313 Reportable Ingredients:

Title III Notes:

CERCLA (Comprehensive Response, Compensation, And Liability Act)

CERCLA Rq:

TSCA (Toxic Substance Control Act)

WHMIS (Worker Hazardous Materials Information System):

EUROPEAN UNION LEGISLATION: -

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

H2: - : ACUTE TOXIC

P2: - : FLAMMABLE GASES

E1: - : ENVIRONMENTAL HAZARDS

OTHER REGULATIONS

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

Section-16 : Other Information

Full text of H-Statements

H221	Flammable gas.
H280	Contains gas under pressure; may explode if heated.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.
EUH071	Corrosive to the respiratory tract.

FULL TEXT OF OTHER ABBREVIATIONS

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; BW - Body Weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardization; DSL - Domestic Substances List (Canada); EC_x - Concentration associated with x% response; EL_x - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErC_x - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC₅₀ - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organization for Standardization; KECI - Korea Existing Chemicals Inventory; LC₅₀ - Lethal Concentration to 50 % of a test population; LD₅₀ - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; N.O.S. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bio-accumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bio-accumulative

FURTHER INFORMATION

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2020 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

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