

Safety Data Sheet

AERO 2000



AEROCHEM

1. Identification

Product identifier	AERO 2000
Product code	AE2000570GDZ
Other means of identification	AERO 2000, aerosol. This SDS sheet is not for the product AERO 2000 in liquid format.
Recommended use of the chemical and restrictions on use	Industrial solvent, cleaner, degreaser. Degreaser liquid in aerosol form with instantaneous evaporation.
Manufacturer	AEROCHEM Inc. 5977 Trans Canada Highway Pointe-Claire, QC H9R 1C1 Canada General Information: 1-888-592-5837 www.aerochem.ca info@aerochem.ca
Emergency phone number	INFOTRAC®: 1-800-535-5053 International call collect: 1-352-323-3500 24 hours/day, 7 days/week

2. Hazard identification

Summary	FLAMMABLE AEROSOL! Content under pressure, do not puncture, cut, heat or throw container into the flames. Avoid contact with skin, eyes and clothing. Do not breathe vapours, mists or aerosols. Do not ingest. If ingested consult physician immediately and show this Safety Data Sheet. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved.
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WHMIS 2015/GHS/OSHA HCS 2012



Flammable aerosols (Category 1)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Carcinogenicity (Category 2)
Reproductive toxicity (Category 1B)
Specific target organ toxicity, single exposure (Category 3)
Specific target organ toxicity, repeated exposure (Category 1)

DANGER

H222: Extremely flammable aerosol
H229: Pressurized container: may burst if heated
H360: May damage fertility or the unborn child
H372: Causes damage to organs through prolonged or repeated exposure
H319: Causes serious eye irritation
H315: Causes skin irritation
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness
H351: Suspected of causing cancer
H402: Harmful to aquatic life
P101: If medical advice is needed, have product container or label at hand.

P201: Obtain special instructions before use.
 P202: Do not handle until all safety precautions have been read and understood.
 P210: Keep away from heat, sparks, open flames and other ignition sources. No smoking.
 P211: Do not spray on an open flame or other ignition source.
 P251: Do not pierce or burn, even after use.
 P260: Do not breathe mist, vapours and spray.
 P264: Wash face, hands and any exposed skin thoroughly after handling.
 P270: Do not eat, drink or smoke when using this product.
 P271: Use only outdoors or in a well-ventilated area.
 P273: Avoid release to the environment.
 P280: Wear protective gloves, protective clothing and eye protection.
 P308+313: IF exposed or concerned: Get medical attention.
 P314: Get Medical advice/attention if you feel unwell.
 P302+352: IF ON SKIN: Wash with plenty of water and soap.
 P332+313: If skin irritation occurs: Get medical advice or attention.
 P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 P337+313: If eye irritation persists: Get medical advice or attention.
 P362+364: Take off contaminated clothing and wash before reuse.
 P403+235: Store in a well ventilated place. Keep cool.
 P405: Store locked up.
 P410+412: Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
 P501: Dispose of contents and container to a licensed chemical disposal agency in accordance with local, regional and national regulations.

Other hazards which do not result in classification

Acute hazard to the aquatic environment (Category 3).

3. Composition/information on ingredients

Common name	CAS	Weight % content
1-Bromopropane	106-94-5	65 - 85 %
1,1,1,2-Tetrafluoroethane	811-97-2	10 - 30 %
Isopropyl alcohol	67-63-0	1 - 5 %
n-Propanol	71-23-8	1 - 5 %
1,2-Epoxybutane	106-88-7	0.1 - 1 %

Note: The manufacturer withholds the actual concentration range of the ingredients as a trade secret.

4. First-aid measures

Inhalation	Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. If a problem develops or persists, seek medical attention.
Skin contact	Flush with water for at least 15 minutes. Remove contaminated clothing and wash before reuse. Avoid touching eyes with contaminated body parts. If a problem develops or persists, seek medical attention.
Eye contact	IMMEDIATELY flush with plenty of water. Remove contact lenses if easy to do. Flush with water for at least 15 minutes. Hold eyelids apart to rinse properly. If a problem develops or persists, seek medical attention.
Ingestion	DO NOT induce vomiting, unless recommended by medical personnel. If victim is conscious wash out mouth with plenty of water. Never give anything by mouth if victim is unconscious or convulsing. If spontaneous vomiting occurs, keep head below hip level to prevent aspiration into the lungs. Seek medical attention or contact a Poison Centre immediately.
Other	No information available.

Symptoms	May cause redness and irritation to eyes. May cause dry skin and irritation. May cause upper respiratory tract irritation. High concentrations may cause central nervous system depression characterized by headache, dizziness, vertigo, nausea, drowsiness and fatigue.
Notes to the physician	If gastric lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire-fighting measures

Suitable extinguishing media	ABC fire extinguishing, dry powder, alcohol resistant foam, carbon dioxide (CO ₂). Do not use a heavy water jet.
Specific hazards arising from the chemical	Flammable aerosol. Content under pressure, containers may explode under fire conditions. Vapours are heavier than air and may travel to an ignition source distant from the material handling point.
Special protective equipment	Firefighters must wear self contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.
Special protective actions for fire-fighters	Use water spray to cool fire-exposed containers. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.


6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Do not touch spilled material. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet.
Environmental precautions	Prevent entry into sewers, closed areas and release to the environment.
Methods and materials for containment and cleaning up	Ventilate the area well. Remove sources of ignition. Absorb with inert material (soil, sand, vermiculite) and place in an appropriate waste disposal clearly identified. Use non-sparking and antistatic tools. Finish cleaning the contaminated surface by rinsing with soapy water. Dispose via a licensed waste disposal contractor.

7. Handling and storage

Precautions for safe handling	Content under pressure, do not puncture, cut, heat or throw container into the flames. Keep away from heat and open flame. Use only in well ventilated area. Do not breathe vapours, mists or aerosols. Avoid contact with skin, eyes and clothing. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved. Keep only the quantities necessary for the work being performed in the work area. Do not eat, do not drink and do not smoke during use. Wash hands, forearms and face thoroughly after handling this compound and before eating, drinking or using toiletries. Remove contaminated clothing and wash before reuse.
Conditions for safe storage, including any incompatibilities	Keep in properly labelled containers. Store away from oxidizing materials and incompatible materials (see section 10). Keep away from direct sunlight and heat. Keep away from freezing.
Storage temperature	<49°C (120.2°F)

8. Exposure controls/personal protection

Immediately Dangerous to Life or Health	Isopropyl alcohol: 2000 ppm. n-Propanol: 800 ppm.		
1-Bromopropane	TWA (8h)	0.1 ppm 10 ppm	ACGIH BC , ON
1,1,1,2-Tetrafluoroethane	TWA (8h)	1000 ppm	US AIHA
Isopropyl alcohol	STEL	400 ppm	ACGIH , BC, ON
		500 ppm	RSST
	TWA (8h)	200 ppm	ACGIH , BC, ON
n-Propanol		400 ppm	RSST
	STEL	250 ppm	RSST (Pc)
	TWA (8h)	100 ppm	ACGIH , BC, ON
		200 ppm	RSST (Pc)
1,2-Epoxybutane	TWA (8h)	2 ppm	US AIHA
Appropriate engineering controls	Provide sufficient mechanical ventilation (general or local exhaust) to keep the airborne concentrations of vapours, mists, aerosols or dust below their respective occupational exposure limits.		
Individual protection measures			
Eye	Wear chemical splash goggles.		
Hands	Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. Wear nitrile gloves, neoprene gloves, polyvinyl alcohol (PVA) gloves or multilayer polymer laminate gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Before using, user should confirm impermeability. Discard gloves with tears, pinholes, or signs of wear. Gloves must only be worn on clean hands. Wash gloves with water before removing them. After using gloves, hands should be washed and dried thoroughly.		
Skin	Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Wear normal work clothing covering arms and legs as required by employer code. Wear synthetic or a neoprene apron, if necessary, to prevent repeated or prolonged contact with skin.		
Respiratory	Respiratory protection is not required for normal use. Where the conditions in the workplace require a respirator, it is necessary to follow a respiratory protection program. Moreover, respiratory protection equipment (RPE) must be selected, fitted, maintained and inspected in accordance with regulations and standard 29 CFR 1910.134 (OSHA), ANSI Z88.2 or CSA Z 94.11 (Canada) and approved by NIOSH/MSHA. In case of insufficient ventilation or in confined or enclosed space and for an assigned protection factor (APF) up to 10 times of exposure limit, wear a half mask respirator with organic vapour cartridges. For an APF until maximum 100 times of exposure limit, wear a full face mask respirator with organic vapour cartridges.		
Feet	No personal protection measure required.		
	 Goggles Neoprene gloves (thin) Lab coat		

9. Physical and chemical properties

Physical state	Aerosol (liquid)	Flammability	Flammable.
Colour	Colourless	Flammability limits	4 to 8%
Odour	Slight alcohol odor	Flash point	11.7 to 20°C (53.1 to 68°F) Closed Cup

Odour threshold	>30 ppm	Auto-ignition temperature	399 to 460 °C (750.2 to 860 °F)
pH	N/Ap.	Sensibility to electrostatic charges	Yes
Melting point	N/Av.	Sensibility to sparks and/or friction	N.Av.
Freezing point	N/Av.	Vapour density	4.2 (Air = 1)
Boiling point	69 to 71 °C (156.2 to 159.8 °F)	Relative density	1.32 to 1.35 kg/L @ 20 °C (68 °F) (Water = 1)
Solubility	Slightly soluble in water.	Partition coefficient n-octanol/water	N/Av.
Evaporation rate	> Éther éthylique	Decomposition temperature	N/Av.
Vapour pressure	986kPa (7395 mm Hg) @ 20 °C (68 °F)	Viscosity	5 cSt @ 40 °C (104 °F)
Percent Volatile	100%	Molecular mass	N/Ap.
N/Av.: Not Available N/Ap.: Not Applicable Und.: Undetermined N/E: Not Established			

10. Stability and reactivity

Reactivity	May react vigorously (up fire or explosion) with strong oxidants and strong bases.
Chemical stability	Stable under recommended storage conditions. Aerosol containers are unstable at temperatures above 49 °C.
Possibility of hazardous reactions (including polymerizations)	A dangerous reaction will not occur.
Conditions to avoid	Keep away from heat and open flame. Avoid temperatures over 49 °C. Avoid contact with incompatible materials. Avoid prolonged contact with aluminum, magnesium, and zinc metals.
Incompatible materials	Strong bases, strong oxidizing agents (e.g. chlorine, fluorine, nitric acid, perchloric acid, peroxides, nitrates, chlorates, chromates, permanganates and perchlorates), strong acids.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information


Numerical measures of toxicity	1-Bromopropane	Ingestion >2000 mg/kg	Rat	LD50	
		Inhalation 35.2 mg/l/4h	Rat	LC50	
		Skin >2000 mg/kg	Rabbit	LD50	
	1,1,1,2-Tetrafluoroethane	Inhalation >500000 ppm/4h	Rat	LC50	
		Isopropyl alcohol	Ingestion 5045 mg/kg	Rat	LD50
			3600 mg/kg	Mouse	LD50
	Inhalation 66.1 mg/l/4h		Rat	LC50	
	n-Propanol	Skin 6280 mg/kg	Rat	LD50	
		Ingestion 1870 mg/kg	Rat	LD50	
		5467 mg/kg	Mouse	LD50	
		Inhalation 48 mg/l/4h	Mouse	LC50	
		Skin 4060 mg/kg	Rabbit	LD50	

	1,2-Epoxybutane	Ingestion 500 mg/kg Inhalation >6.3 mg/l/4h Skin 1757 mg/kg	Rat LD50 Rat LC50 Rabbit LD50
Likely routes of exposure	Skin, eyes, inhalation, ingestion.		
Delayed, immediate and chronic effects	Eye contact	May cause redness and irritation to eyes. Exposure to high concentrations vapor of 1-Bromopropane cause eye irritation in humans (TOXNET). Eye Irritation, Rabbit: the data indicate that isopropyl alcohol and n-propanol are irritating to eyes (Draize-Test, OECD SIDS).	
	Skin contact	May cause dry skin and irritation. Prolonged or repeated contact may cause defatting dermatitis. Pure 1-bromopropane is irritating to rabbit skin. The non-irritating concentration is 50% in almond oil (INRS). Skin Irritation, Rabbit : the data indicate that isopropyl alcohol and n-propanol are not irritating to the skin (Draize-Test, OECD SIDS).	
	Inhalation	In the workplace, the product is rapidly absorbed by respiratory tract. Exposure to high concentrations vapor of 1-Bromopropane cause upper respiratory tract irritation to rat (TOXNET, INRS). Excessive inhalation is harmful. Inhalation of vapours may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue. The severity of symptoms may vary depending on exposure conditions. Study results of prolonged worker exposure over a long period to 1-bromopropane have shown cases of neurological disorders (numbness and weakness in legs and right hand, staggering gait, etc.) (TOXNET). Inhalation in large amounts of 1,1,1,2-Tetrafluoroethane (CAS no 811-97-2) may cause asphyxiation.	
	Ingestion	May cause gastrointestinal irritation with nausea and vomiting. Ingestion of large amounts may cause depression of the central nervous system characterized by headache, dizziness, convulsions and loss of consciousness. Contains a substance that can cause target organ damage, according to data obtained on animals.	
	Respiratory or skin sensitization	Ingredients present at levels greater than or equal to 0.1% of this product are not skin or respiratory sensitizers.	
	IARC/NTP Classification	Common name IARC NTP 1-Bromopropane 2B R n-Propanol - - 1,2-Epoxybutane 2B - IARC : 1- Carcinogenic; 2A- Probably carcinogenic; 2B- Possibly carcinogenic. NTP : K- Known to be carcinogens; R- Reasonably anticipated to be carcinogens.	
	Carcinogenicity	Contains an ingredient possibly carcinogenic to humans (Group 2B, IARC). Contains an ingredient which is reasonably anticipated to be a human carcinogen (NTP). The risk of cancer depends on duration and level of exposure.	
	Mutagenicity	Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effects.	
	Reproductive toxicity	Several studies have demonstrated that 1-bromopropane (CAS no 106-94-5) is toxic for reproduction in male rats (inhibition of the formation of sperm) and female (modification of the oestrus cycle). It induces skeletal variations on the fetus at toxic concentrations for mothers.	
	Specific target organ toxicity - single exposure	Central nervous system, respiratory system.	
	Specific target organ toxicity - repeated exposure	Central nervous system, peripheral nervous system, kidneys.	
Interactive effects	N,N-dimethylnitrosamine.		
Other information	The oral and skin acute toxicity estimates (ATE) of the mixture were calculated to be greater than 2000 mg/kg. The acute toxicity estimate (ATE) by inhalation of the mixture was calculated to be greater than 20 mg/L/4h. This value is not classified according to GHS. These values are not classified according to WHMIS 2015 and OSHA HCS 2012.		


12. Ecological information

Ecological toxicity	Fish - Pimephales promelas - fathead minnow LC50 67.3 mg/L; 96h (CAS no 106-94-5) Aquatic Invertebrate - Crustaceans, Daphnia Magna EC50 69.8 mg/L; 48h (1,2-Epoxybutane) Fish - Fathead minnow, Pimephales promelas - fresh water LC50 4480 mg/L; 96h (CAS no 71-23-8) Fish - Fathead minnow, Pimephales promelas - fresh water LC50 9640 mg/L; 96h (CAS no 67-63-0) Fish - Oncorhynchus mykiss - Rainbow trout LC50 450 mg/L; 96h (CAS no 811-97-2)
Persistence	Not persistent in environment.
Degradability	The product in air rapidly is decomposed by photochemical processes, mainly through oxidation by hydroxyl free radicals as well as some decomposition by direct photolysis. Biodegradable (>70% in 28 days). 1-Bromopropane, present at 100 mg/L, reached 70% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L (TOXNET Databases).
Bioaccumulative potential	Potential to bioaccumulate is low. 1-Bromopropane has a measured log Kow of 2.10 and an estimated Bioconcentration Factor (BCF) of 11 that suggest a low potential to bioaccumulation in aquatic organisms (TOXNET Databases). The Log Kow values <0.4 and bioconcentration factor (BCF) values <1 for isopropyl alcohol and n-propanol show no potential to bioaccumulate (IUCLID).
Mobility in soil	The estimated Koc value of 40 suggests that 1-bromopropane is expected to have very high mobility in soil (TOXNET Databases). Isopropyl alcohol and n-propanol are soluble in water and will quickly evaporate into the air. There is no partition in the ground.
Other adverse effects	This chemical does not deplete the ozone layer.

13. Disposal considerations

Container 	Important! Prevent waste generation. Use in full. DO NOT pierce, cut, heat, or burn the container, even after use. DO NOT dispose residue in sewers, streams or drinking water supply. Depressurize empty container (empty it of its propellant). Organic solvents and wastes residues can be reprocessed (recycle) where there is a recovery program. Observe all federal, state/provincial and municipal regulations. If necessary consult the Department of Environment or the relevant authorities.
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14. Transport information

UN Number	UN 1950
UN Proper Shipping Name	AEROSOLS
Environmental hazards	This material does not contain marine pollutant.
Special precautions for user	Permit required for transportation with proper DANGER placards displayed on vehicle. Exemption available: LTD QTY according to TDG Canada - art. 1.17; Mode of transportation: rail, sea and road, applicable for Canadian domestic shipments. Quantitative limits: applicable for aerosol cans containing =< 1L each.
TDG - Transportation of Dangerous Goods (Canada)	
Transport hazard class(es)	 Class 2.1
Packing group	
	<u>126</u>

Emergency response guidebook 2016

IMO/IMDG - International Maritime Transport

Classification UN 1950. AEROSOLS. Class 2.1 Emergency schedules (EmS-No) F-D, S-U

IATA - International Air Transport Association

Classification UN 1950. AEROSOLS, FLAMMABLE. Class 2.1

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. In addition, if a domestic exemption exists, it is the responsibility of the shipper to define the application of it.

15. Regulatory information

CANADA

Common name	CAS	CEPA	DSL	NDSL	NPRI
1-Bromopropane	106-94-5	X	X		X
1,1,1,2-Tetrafluoroethane	811-97-2		X		
Isopropyl alcohol	67-63-0	X	X		X
n-Propanol	71-23-8	X	X		X
1,2-Epoxybutane	106-88-7	X	X		X

- CEPA: List of Toxic Substances Managed Under Canadian Environmental Protection Act
- DSL: Domestic Substances List Inventory
- NDSL: Non-Domestic Substances List Inventory
- NPRI: National Pollutant Release Inventory Substances

UNITED STATE OF AMERICA

Common name	CAS	TSCA	CER CLA	EPCRA 313	EPCRA 302/304	CAA 112(b) HON	CAA 112(b) HAP	CAA 112(r)	CWA 311	CWA Prio.
1-Bromopropane	106-94-5	X								
1,1,1,2-Tetrafluoroethane	811-97-2	X								
Isopropyl alcohol	67-63-0	X		X						
n-Propanol	71-23-8	X								
1,2-Epoxybutane	106-88-7	X	X	X			X			

- TSCA: Toxic Substance Control Act
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act list of hazardous substances
- EPCRA 313: Emergency Planning and Community Right-to-Know Act, Section 313 Toxic Chemicals
- EPCRA 302/304: Emergency Planning and Community Right-to-Know Act, Section 302/304 Extremely Hazardous Substances
- CAA 112(b) HON: Clean Air Act - Hazardous Organic National Emission Standard for Hazardous Air Pollutant
- CAA 112(b) HAP: Clean Air Act - Hazardous Air Pollutants lists pollutants
- CAA 112(r): Clean Air Act - Regulated Chemicals for Accidental Release Prevention
- CWA 311: Clean Water Act - List of Hazardous Substances
- CWA Priority: Clean Water Act - Priority Pollutant list

California Proposition 65

Common name	CAS	Cancer	Reproductive and Developmental Toxicity
1-Bromopropane	106-94-5		X


Other regulations

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HMIS

2	Health
4	Flamability
0	Reactivity
X	Protective Equipment

NFPA**16. Other information**

Date (YYYY-MM-DD)	AEROCHEM Inc. 2020-03-03
Version	04
Other information	<p>REFERENCES:</p> <ul style="list-style-type: none"> - Haz-Map, Information on Hazardous Chemicals and Occupational Diseases, https://haz-map.com/ - Service du répertoire toxicologique de la Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), http://www.reptox.csst.qc.ca - TOXNET Databases, Toxicology Data Network, NIH U.S. National Library of Medicine, http://toxnet.nlm.nih.gov/ - NIOSH Pocket Guide to Chemical Hazards, Centers for Disease Control and Prevention, NIOSH Publications, 2007, http://www.cdc.gov/niosh/npg/npg.html - Database, Institut National de Recherche et de Sécurité, http://www.inrs.fr/accueil/produits/bdd.html <p>DATE OF FIRST VERSION OF SDS: 2015-11-10</p> <p>CHANGES MADE IN THE VERSION 02: sections 2, 3, 9 and 11.</p> <p>DATE OF SECOND VERSION OF SDS: 2015-12-16</p> <p>CHANGES MADE IN THE VERSION 03: section 3.</p> <p>DATE OF THIRD VERSION OF SDS: 2018-07-13.</p> <p>CHANGES MADE IN THE VERSION 04: section 1.</p> <p>ACGIH: American Conference of Governmental Industrial Hygienists AIHA: American Industrial Hygiene Association HMIS: Hazardous Materials Identification System NFPA: National Fire Protection Association OSHA: Occupational Safety and Health Administration (USA) NIOSH: National Institute for Occupational Safety and Health NTP: National Toxicology Program RSST: Règlement sur la santé et la sécurité du travail (Québec) GHS: Globally Harmonized System IARC: International Agency for Research on Cancer IDLH: Immediately Dangerous to Life or Health STEL: Short Term Exposure Limit (15 min) TWA: Time Weighted Averages WHMIS: Workplace Hazardous Materials Information System</p>
Powered by  A global vision of prevention	<p>To the best of our knowledge, the information contained herein is accurate. However, neither Préventis System 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.</p>