

Safety Data Sheet

AERO 90N



AEROCHEM

1. Identification

Product identifier	AERO 90N
Product code	AE90N454GDZ
Other means of identification	AERO 90N Aerosol. TM/MD
Recommended use of the chemical and restrictions on use	Electric and electronic contact cleaner safe on all plastics. Not recommended for any other use not detailed on product data sheet or label.
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	Non-flammable aerosol. Content under pressure, do not puncture, cut, heat or throw container into the flames. Keep away from heat and open flame. Do not breathe vapours, mists or aerosols. Avoid contact with skin, eyes and clothing. If medical advice is needed, have this SDS or label at hand. 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



Serious eye damage/eye irritation (Category 2A)
Specific target organ toxicity, single exposure (Category 3)

WARNING

H229: Pressurized container: may burst if heated

H319: Causes serious eye irritation

H336: May cause drowsiness or dizziness

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

P251: Do not pierce or burn, even after use.

P261: Avoid breathing vapours, mist and spray.

P264: Wash skin thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P280: Wear gloves and eye protection.

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER or physician if you feel unwell.

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.

P403: Store in a well-ventilated place.

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 an approved waste disposal plant.

Other hazards which do not result in classification

Flammable aerosols (Category 3).

3. Composition/information on ingredients

Common name	CAS	Weight % content
Methyl nonafluoroisobutyl ether	163702-08-7	15 - 40 %
Methyl nonafluorobutyl ether	163702-07-6	15 - 40 %
1,1,1,2-Tetrafluoroethane	811-97-2	10 - 30 %
Isopropyl alcohol	67-63-0	1 - 5 %

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	Wash skin with warm water and mild soap. Remove contaminated clothing and wash before reuse. 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. Inhalation of vapours may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue. May cause dry skin and slight irritation.
Notes to the physician	Treat symptomatically. 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	Dry chemicals, water spray, chemical foam, carbon dioxide (CO ₂).
Specific hazards arising from the chemical	Content under pressure, containers may explode under fire conditions. According to the method prescribed by the Hazardous Products Regulations SOR/2015-17 and with sub-section 31.4 Ignition Distance Test for Spray Aerosols and 31.5 Enclosed Space Ignition Test of Part III of the Manual of Tests and Criteria of United Nation, this aerosol is not flammable. The ignition distance is <15 cm; the time equivalent needed to achieve ignition is >300 s/m ³ ; the deflagration density is >300 g/m ³ .
Special protective equipment	Firefighters must wear self contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.
	Use water spray to cool fire-exposed containers.

Special protective actions for fire-fighters

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	For a large spill, consult the Department of Environment or the relevant authorities.
Methods and materials for containment and cleaning up	Ventilate the area well. Allow propellant gas to evaporate. Absorb with inert material (soil, sand, vermiculite) or wipe with a cloth and place in an appropriate waste disposal container clearly identified. Finish cleaning the contaminated surface by rinsing with soapy water.

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. 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	Store in a cool, dry, well-ventilated area. Store away from oxidizing materials and incompatible materials (see section 10). Keep away from direct sunlight and heat.
Storage temperature	<49°C (120.2°F)

8. Exposure controls/personal protection

Immediately Dangerous to Life or Health	Isopropyl alcohol: 2000 ppm.		
Methyl nonafluoroisobutyl ether	TWA (8h)	750 ppm	US AIHA
Methyl nonafluorobutyl ether	TWA (8h)	750 ppm	US AIHA
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
		400 ppm	RSST
		1230 mg/m ³	
		983 mg/m ³	
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	No measures will be necessary. If there is a risk of contact with eyes, wear chemical splash goggles.
Hands	Wear nitrile or neoprene gloves. Disposable nitrile gloves can also be used, but discard after single use. To avoid frostbite, wear gloves suitable to the hazards.
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.
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.
Feet	No personal protection measure required.
 Safety glasses Nitrile gloves	

9. Physical and chemical properties

Physical state	Aerosol (liquid)	Flammability	Non-flammable
Colour	Colourless	Flammability limits	N/Av.
Odour	Mild fragrance	Flash point	N/Av.
Odour threshold	N/Av.	Auto-ignition temperature	N/Av.
pH	N/Av.	Sensibility to electrostatic charges	N/Av.
Melting point	<-50 °C (-58 °F)	Sensibility to sparks and/or friction	No
Freezing point	<-50 °C (-58 °F)	Vapour density	>3 (Air = 1)
Boiling point	-26.5 to 82 °C (-15.7 to 179.6 °F)	Relative density	1.48 kg/L (Water = 1)
Solubility	Negligeable (<5%) in water	Partition coefficient n-octanol/water	>4
Evaporation rate	> Éther éthylique	Decomposition temperature	N/Av.
Vapour pressure	1100 to 1125kPa (8250 to 8437.5 mm Hg) @ 20 °C (68 °F)	Viscosity	3 cSt @ 23 °C (73.4 °F)
Percent Volatile	100%	Molecular mass	N/Av.
N/Av.: Not Available N/Av.: Not Applicable Und.: Undetermined N/E: Not Established			

10. Stability and reactivity

Reactivity	No information available.
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	Avoid temperatures over 49 °C. Avoid contact with incompatible materials.
Incompatible materials	Strong oxidizing agents (e.g. chlorine, fluorine, nitric acid, perchloric acid, peroxides, nitrates, chlorates, chromates, permanganates and perchlorates), strong acids (e.g. hydrochloric acid, sulfuric acid, phosphoric acid), strong bases (e.g. hydroxides, solutions of ammonia, amines, carbonates).
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Numerical measures of toxicity	<table> <tr> <td>Methyl nonafluorobutyl ether</td> <td>Ingestion >5000 mg/kg</td> <td>Rat</td> <td>LD50</td> </tr> <tr> <td></td> <td>Inhalation >1 mg/l/4h</td> <td>Rat</td> <td>LC50</td> </tr> <tr> <td>Methyl nonafluoroisobutyl ether</td> <td>Ingestion >5000 mg/kg</td> <td>Rat</td> <td>LD50</td> </tr> <tr> <td></td> <td>Inhalation >1 mg/l/4h</td> <td>Rat</td> <td>LC50</td> </tr> <tr> <td>1,1,1,2-Tetrafluoroethane</td> <td>Inhalation >500000 ppm/4h</td> <td>Rat</td> <td>LC50</td> </tr> <tr> <td>Isopropyl alcohol</td> <td>Ingestion 5045 mg/kg</td> <td>Rat</td> <td>LD50</td> </tr> <tr> <td></td> <td>3600 mg/kg</td> <td>Mouse</td> <td>LD50</td> </tr> <tr> <td></td> <td>Inhalation 66.1 mg/l/4h</td> <td>Rat</td> <td>LC50</td> </tr> <tr> <td></td> <td>Skin 6280 mg/kg</td> <td>Rat</td> <td>LD50</td> </tr> </table>	Methyl nonafluorobutyl ether	Ingestion >5000 mg/kg	Rat	LD50		Inhalation >1 mg/l/4h	Rat	LC50	Methyl nonafluoroisobutyl ether	Ingestion >5000 mg/kg	Rat	LD50		Inhalation >1 mg/l/4h	Rat	LC50	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		Skin 6280 mg/kg	Rat	LD50
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Likely routes of exposure	Skin, eyes, inhalation, ingestion.																																				
Delayed, immediate and chronic effects	<p>Eye contact May cause irritation, redness, tearing and blurred vision. Isopropyl alcohol is slightly to severely irritating on the eyes of rabbits (OECD TG 405). Contact with liquefied gas may cause frostbite.</p> <p>Skin contact May cause dry skin and slight irritation. Skin Irritation/Corrosion, Rabbit (OECD 404) : tests performed with each ingredient of this mixture gave not irritating results.</p> <p>Inhalation In the workplace, the product is rapidly absorbed by respiratory tract. 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. Inhalation in large amounts of 1,1,1,2-Tetrafluoroethane (CAS no 811-97-2) may cause asphyxiation.</p> <p>Ingestion Swallowing will causes digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea.</p> <p>Respiratory or skin sensitization Ingredients present at levels greater than or equal to 0.1% of this product are not skin or respiratory sensitizers.</p> <p>IARC/NTP Classification No ingredients listed.</p> <p>Carcinogenicity Ingredients present at levels greater than or equal to 0.1% of this product are not listed as a carcinogen by IARC, ACGIH, NIOSH, NTP or OSHA.</p> <p>Mutagenicity Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effects.</p> <p>Reproductive toxicity Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause reproduction effects.</p> <p>Specific target organ toxicity - single exposure Central nervous system.</p>																																				

	Specific target organ toxicity - repeated exposure No target organ is listed.
Interactive effects	No information available.
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	<p>Fish - Oncorhynchus mykiss - Rainbow trout LC50 450 mg/L; 96h (CAS no 811-97-2)</p> <p>Aquatic Invertebrate - Daphnia magna EC50 980 mg/L; 48h (CAS no 811-97-2)</p> <p>Algae, Pseudokirchneriella subcapitata EC50 159 mg/L; 96h (CAS no 811-97-2)</p> <p>Fish - Fathead minnow, Pimephales promelas - fresh water LC50 9640 mg/L; 96h (CAS no 67-63-0)</p> <p>Aquatic Invertebrate - Daphnia magna EC50 3644 mg/L; 48 h (CAS no 67-63-0)</p> <p>Plant - Lettuce seed germination, Lactuca Sativa EC50 2100 mg/L; 72 h (CAS no 67-63-0)</p>
Persistence	Persistent in the environment.
Degradability	Degradation of tetrafluoroethane (CAS no 811-97-2) in the atmosphere is slow. The major degradation process for tetrafluoroethane in the atmosphere is oxidation. It has low reactivity towards indirect photo-oxidation by hydroxyl radicals in the troposphere, with an estimated lifetime of 14.3 years for this reaction. Isopropyl alcohol (CAS no 67-63-0) is biodegradable, 49% in 5 days and 70% in 20 days (TOXNET). It does not undergo photolysis. Its atmospheric degradation (OH radical attack) in air has a half-time T _{1/2} of 18 to 25 hours.
Bioaccumulative potential	Based on the measured partition coefficient Log Kow of 1.06, Tetrafluoroethane (CAS no 811-97-2) is expected to have a low potential for bioaccumulation in the environment. Methyl nonafluorobutyl ethers have partition coefficient Log Kow >3, indicating they have a potential to bioaccumulate. The Log Kow value <0.4 and bioconcentration factor (BCF) value <1 for isopropyl alcohol (CAS no 67-63-0) show no potential to bioaccumulate (IUCLID).
Mobility in soil	Tetrafluoroethane (CAS no 811-97-2) is expected to mainly partition to the atmosphere when released with minor partitioning to soil. Isopropyl alcohol (CAS no 67-63-0) is soluble in water and will quickly evaporate into the air. There is no partition in the ground.
Other adverse effects	Tetrafluoroethane (CAS no 811-97-2) does not deplete the ozone layer, but it does have a high global warming potential.

13. Disposal considerations

Container	Important! Prevent waste generation. Use in full. DO NOT pierce, cut, heat, or burn the container, even after use. Depressurize empty container (empty it of its propellant). Dispose of empty container as household waste. 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	This material does not contain marine pollutant.

hazards	
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 2.2
Packing group	
Emergency response guidebook 2016	126
IMO/IMDG - International Maritime Transport	
Classification	UN 1950. AEROSOLS. Class 2.2, Emergency schedules (EmS-No) F-D, S-U
IATA - International Air Transport Association	
Classification	UN 1950. AEROSOLS, NON-FLAMMABLE. Class 2.2.
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
Methyl nonafluoroisobutyl ether	163702-08-7		X		
Methyl nonafluorobutyl ether	163702-07-6		X		
1,1,1,2-Tetrafluoroethane	811-97-2		X		
Isopropyl alcohol	67-63-0	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.
Methyl nonafluoroisobutyl ether	163702-08-7	X								
Methyl nonafluorobutyl ether	163702-07-6	X								
1,1,1,2-Tetrafluoroethane	811-97-2	X								
Isopropyl alcohol	67-63-0	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

No ingredients listed.

Other regulations

HMIS

2	Health
2	Flamability
0	Reactivity
B	Protective Equipment

NFPA

2	3
0	0

TM/MD

16. Other information

Date (YYYY-MM-DD)

AEROCHEM Inc. 2020-03-03

Version

05

Other information

REFERENCES:

- Haz-Map, Information on Hazardous Chemicals and Occupational Diseases, <https://haz-map.com/>
- TOXNET Databases, Toxicology Data Network, NIH U.S. National Library of Medicine, <http://toxnet.nlm.nih.gov/>
- 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>

DATE OF FIRST VERSION OF SDS:
2016-07-08.

CHANGES MADE IN THE VERSION 02:
sections 2, 3, 4, 8, 11, 12 and 15.

DATE OF SECOND VERSION OF SDS:
2016-07-11.

CHANGES MADE IN THE VERSION 03:
section 3.

DATE OF THIRD VERSION OF SDS:
2018-07-13.

CHANGES MADE IN THE VERSION 04:
section 3.

DATE OF VERSION 04 OF SDS:
2019-07-31.

CHANGES MADE IN THE VERSION 05:
section 1.

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

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TM/MD

