SECTION 1. IDENTIFICATION

Product identifier used on the label

: BRAKE CLEANER NON-FLAMMABLE

Product Code(s) : AM7200

Recommended use of the chemical and restrictions on use

Brake cleaner.

Restrictions on use: Not available.

Chemical family : Mixture of: Halogenated hydrocarbon; Propellant

Name, address, and telephone number of Name, address, and telephone number of

the supplier:

the manufacturer:

Radiator Specialty Co., of Canada

Refer to supplier

3-3055 Dundas St West, Suite 50 Mississauga, ON, Canada

L5L 3R8

Supplier's Telephone # : (905) 625-9117 (Mon.- Fri., 8 am - 4 pm)

24 Hr. Emergency Tel # : Not available.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Colourless aerosol spray. Ether like odour.

Most important hazards:

Contents under pressure. Container may explode if heated.

Harmful if inhaled. Irritating to respiratory system and skin. Inhalation may cause central nervous system depression. May cause damage to organs through prolonged or repeated exposure. Cancer hazard. Contains material which can cause cancer. Occupational exposure to the substance or mixture may cause adverse effects. For further information, please refer to section 11 of the SDS.

Toxic to aquatic life with long lasting effects. Avoid release to the environment. See Section 12 for more environmental information.

This product is packaged and sold as a consumer product. The Hazardous Products Act (HPA) does not apply to consumer products [Hazardous Products Act Section 12(j)]. The below WHMIS 2015 classification and labeling information is being provided for informational purposes.

This material is classified as hazardous under Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:

Gases under pressure - Compressed gas

Acute toxicity - Category 4 (Inhalation)

Skin corrosion/irritation - Category 2

Carcinogenicity - Category 1B

Specific target organ toxicity, single exposure - Category 3 (Respiratory irritation; Narcotic effects)

Specific target organ toxicity, repeated exposure - Category 2

Label elements

Hazard pictogram(s)



Signal Word

DANGER!

Hazard statement(s)

Contains gas under pressure; may explode if heated.

Causes skin irritation.

Harmful if inhaled.

May cause respiratory irritation.

May cause drowsiness or dizziness.

May cause cancer.

May cause damage to organs through prolonged or repeated exposure.

Precautionary statement(s)

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe mist or vapour.

Wash exposed skin thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/clothing and eye/face protection.

IF exposed or concerned: Get medical attention/advice.

IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Keep container tightly closed.

Store locked up.

Protect from sunlight. Store in a well-ventilated place.

Dispose of contents/container in accordance with local regulation.

Other hazards

Other hazards which do not result in classification:

Toxic fumes may be released during a fire. Direct eye contact may cause slight or mild, transient irritation. May cause gastrointestinal irritation. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Chemical name	Common name and synonyms	CAS#	Concentration (% by weight)
Perchloroethylene	Tetrachloroethylene PCE	127-18-4	80.0 - 100.0
Carbon dioxide	Carbonic anhydride	124-38-9	1.0 - 5.0

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : If ingested, do not induce vomiting. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention. If vomiting occurs spontaneously,

keep victim's head lowered (forward) to reduce the risk of aspiration.

Inhalation : IF INHALED: Remove person to fresh air and keep comfortable for breathing. If breathing is

difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact: IF ON SKIN: Wash with plenty of soap and water. Wash exposed area thoroughly with soap

and water for at least 15 minutes. If skin irritation occurs: Get medical advice/attention. Take

off contaminated clothing and wash it before reuse.

Eye contact: Rinse immediately with plenty of water, also under the eyelids. IF exposed or concerned:

Get medical advice/attention.

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Most important symptoms and effects, both acute and delayed

: Harmful if inhaled. May cause respiratory irritation. Symptoms may include upper respiratory irritation, coughing and breathing difficulties. Inhalation of high concentrations may cause dizziness, disorientation, incoordination, narcosis, nausea or narcotic effects. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Causes skin irritation. Symptoms may include redness, blistering, pain and swelling. May cause cancer. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing.

May cause damage to organs through prolonged or repeated exposure. May cause kidney or nervous system damage. Symptoms may include fatigue, shortness of breath, weight loss, muscle twitching or cramping, and urine that is cloudy or tea-colored. Direct eye contact may cause slight or mild, transient irritation. Direct eye contact may cause

slight redness.

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Indication of any immediate medical attention and special treatment needed

: Provide general supportive measures and treat symptomatically.

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Dry chemical, foam, carbon dioxide and water fog.

Unsuitable extinguishing media

: Do not use a solid water stream as it may scatter and spread the fire.

Special hazards arising from the substance or mixture / Conditions of flammability

Not considered flammable. This product is contained under pressure, and could explode when exposed to heat and flame. Vapours are heavier than air and collect in confined and low-lying areas. Toxic fumes, gases or vapours may evolve on burning.

Hazardous combustion products

 Carbon oxides; Chlorine; Phosgene; Hydrogen chloride gas; Unidentified organic compounds.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Special fire-fighting procedures

: Move containers from fire area if safe to do so. Cool closed containers exposed to fire with water spray. Shield personnel to protect from venting or rupturing containers. Do not allow run-off from fire fighting to enter drains or water courses. Dike for water control.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Wear appropriate protective equipment. Refer to protective measures listed in sections 7 and 8.

Environmental precautions

 Prevent product from entering drains, sewers, waterways and soil. Avoid release to the environment.

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Methods and material for containment and cleaning up

: Ventilate area of release. Remove all sources of ignition. Prevent further leakage or spillage if safe to do so. For spilled liquids: absorb spill with inert, non-combustible material such as sand, then place into suitable containers. Pick up and transfer to properly labeled containers. Contaminated absorbent material may pose the same hazards as the spilled product. Notify the appropriate authorities as required. Refer to Section 13 for disposal of contaminated material.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Use only outdoors or in a well-ventilated area. Wear suitable protective equipment during handling. Wear protective gloves/clothing and eye/face protection. Do not breathe mist or vapour. Avoid contact with skin, eyes and clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources - No smoking. Avoid contact with incompatible materials. Do not puncture or incinerate. Wash thoroughly after handling. Always replace cap after use.

Conditions for safe storage

Store in a cool, dry, well ventilated area, away from incompatibles. Store locked up. Inspect periodically for damage or leaks. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Protect from sunlight and do not expose to temperatures exceeding 50 °C/122 °F.

Incompatible materials

: Strong oxidizing agents; Strong acids and strong bases; Reactive metals.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:							
Chemical Name	ACGIH TLV OSHA PEL						
	<u>TWA</u>	STEL	<u>PEL</u>	<u>STEL</u>			
Perchloroethylene	25 ppm	100 ppm	100 ppm	200 ppm (Ceiling)			
Carbon dioxide	5000 ppm	30 000 ppm	5000 ppm (9000 mg/m³)	N/Av			

Exposure controls

Ventilation and engineering measures

: Use only outdoors or in a well-ventilated area. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. In case of insufficient ventilation wear suitable respiratory equipment.

Respiratory protection

If airbourne concentrations are above the permissible exposure limit or are not known, use NIOSH-approved respirators. Refer to CSA Z94.3 or other appropriate standards. Advice should be sought from respiratory protection specialists.

Skin protection

: Wear protective gloves/clothing. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact.

Eye / face protection

Wear eye/face protection. Wear as appropriate: Safety glasses with side shields; Tightly fitting safety goggles .A full face shield may also be necessary.

Other protective equipment

Ensure that eyewash stations and safety showers are close to the workstation location. Other equipment may be required depending on workplace standards.

General hygiene considerations

Do not breathe mist or vapour. Avoid contact with eyes, skin and clothing. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Colourless aerosol spray.

Odour : Ether-like.
Odour threshold : N/Av

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Melting/Freezing point Freezing point: - 22.3°C (- 8.14°F)

Melting point: N/Av

Initial boiling point and boiling range

: 121.3°C (250.34°F) (estimation)

Flash point None. Flashpoint (Method) N/Ap Evaporation rate (BuAe = 1) : N/Av Flammability (solid, gas) : N/Ap Lower flammable limit (% by vol.)

N/Ap

Upper flammable limit (% by vol.)

: N/Ap

Oxidizing properties : No oxidizing properties.

Explosive properties : Aerosols are sensitive to mechanical impact. Closed containers are contained under

pressure and may explode if exposed to excess heat for a prolonged period of time.

Vapour pressure 14.2 mmHg @ 20°C (68°F)

Vapour density Relative density / Specific gravity

Specific Gravity: 1.62

Relative density: 1620 kg/m³

Solubility in water < 1.3% @ 25°C (77°F)

Other solubility(ies)

Partition coefficient: n-octanol/water or Coefficient of water/oil distribution

: N/Av **Auto-ignition temperature** : N/Av **Decomposition temperature** : N/Av : N/Av Volatiles (% by weight) 100% Volatile organic Compounds (VOC's)

: 0%

Absolute pressure of container

Viscosity

: N/Av

Flame projection length : None.

Other physical/chemical comments

: Flashback Observed: NO

Chemical heat of combustion: 1.03 kJ/g

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive. May hydrolyze very slowly in the presence of water to form acids.

Stable under normal conditions. May decompose slowly in the presence of light to form Chemical stability

trichloroacetyl chloride and phosgene.

Possibility of hazardous reactions

: Hazardous polymerization does not occur. No dangerous reaction known under conditions

of normal use.

Avoid heat and open flame. Do not use in areas without adequate ventilation. Avoid contact Conditions to avoid

with incompatible materials.

Incompatible materials : Strong oxidizing agents; Strong acids and strong bases; Reactive metals.

Hazardous decomposition products

: Hydrochloric acid; Phosgene; Trichloroacetyl chloride; Trichloroacetic acid.

Refer to Section 5 for additional 'Hazardous combustion products'.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation : YES

Routes of entry skin & eye : YES **Routes of entry Ingestion** : YES Routes of exposure skin absorption

: NO

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation

: Harmful if inhaled. May cause respiratory irritation. Symptoms may include upper respiratory irritation, coughing and breathing difficulties. Inhalation of high concentrations may cause dizziness, disorientation, incoordination, narcosis, nausea or narcotic effects. Inhalation could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. In extremely high concentrations, product may act as an asphyxiant and cause increased breathing and pulse rates, fatigue and unconsciousness.

Sign and symptoms ingestion

: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of larger amounts may cause defects to the central nervous system (e.g. dizziness, headache).

Sign and symptoms skin

: Causes skin irritation. Symptoms may include redness, blistering, pain and swelling.

Sign and symptoms eyes

Direct eye contact may cause slight or mild, transient irritation. Direct eye contact may cause slight redness.

Potential Chronic Health Effects

Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin.

Mutagenicity

: No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity

This material is classified as hazardous under Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:

Carcinogenicity - Category 1B. May cause cancer. Symptoms may include persistent

coughing, shortness of breath, coughing up blood and wheezing.

This product contains Perchloroethylene, which is classified as carcinogenic by IARC

(Group 2A) and ACGIH (Category A3).

Reproductive effects & Teratogenicity

: This product is not expected to cause reproductive or developmental effects.

Sensitization to material Specific target organ effects

Not expected to be a skin or respiratory sensitizer.

This material is classified as hazardous under Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:

Specific target organ toxicity, single exposure - Category 3. May cause respiratory irritation.

May cause drowsiness or dizziness.

Specific target organ toxicity, repeated exposure - Category 2. May cause damage to organs through prolonged or repeated exposure. May cause kidney or nervous system damage. Symptoms may include fatigue, shortness of breath, weight loss, muscle twitching or cramping, and urine that is cloudy or tea-colored.

Medical conditions aggravated by overexposure

: Pre-existing eye, skin, respiratory, liver, kidney and central nervous system disorders.

Synergistic materials Toxicological data

: None known or reported by the manufacturer.

: This material is classified as hazardous under Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015). Classification:

Acute toxicity - Category 4. Harmful if inhaled.

No data is available on the product itself. The calculated ATE values for this mixture are:

ATE oral = 2600 - 2889 mg/kgATE dermal = 3245 - 3606 mg/kg

ATE inhalation (vapours) = 17.7 - 19.7 mg/L/4H See below for individual ingredient acute toxicity data.

	LC ₅₀ (4hr)	LD ₅₀	
Chemical name	inh, rat	(Oral, rat)	(Rabbit, dermal)
Perchloroethylene	3786 ppm (25.7 mg/L) (vapour) (rat) 2613 ppm (17.7 mg/L) (vapour) (mouse)	2600 mg/kg	> 3245 mg/kg
Carbon dioxide	200 000 ppm/2H (141 421 ppm/4H)	N/Ap (gas)	N/Ap (gas)

Other important toxicological hazards

: Reports have associated repeated and prolonged occupational overexposure to various organic solvents with internal organ, brain and nervous system damage.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

: Toxic to aquatic life with long lasting effects. The product itself has not been tested. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. The product contains the following substances which are hazardous for the environment: Perchloroethylene.
See the following tables for individual ingredient ecotoxicity data.

Ecotoxicity data:

In any diameter	0.0.1	Toxicity to Fish				
<u>Ingredients</u>	CAS No	LC50 / 96h	NOEC / 21 day M Fact			
Perchloroethylene	127-18-4	5 mg/L (Rainbow trout)	N/Av	None.		
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap		

<u>Ingredients</u>	CAS No	Toxicity to Daphnia				
		EC50 / 48h	EC50 / 48h NOEC / 21 day			
Perchloroethylene	127-18-4	8.5 mg/L (Daphnia magna)	0.51 mg/L/28-day	None.		
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap		

<u>Ingredients</u>	CAS No	Toxicity to Algae				
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor		
Perchloroethylene	127-18-4	3.64 mg/L/72hr (Green algae)	N/Av	None.		
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap		

Persistence and degradability

: No data is available on the product itself.

Contains the following chemicals which are not readily biodegradable: Perchloroethylene.

Bioaccumulation potential : The

: The product itself has not been tested. See the following data for ingredient information.

<u>Components</u>	Partition coefficient n-octanol/water (log Kow)	Bioconcentration factor (BCF)
Perchloroethylene (CAS 127-18-4)	3.4	49 (Bluegill sunfish)

Mobility in soil : The product itself has not been tested.

Other Adverse Environmental effects

: No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal

: Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. This material and its container must be disposed of in a safe way. Empty containers retain residue and can be dangerous. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

Methods of Disposal

Dispose of in accordance with federal, provincial and local hazardous waste laws.

SECTION 14. TRANSPORT INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
TDG	UN1950	AEROSOLS	2.2(6.1)	None	2 2
TDG Additional information		as a LIMITED QUANTITY in containers no larger than 125 mL refer to Section 1.17 for additional exemption requirements, if			

Special precautions for user

Appropriate advice on safety must accompany the package. Keep away from heat and

Environmental hazards

This product meets the criteria for an environmentally hazardous material according to the

IMDG Code. See ECOLOGICAL INFORMATION, Section 12.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

: Not applicable.

SECTION 15 - REGULATORY INFORMATION

Canadian Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Canadian National Pollutant Release Inventory (NPRI): This product contains the following substances listed on the NPRI: Perchloroethylene (Part 1, Group A Substance)

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

US Federal Information:

TSCA: All listed ingredients appear on the Toxic Substances Control Act (TSCA) inventory.

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS#	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	New Zealand IOC
Perchloroethylene	127-18-4	204-825-9	Present	Present	(2)-114	KE-33294	Present	HSR001551
Carbon dioxide	124-38-9	204-696-9	Present	Present	(1)-310; (1)-169	KE-04683	Present	HSR001018

SECTION 16. OTHER INFORMATION

AICS: Australian Inventory of Chemical Substances

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ATE: Acute Toxicity Estimate
CAS: Chemical Abstract Services
CSA: Canadian Standards Association
EC50: Effective Concentration 50%

EINECS: European Inventory of Existing Commercial chemical Substances

ENCS: Existing and New Chemical Substances HSDB: Hazardous Substances Data Bank

IARC: International Agency for Research on Cancer

IBC: Intermediate Bulk Container

IECSC: Inventory of Existing Chemical Substances IMDG: International Maritime Dangerous Goods

Inh: Inhalation

IOC: Inventory of Chemicals

KECI: Korean Existing Chemicals Inventory KECL: Korean Existing Chemicals List

LC: Lethal Concentration

LD: Lethal Dose N/Ap: Not Applicable N/Av: Not Available

NIOSH: National Institute of Occupational Safety and Health

NOEC: No observable effect concentration

OECD: Organisation for Economic Co-operation and Development

OSHA: Occupational Safety and Health Administration

PEL: Permissible exposure limit

PICCS: Philippine Inventory of Chemicals and Chemical Substances

RTECS: Registry of Toxic Effects of Chemical Substances

SCBA: Self-Contained Breathing Apparatus

STEL: Short Term Exposure Limit

TDG: Canadian Transportation of Dangerous Goods Act & Regulations

TLV: Threshold Limit Values TWA: Time Weighted Average

WHMIS: Workplace Hazardous Materials Identification System

References

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2018.
 - 2. International Agency for Research on Cancer Monographs, searched 2019.
 - Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2019 (Chempendium, HSDB and RTECs).
 - 4. Material Safety Data Sheets from manufacturer.
 - 5. OECD The Global Portal to Information on Chemical Substances eChemPortal, 2019.

Preparation Date (mm/dd/yyyy)

: 02/20/2019

Other special considerations for handling

: Provide adequate information, instruction and training for operators.

Prepared for:

Radiator Specialty Co. of Canada 3-3055 Dundas St West, Suite 50 Mississauga, ON, Canada, L5L 3R8

Telephone: 905-625-9117 (Mon. - Fri., 8 AM - 4 PM) Please direct all enquiries to Radiator Specialty.

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SAFETY DATA SHEET

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