

**MATERIAL SAFETY DATA SHEET****SECTION 1: IDENTIFICATION****Product identifier** : **BRAKE CLEANER NON-FLAMMABLE****Product Use** : Brake cleaner**Chemical Family** : Mixture.**Manufacturer part no.** : AM720C**Supplier's name and address:****Radiator Specialty Co., of Canada**1711 Aimco Blvd.  
Mississauga, ON, Canada  
L4W 1H7**Manufacturer's name and address:**

Refer to Supplier

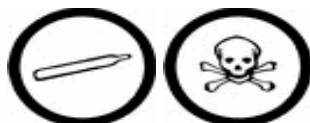
**Information Telephone #** : (905) 625-9117 (Monday - Friday, 8AM - 4PM)**24 Hr. Emergency Tel #** : 613-996-6666 (CANUTEC)**SECTION 2 - HAZARDS IDENTIFICATION**

**Classification** : WHMIS information: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Canadian Controlled Products Regulations (CPR). WHMIS Classification:

- Class A (Pressurized containers);
- Class D1B (Materials Causing Immediate and Serious Toxic Effects, Toxic Material);
- Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material);
- Class D2B (Materials Causing Other Toxic Effects, Toxic Material).

Labelling: Phrases recommended to appear on a supplier label, can be found in Section 15.

WHMIS symbols required on a supplier label:

**Emergency Overview** : Colourless aerosol spray. Ether like odour.**WARNING!**

Contents under pressure. Containers may explode if heated. POISON! May be fatal if too much is inhaled. Liver and kidney injuries may occur. May be harmful or fatal if swallowed in large amounts. Can enter the lungs and cause damage. Causes central nervous system depression. Causes severe skin irritation. Possible cancer hazard - contains material which may cause cancer.

**POTENTIAL HEALTH EFFECTS:****Signs and symptoms of short-term (acute) exposure**

- Inhalation** : May be fatal if too much is inhaled. May cause irritation to the nose, throat and upper respiratory tract. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Liver and kidney injuries may occur. Could result in pulmonary edema (fluid accumulation). Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed. May result in unconsciousness and possibly death.  
In extremely high concentrations, product may act as an asphyxiant and cause increased breathing and pulse rates, fatigue and unconsciousness.
- Skin** : Causes severe skin irritation. Symptoms may include redness and possibly blistering, if product is left on the skin. If product is sprayed directly on skin, symptoms of frostbite may be experienced including numbness, prickling and itching.
- Eyes** : May cause mild eye irritation. Symptoms may include stinging and tearing. If product is sprayed directly into the eyes, could cause freezing of the eye.
- Ingestion** : May cause irritation to the mouth, throat and stomach. May produce mild central nervous system depression characterized by headache, nausea, vertigo, and stupor. Temporary vision impairment (cloudy or blurred vision) is possible. Product may present an aspiration hazard, if ingested in large amounts, causing life-threatening lung injury.

**Effects of long-term (chronic) exposure**

- : Prolonged skin contact may cause dermatitis (rash), characterized by red, dry, itching skin. Some reports have associated repeated, prolonged overexposure to solvents with permanent central nervous system changes. Prolonged or repeated overexposure may cause liver effects. Can cause kidney damage.

**Carcinogenic status**

- : Possible cancer hazard .See TOXICOLOGICAL INFORMATION, Section 11.

**Additional health hazards**

- : See TOXICOLOGICAL INFORMATION, Section 11.

**Potential environmental effects**

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

**SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**

<u>Ingredients</u>	<u>CAS #</u>	<u>Wt. %</u>
Perchloroethylene (Tetrachloroethylene)	127-18-4	90.00 - 100.00
Carbon dioxide	124-38-9	1.00 - 3.00

**SECTION 4 - FIRST AID MEASURES**

- Inhalation** : Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.
- Skin contact** : Remove/Take off immediately all contaminated clothing. Wash exposed area thoroughly with soap and water for at least 15 minutes. Get medical attention.
- Eye contact** : Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists, seek prompt medical attention.
- Ingestion** : Seek immediate medical attention/advice. Do not induce vomiting. Never give anything by mouth to an unconscious person. Guard against aspiration into lungs.
- Notes For Physician** : Immediate medical attention is required. May be fatal if too much is inhaled. Provide general supportive measures and treat symptomatically.

**SECTION 5 - FIRE FIGHTING MEASURES****Fire hazards/conditions of flammability**

- : Not flammable. Closed containers are contained under pressure and may explode if exposed to excess heat for a prolonged period of time. Vapours are heavier than air and collect in confined and low-lying areas. Toxic fumes may be released during a fire.

**Oxidizing properties**

- : None known.

**Explosion data: Sensitivity to mechanical impact / static discharge**

- : Not expected to be sensitive to mechanical impact or static discharge.

**Suitable extinguishing media**

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

**Special fire-fighting procedures/equipment**

- : Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Shield personnel to protect from venting or rupturing containers. Water spray may be useful in cooling equipment exposed to heat and flame.

**Hazardous combustion products**

- : Chlorine; Phosgene; Hydrogen chloride gas; Unidentified organic compounds.

**SECTION 6 - ACCIDENTAL RELEASE MEASURES****Personal precautions**

- : All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up. Refer to protective measures listed in sections 7 and 8.

**Environmental precautions**

- : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces.

**Spill response/cleanup**

- : Ventilate area of release. Remove all sources of ignition. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Notify the appropriate authorities as required. Contaminated absorbent material may pose the same hazards as the spilled product.

**Prohibited materials**

- : None known.

**SECTION 7 - HANDLING AND STORAGE**

- Safe Handling procedures** : Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and flame. Avoid contact with incompatible materials. Do not puncture or incinerate. Wash thoroughly after handling. Always replace cap after use.
- Storage requirements** : Store in a cool, dry, well-ventilated area away from sources of heat, ignition and sunlight. Inspect periodically for damage or leaks. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel.
- Incompatible materials** : Strong oxidizing agents; Strong acids and strong bases; Amines; Reactive metals.
- Special packaging materials** : Always keep in containers made of the same materials as the supply container.

**SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION****Exposure Limits**

<u>Ingredients</u>	<u>ACGIH TLV</u>		<u>OSHA PEL</u>	
	<u>TWA</u>	<u>STEL</u>	<u>PEL</u>	<u>STEL</u>
Perchloroethylene (Tetrachloroethylene)	25 ppm	100 ppm	100 ppm	200 ppm (Ceiling)
Carbon dioxide	5000 ppm	30 000 ppm	5000 ppm (9000 mg/m <sup>3</sup> )	N/Av

**Ventilation and engineering measures**

- : Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

**Respiratory protection**

- : If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised. A self contained breathing apparatus should be used in emergency situations or instances where exposure levels are not known. Advice should be sought from respiratory protection specialists.

**Skin protection**

- : Impervious gloves must be worn when using this product. Wear as appropriate: Viton; polyvinyl alcohol; Silver Shield™; Barrier; Nitrile rubber. The following glove material(s) are not recommended: Butyl rubber; Natural Rubber; Neoprene; PVC. Advice should be sought from glove suppliers. Depending on conditions of use, an impervious apron should be worn.

**Eye / face protection**

- : Chemical splash goggles must be worn when handling this material.

**Other protective equipment**

- : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

**General hygiene considerations**

- : Do not breathe vapours or spray mist. Avoid contact with eyes, skin and clothing. Wash hands thoroughly after using this product, and before eating, drinking or smoking. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

**SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical state</b>	: Liquid aerosol.	<b>Appearance</b>	: Colourless aerosol spray.
<b>Odour</b>	: Ether-like.	<b>Odour threshold</b>	: N/Av
<b>pH</b>	: N/Av		
<b>Boiling point</b>	: 121°C (250°F)	<b>Specific gravity</b>	: 1.60
<b>Melting/Freezing point</b>	: N/Av	<b>Coefficient of water/oil distribution</b>	: N/Av
<b>Vapour pressure (mmHg @ 20° C / 68° F)</b>	: 14.2	<b>Solubility in water</b>	: 0.015% @ 25°C
<b>Vapour density (Air = 1)</b>	: 5.7	<b>Evaporation rate (n-Butyl acetate = 1)</b>	: 0.09
<b>Volatile organic Compounds (VOC's)</b>	: N/Av	<b>Volatiles (% by weight)</b>	: 0%
<b>Flash point</b>	: N/Av (Non-flammable.)		
<b>Flash point Method</b>	: N/Av	<b>Auto-ignition temperature</b>	: N/Av
<b>Lower flammable limit (% by vol.)</b>	: N/Av	<b>Upper flammable limit (% by vol.)</b>	: N/Av

**Flame Projection Length** : N/Av  
**Absolute pressure of container** : N/Av  
**Flashback observed** : N/Av  
**Viscosity** : N/Av  
**General Information** : No additional information.

### Section 10: STABILITY AND REACTIVITY

**Stability and reactivity** : Stable under the recommended storage and handling conditions prescribed. May decompose slowly in the presence of light to form trichloroacetyl chloride and phosgene. May hydrolyze very slowly in the presence of water to form acids.  
**Hazardous polymerization** : Hazardous polymerization does not occur.  
**Conditions to avoid** : Avoid heat and open flame. Avoid contact with incompatible materials. Do not use in areas without adequate ventilation.  
**Materials To Avoid And Incompatibility** : Strong oxidizing agents; Strong acids and strong bases; Amines; 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

**Target organs** : Eyes, skin, respiratory system and digestive system. Liver and kidney injuries may occur. Central nervous system.  
**Routes of exposure** : *Inhalation:* YES *Skin Absorption:* NO *Skin & Eyes:* YES *Ingestion:* YES  
**Irritancy** : Mild eye irritant. Severe skin irritation.  
**Toxicological data** : There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<u>Ingredients</u>	<u>LC<sub>50</sub>(4hr)</u> <u>inh, rat</u>	<u>LD<sub>50</sub></u>	
		<u>(Oral, rat)</u>	<u>(Rabbit, dermal)</u>
Perchloroethylene (Tetrachloroethylene)	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)

**Carcinogenic status** : This product contains Tetrachloroethylene, which is classified as carcinogenic by IARC (Group 2A) and ACGIH (Category A3).  
**Reproductive effects** : Not expected to have other reproductive effects.  
**Teratogenicity** : Not expected to be a teratogen.  
**Mutagenicity** : Not expected to be mutagenic in humans.  
**Epidemiology** : None known or reported by the manufacturer.  
**Sensitization to material** : Not expected to be a skin or respiratory sensitizer.  
**Synergistic materials** : None known or reported by the manufacturer.  
**other important hazards** : Reports have associated repeated and prolonged occupational overexposure to various organic solvents with internal organ, brain and nervous system damage.  
**Conditions aggravated by overexposure** : None known or reported by the manufacturer.

### SECTION 12 - ECOLOGICAL INFORMATION

**Ecotoxicity** : Toxic to aquatic life with long lasting effects. No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. This product contains the following substance which may also be hazardous for the environment: Perchloroethylene.  
  
 See the following tables for individual ingredient ecotoxicity data.

**Ecotoxicity data:**

<u>Ingredients</u>	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Perchloroethylene (Tetrachloroethylene)	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	NOEC / 21 day	M Factor
Perchloroethylene (Tetrachloroethylene)	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 (Tetrachloroethylene)	127-18-4	3.64 mg/L/72hr (Green algae)	N/Av	None.
Carbon dioxide	124-38-9	N/Ap	N/Ap	N/Ap

**Mobility** : No data is available on the product itself.

**Persistence** : No data is available on the product itself.  
Contains the following chemicals which are not readily biodegradable: Perchloroethylene.

**Bioaccumulation potential** : No data is available on the product itself. See the following data for ingredient information.

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

**Other Adverse Environmental effects**



: No additional information.

**SECTION 13 - DISPOSAL CONSIDERATIONS**

**Handling for Disposal** : Handle waste according to recommendations in Section 7. Do not puncture or incinerate containers.

**Methods of Disposal** : Dispose of in accordance with federal, provincial and local hazardous waste laws.

**SECTION 14: TRANSPORT INFORMATION**

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
TDG	UN1950	AEROSOLS	2.2	none	 
<b>TDG Additional information</b>	May be shipped as LIMITED QUANTITY when transported in containers no larger than 1.0 Litre, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption.				

**SECTION 15 - REGULATORY INFORMATION****Labelling:**

WARNING! Contents under pressure. Container may explode if heated. POISON! May be fatal if too much is inhaled. Liver and kidney injuries may occur. May be harmful or fatal if swallowed in large amounts. Can enter the lungs and cause damage. Causes central nervous system depression. Causes severe skin irritation. Possible cancer hazard - contains material which may cause cancer.

Precautions: Use in a well-ventilated area. Wear suitable protective equipment during handling. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Keep away from extreme heat and flame. Avoid contact with incompatible materials. Do not puncture or incinerate containers. Wash thoroughly after handling. Store in a cool, dry, well ventilated area, away from heat and ignition sources.

FIRST AID: If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing stops, provide artificial respiration. For skin contact, immediately remove contaminated clothing then wash thoroughly with soap and water for at least 15 minutes. For eye contact, flush with running water for at least 15 minutes. If ingested, do not induce vomiting. Never give anything by mouth to an unconscious person. For all cases, obtain medical attention immediately.

Refer To Material Safety Data Sheet for further information.

**Canadian Information:**

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

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

**This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.**

**US Federal Information:**

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

**SECTION 16 - OTHER INFORMATION****Legend**

: ACGIH: American Conference of Governmental Industrial Hygienists  
CAS: Chemical Abstract Services  
CPR: Controlled Products Regulation  
EC50: Effective Concentration 50%.  
IARC: International Agency for Research on Cancer  
Inh: Inhalation  
LC: Lethal Concentration  
LD: Lethal Dose  
MSHA: Mine Safety and Health Administration  
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  
RTECS: Registry of Toxic Effects of Chemical Substances  
STEL: Short Term Exposure Limit  
TDG: Canadian Transportation of Dangerous Goods Act & Regulations  
TLV: Threshold Limit Values  
TWA: Time Weighted Average  
TSCA: Toxic Substance Control Act  
WHMIS: Workplace Hazardous Materials Identification System

**References**

- : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2015.  
2. International Agency for Research on Cancer Monographs, searched 2016.  
3. Canadian Centre for Occupational Health and Safety, CCIInfoWeb databases, 2016 (Chempendium, HSDB and RTECs).  
4. Material Safety Data Sheets from manufacturer.  
5. OECD - The Global Portal to Information on Chemical Substances - eChemPortal, 2016.

<b><u>Prepared for:</u></b> Radiator Specialty Co. of Canada 1711 Aimco Blvd. Mississauga, ON, Canada, L4W 1H7 Telephone: 905-625-9117 (Mon. - Fri., 8 AM - 4 PM) Please direct all enquiries to Radiator Specialty.	
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**MSDS Preparation Date (mm/dd/yyyy)**

: 06/22/2007

**MSDS Revision Date (mm/dd/yyyy)**

: 03/17/2016

**Revision No.**

: 3

**Revision Information**

: (M)SDS sections updated:  
8. EXPOSURE CONTROLS / PERSONAL PROTECTION (Skin protection);  
11. TOXICOLOGICAL INFORMATION;  
12. ECOLOGICAL INFORMATION ;  
15. REGULATORY INFORMATION

**END OF DOCUMENT**