MATERIAL SAFETY DATA SHEET

Section 1: Product & Company Identification

Product Name: **PF Precision Cleaner** (aerosol)

Product Number (s): **02190**

Product Use: Precision Electronics Cleaning

Manufacturer / Supplier Contact Information:

In United States:
CRC Industries, Inc.
885 Louis Drive
Warminster, PA 18974
www.crcindustries.com
1-215-674-4300(General)
(800) 521-3168 (Technical)
(800) 272-4620 (Customer Service)

In Canada:
CRC Canada Co.
2-1246 Lorimar Drive
Mississauga, Ontario L5S 1R2
www.crc-canada.ca
1-905-670-2291

In Mexico:
CRC Industries Mexico
Av. Benito Juárez 4055 G
Colonia Orquídea
San Luís Potosí, SLP CP 78394
www.crc-mexico.com
52-444-824-1666

24-Hr Emergency – CHEMTREC: (800) 424-9300 or (703) 527-3887

Section 2: Hazards Identification

Emergency Overview

WARNING: Contents Under Pressure.
Appearance & Odor: Colorless volatile liquid with faint ethereal odor.

Potential Health Effects:

ACUTE EFFECTS:

EYE: May cause mild to moderate eye irritation with tearing, pain or blurred vision.

SKIN: Immediate effects may include irritation, itching, redness and swelling. Prolonged or repeated contact can cause defatting of the skin, with redness and rash.

INHALATION: Overexposure to vapor may cause central nervous system excitation (sleeplessness, tremors) followed by central nervous system depression (dizziness, loss of concentration, drowsiness and confusion). With high exposure levels, effects can include irregular heartbeat or heart palpitations. Product vapors displace air and can cause suffocation especially in a confined space.

INGESTION: The major hazard is aspiration of the liquid into the lungs during swallowing or vomiting. This may result in chemical pneumonia. Symptoms include coughing, gasping, shortness of breath, bluish discoloration of the skin, and fever. Pulmonary edema, confusion, coma and seizures may occur in more serious cases.

CHRONIC EFFECTS: None identified

TARGET ORGANS: None identified

Medical Conditions Aggravated by Exposure: Pre-existing disease of the central nervous system or cardiovascular system.

See Section 11 for toxicology and carcinogenicity information on product ingredients.

Section 3: Composition / Information on Ingredients

COMPONENT	CAS NUMBER	% by Wt.
Decafluoropentane (HFC-43-10mee)	138495-42-8	50 - 60
1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2	35 - 45
Trans-1,2-dichloroethylene	156-60-5	3 - 8
Isopropyl alcohol	67-63-0	< 2

Section 4: First Aid Measures

Eye Contact: Immediately flush with plenty of water for 15 minutes. Call a physician if irritation persists.

Skin Contact: Remove contaminated clothing and wash affected area with soap and water. Call a physician if irritation persists. Wash contaminated clothing prior to re-use.

Inhalation: Remove person to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult give oxygen. Do NOT give epinephrine (adrenaline). Call a physician.

Ingestion: Do NOT induce vomiting unless instructed to do so by a physician. Immediately give 2 glasses of water. Do NOT give stimulants. Get medical attention immediately.

Note to Physicians: Because of possible disturbances of cardiac rhythm, catecholamine drugs such as adrenaline should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

Section 5: Fire-Fighting Measures

Flammable Properties: This product is nonflammable in accordance with aerosol flammability definitions. (See 16 CFR 1500.3(c)(6)). This product does not produce a flame extension.

Flash Point:	None	Upper Explosive Limit:	18 (estimate)
Autoignition Temperature:	ND	Lower Explosive Limit:	6.7 (estimate)

Fire and Explosion Data:

Suitable Extinguishing Media: Choose an extinguishing agent appropriate for the surrounding fire.

Products of Combustion: Product will decompose at high temperatures. Decomposition products include hydrofluoric acid, hydrogen chloride gas, and carbonyl halides, such as phosgene.

Explosion Hazards: Aerosol containers, when exposed to heat from fire, may build pressure and explode.

Protection of Fire-Fighters: Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against suffocation and possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool and to knock down vapors which may result from product decomposition.

Section 6: Accidental Release Measures

Personal Precautions: Use personal protection recommended in Section 8. Avoid inhaling vapors.

Environmental Precautions: Take precautions to prevent contamination of ground and surface waters. Do not flush into sewers or storm drains.

Methods for Containment & Clean-up: Dike area to contain spill. Ventilate the area with fresh air. If in confined space or limited air circulation area, clean-up workers should wear appropriate respiratory protection. Recover or absorb spilled material using an absorbent designed for chemical spills. Place used absorbents into proper waste containers.

Section 7: Handling and Storage

Handling Procedures: Minimize vapor accumulation by providing air circulation. Avoid breathing vapors or mist. Wear eye protection. Wash thoroughly after handling. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. For product use instructions, please see the product label.

Storage Procedures: Store in a cool dry area out of direct sunlight. Aerosol cans must be maintained below 120°F / 49°C to prevent cans from rupturing.

Aerosol Storage Level: I

Section 8: Exposure Controls / Personal Protection

Exposure Guidelines:

	OSHA		ACGIH		OTHER		
COMPONENT	TWA	STEL	TWA	STEL	TWA	SOURCE	UNIT
Decafluoropentane	NE	NE	NE	NE	200	mfr	ppm
1,1,1,2-Tetrafluoroethane	NE	NE	NE	NE	1000	AIHA	ppm
Trans-1,2-dichloroethylene	NE	NE	200	NE	NE		ppm
Isopropyl alcohol	400	NE	200	400	400	NIOSH	ppm

N.E. – Not Established (c) – ceiling (s) – skin (v) – vacated

mfr – manufacturer's recommendation

Controls and Protection:

Engineering Controls: Area should have ventilation to provide fresh air. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at the source, preventing dispersion into the general work area. Use mechanical means if necessary to maintain vapor levels below the exposure guidelines. If working in a confined space, follow applicable OSHA regulations.

Respiratory Protection: None required for normal work where adequate ventilation is provided. If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with organic vapor cartridge. Air monitoring is needed to determine actual employee exposure levels. Use a self-contained breathing apparatus in confined spaces and for emergencies.

Eye/face Protection: For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear splash-proof goggles.

Skin Protection: Use protective gloves such as nitrile, PVA, neoprene or Viton®. Also, use full protective clothing if there is prolonged or repeated contact of liquid with skin.

Section 9: Physical and Chemical Properties

Physical State: liquid

Color: clear, colorless
Odor: faint ethereal
Odor Threshold: ND
Specific Gravity: 1.51
Initial Boiling Point: 131°F / 55°C
Freezing Point: ND
Vapor Pressure: > 200 mmHg @ 77°F / 25°C
Vapor Density: > 2 (air = 1)
Evaporation Rate: very fast
Solubility: slight
Coefficient of water/oil distribution: ND
pH: NA

Volatile Organic Compounds:								
	Federal:	wt %:	6.0	g/L:	90.6	lbs./gal:	0.8
	CARB:	wt %:	59.8	g/L:	903.0	lbs./gal:	7.5

Section 10: Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid temperature extremes. Exposure of this product to high energy sources may yield toxic and/or corrosive decomposition products.

Incompatible Materials: Alkali or alkaline earth metals such as powdered or freshly abraded aluminum, sodium, magnesium, zinc, beryllium, etc.; strong bases such as sodium hydroxide, potassium hydroxide, etc.; oxidizers

Hazardous Decomposition Products: Hydrofluoric acids, hydrogen chloride gas, and carbonyl halides, such as phosgene. Decafluoropentane is incompatible with strong bases and can react to form salts of hydrofluoric acid.

Possibility of Hazardous Reactions: No

Section 11: Toxicological Information

Long-term toxicological studies have not been conducted for this product. The following information is available for components of this product.

Acute Toxicity:

Component	Oral LD50 (rat)	Dermal LD50 (rabbit)	Inhalation LC50 (rat)
Decafluoropentane	> 5 mg/kg	> 5 mg/kg	11,100 ppm/4H
1,1,1,2-Tetrafluoroethane	No data	No data	1500 g/m^3/4H
Trans-1,2-dichloroethylene	1235 mg/kg	> 5 mg/kg	24,100 ppm/4H
Isopropyl alcohol	4700 mg/kg	> 5 mg/kg	16,000 ppm/4H

Chronic Toxicity:

Component	OSHA Carcinogen	IARC Carcinogen	NTP Carcinogen	Irritant	Sensitizer
Decafluoropentane	No	No	No	E & S (mild)	No
1,1,1,2-Tetrafluoroethane	No	No	No	No	No
Trans-1,2-dichloroethylene	No	No	No	E (moderate) / S (mild)	Unknown
Isopropyl alcohol	No	No	No	E (moderate) / S (mild)	No

E – Eye S – Skin R - Respiratory

Reproductive Toxicity: No information available
Teratogenicity: No information available
Mutagenicity: No information available
Synergistic Effects: No information available

Section 12: Ecological Information

Ecological studies have not been conducted for this product. The following information is available for components of this product.

Ecotoxicity: Decafluoropentane – daphnia magna: 11.7 mg/L (48 Hr LC50)
fathead minnow: 27.2 mg/L (96 Hr LC50)
Trans-1,2-dichloroethylene – lepomis marcrochirus: 135 mg/L (96 Hr LC50 static)
Persistence / Degradability: No information available
Bioaccumulation / Accumulation: No information available
Mobility in Environment: No information available

Section 13: Disposal Considerations

Waste Classification: The dispensed liquid product is not a RCRA hazardous waste. (See 40 CFR Part 261.20 – 261.33) Aerosol containers should be fully emptied and depressurized before disposal. Empty aerosol containers may be recycled.

All disposal activities must comply with federal, state, provincial and local regulations. Local regulations may be more stringent than state, provincial or national requirements.

Section 14: Transport Information

US DOT (ground): UN1950, Aerosols, non-flammable, 2.2, Limited Quantity**

ICAO/IATA (air): UN1950, Aerosols, non-flammable, 2.2, Limited Quantity

IMO/IMDG (water): UN1950, Aerosols, 2.2, Limited Quantity

Special Provisions: **This product can be classified and labeled as 'Consumer Commodity, ORM-D' for domestic ground shipping.

Section 15: Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA):
All ingredients are either listed on the TSCA inventory or are exempt. Decafluoropentane is controlled by TSCA Section 5, Significant New Use Rule (40 CFR 721.5645). Precision cleaning is an approved use.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):
Reportable Quantities (RQ's) exist for the following ingredients: Trans-1,2-dichloroethylene (1000 lbs)

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Superfund Amendments Reauthorization Act (SARA) Title III:

Section 302 Extremely Hazardous Substances (EHS): None

Section 311/312 Hazard Categories:

Fire Hazard	No
Reactive Hazard	No
Release of Pressure	Yes
Acute Health Hazard	Yes
Chronic Health Hazard	No

Section 313 Toxic Chemicals: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

None

Clean Air Act:

Section 112 Hazardous Air Pollutants (HAPs): None

Occupational Safety and Health Administration:

This product is regulated under the Hazard Communication Standard.

U.S. State Regulations:

California Safe Drinking Water and Toxic Enforcement Act (Prop 65):

This product may contain the following chemicals known to the state of California to cause cancer, birth defects or other reproductive harm: None

Consumer Products VOC Regulations: This product complies with Consumer Products VOC regulations as an Electronic Cleaner

State Right to Know:

New Jersey:	156-60-5, 67-63-0
Pennsylvania:	156-60-5, 67-63-0
Massachusetts:	156-60-5, 67-63-0
Rhode Island :	67-63-0

Canadian Regulations:

Controlled Products Regulations:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS Hazard Class: A, D2B

Canadian DSL Inventory: All ingredients are either listed on the DSL Inventory or are exempt.

European Union Regulations:

RoHS Compliance: This product is compliant with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003. This product does not contain any of the restricted substances as listed in Article 4(1) of the RoHS Directive.

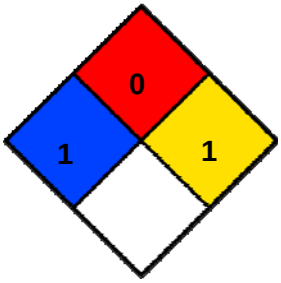
Additional Regulatory Information: None

Section 16: Other Information

HMIS® (II)	
Health:	**1**
Flammability:	**0**
Reactivity:	**1**
PPE:	**B**

Ratings range from 0 (no hazard) to 4 (severe hazard)

NFPA



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Changes since last revision: remove trademark
Section 14: Transport Information

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this MSDS consult your supervisor, a health & safety professional, or CRC Industries.

ACGIH: American Conference of Governmental Industrial Hygienists
CARB: California Air Resources Board
CAS: Chemical Abstract Service
CFR: Code of Federal Regulations
DOT: Department of Transportation
DSL: Domestic Substance List
g/L: grams per Liter
HMIS: Hazardous Materials Identification System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
IMO: International Maritime Organization
lbs./gal: pounds per gallon
LC: Lethal Concentration
LD: Lethal Dose
NA: Not Applicable
ND: Not Determined
NIOSH: National Institute of Occupational Safety & Health
NFPA: National Fire Protection Association
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PMCC: Pensky-Martens Closed Cup
PPE: Personal Protection Equipment
ppm: Parts per Million
RoHS: Restriction of Hazardous Substances
STEL: Short Term Exposure Limit
TCC: Tag Closed Cup
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System