1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: VF 1 for Carbon®

Product Use: Cleaning Solvent

MANUFACTURER/DISTRIBUTOR:

Miller-Stephenson Chemical
55 Backus Ave.
Danbury, Conn. 06810 USA
(203) 743-4447

Emergency Phone Number:
(800) 424-9300

2. HAZARDS IDENTIFICATION

Hazard classification
Serious Eye Damage/Irritation: Category 2B
Specific Target Organ Toxicity (single exposure): Category 2 (Eye, Central Nervous System)
Specific Target Organ Toxicity (single exposure): Category 3

Label elements:
Signal word
Warning

Pictograms

Hazard Statements
Causes eye irritation.
Causes damage to organs (Central nervous system, Eyes)
May cause drowsiness or dizziness.

Precautionary Statements
Do not breathe mist/vapors/spray.
Wash skin thoroughly after handling.
Do not eat, drink, or smoke when using this product.
Use only outdoors or in a well-ventilated area.
IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor/ physician, if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Call a doctor.
If eye irritation persists: Get medical attention.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/ container in accordance with local, regional, national, and international regulations.

Other Hazards
In use, may form flammable/explosive vapor-air mixture. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Misuse or intentional inhalation abuse may lead to death without warning symptoms, due to cardiac effects.

3. INGREDIENTS

Material (s)	CAS No.	Approximate %
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	86 - 89
Methanol	67-56-1	11 - 14

4. FIRST AID MEASURES

Inhalation: Remove patient to fresh air. Get medical attention.

Eye: Immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Continue to rinse. Get medical attention.

Skin: Immediately wash skin with soap and plenty of water. Remove contaminated clothing and shoes. Wash clothing before use. Thoroughly clean shoes before reuse. Get medical attention.

Oral: DO NOT induce vomiting without medical advice. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Get medical attention.

Most important symptoms/effects, acute and delayed: May cause cardiac arrhythmia.
Skin contact may provoke the following symptoms: Dermatitis, Discomfort, Pain, Redness, Rash, Itching, Swelling of tissue, Eye damage
Eye contact may provoke the following symptoms: Irritation, Pain, Tearing, Swelling of tissue, Redness, Impairment of vision, Discomfort
Inhalation may provoke the following symptoms: Eye Damage
Effects of breathing high concentrations of vapor may include: Tiredness, Drowsiness, Central nervous system effects, Convulsions
Adverse effects from repeated inhalation may include central nervous system effects
Ingestion may provoke the following symptoms: Lack of coordination, narcosis, Eye damage
Aspiration may cause pulmonary edema and pneumonitis.
May cause damage to organs.

Notes to Physician: Do not give adrenaline or similar drugs. Because of possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, that may be used in situations of emergency life support should be used with special caution.

5. FIRE FIGHTING MEASURES

Flammability: No flash point was obtained, but the product may release flammable vapor.

Suitable Extinguishing Media: Water spray, Water mist, Dry chemical, Carbon dioxide (CO2)

Unsuitable extinguishing media: None known.

Special hazards: Vapors may form flammable mixture with air. Exposure to decomposition products may be a hazard to health. Hazardous combustion products: Hydrogen fluoride, Carbonyl fluoride, Carbon oxides

Special Fire Fighting Instruction: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

Further information: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers/tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Evacuate personnel to safe area. Ventilate area, especially low or enclosed places where heavy vapor might collect. Use personal protective equipment.

Environmental precautions: **:** Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g.by containment or barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

Spill Cleanup: Contain spillage, and then collect with inert absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

7. HANDLING AND STORAGE

Handling: Use in a well-ventilated area to avoid breathing vapors. Vapors are heavier than air and accumulate in low areas. Use with adequate ventilation. Use only in an area equipped with explosion-proof exhaust ventilation if advised by assessment of the local exposure potential. Do not eat, drink, or smoke. Do not swallow. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.

Storage Conditions: Store in a clean, dry, well-ventilated place. Do not store near sources of ignition, heat, in direct sunlight or where temperatures exceed 46°C (115°F). Take care to prevent spills, waste and minimize release to the environment.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:	TLV (ACGIH)	PEL (OSHA)
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	None Established	None Established
Methanol	200 ppm, TWA	200 ppm, TWA

Respiratory Protection: General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Eye Protection: Avoid eye contact. Use chemical goggles or safety glasses with side shields.

Skin Protection: Avoid contact with skin. Use gloves impervious to this material (eg. Viton) when prolonged or frequently repeated contact occurs. For special applications, we recommend clarifying the resistance of chemicals to the protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often.

Hygiene measures: Do not eat, drink or smoke when using this product. Do not breathe vapors or spray mist. Avoid contact with skin, eyes, or clothing. Wash exposed areas thoroughly after contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Approx. 118°F/48^{O}C

Density: 1.40 g/cc @ 77°F/25^{O}C

Vapor Density (Air=1): 6.1

pH Information: Neutral

Form: Liquid

Color: Colorless

Percent Volatile by Volume: 100

Vapor Pressure: N.A.

Solubility in H_2O: N.A.

Evaporation Rate (CC14=1): N.A.

Appearance: Clear & Colorless

Odor: Ether-like

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Vapors may form flammable mixture with air.

Material and Conditions to Avoid: None known.

Decomposition: No hazardous decomposition products are known

11. TOXICOLOGICAL INFORMATION

1,1,1,2,2,3,4,5,5,5-Decafluoropentane

Information on likely routes of exposure: Inhalation, Skin contact, Ingestion, Eye contact
Acute Oral: LD50: > 5000 mg/kg in rats. Method: OECD Test Guideline 401
Acute Inhalation (vapor): 4 hour LC50: 114.428 mg/l in rats. Method: OECD Test Guideline 403
Acute Dermal: LD50: > 5000 mg/kg in rabbits. Method: OECD Test Guideline 402
Skin Corrosion/Irritation: No skin irritation in rabbits. Method: OECD Test Guideline 404
Serious Eye Irritation/ Eye Irritation: No eye irritation in rabbits. Method: OECD Test Guideline 405
Skin Sensitization: No skin sensitization in Guinea pigs. Buehler Test. Method: OECD Test Guideline 406
Respiratory Sensitization: Not classified based on available information.
Germ Cell Mutagenicity: Weight of evidence does not support classification as a germ cell mutagen.
Carcinogenicity: Not classified based on available information.
Reproductive toxicity: Weight of evidence does not support classification for reproductive toxicity.
STOT-single exposure: Inhalation (vapor): No significant health effects observed in animals at concentrations of 20mg/l/4h or less.
STOT-repeated exposure: Inhalation (vapor): No significant health effects observed in animals at concentrations of 1mg/l/6h/d or less.
Aspiration toxicity: No aspiration toxicity classification.

Methanol

Acute Inhalation toxicity: 3mg/l, 4 hours. Test atmosphere: vapor. Method: Expert judgment. Remarks: Based on national and regional regulations.
Acute Dermal toxicity: 300 mg/kg, (estimated in humans). Method: Expert judgment
Acute Oral Toxicity: 300 mg/kg, (estimated in humans). Method: Expert judgment
Skin Corrosion/Irritation: No irritation in rabbits.
Serious Eye Irritation/ Eye Irritation: No irritation in rabbits.
Skin sensitization: Test Type: Maximization Test. No skin sensitization in Guinea pigs. Based on data similar materials.
Respiratory Sensitization: Not classified based on available information.
Germ Cell Mutagenicity: Genotoxicity in vivo and vitro tests were negative.
Carcinogenicity: Negative in mice by inhalation for 18 months.
Reproductive Toxicity: Test Type: Embryo-fetal development. Positive in mice by ingestion. Remarks: The effects were seen only at maternally toxic doses.
STOT-single exposure: May cause damage to organs (Eyes, Central Nervous System)
STOT-repeated exposure: Not classified based on available information.
Aspiration toxicity: Not classified based on available information.

12. ECOLOGICAL INFORMATION

1,1,1,2,2,3,4,5,5,5-Decafluoropentane

96 hour LC50 in Danio rerio (zebra fish): 13 mg/l. Method: OECD Test Guideline 203
48 hour EC50 in Daphnia magna (Water flea): 10.6 mg/l. Method: OECD Test Guideline 202
72 hour EC50 in Selenastrum capricornutum (Green algae): >120 mg/l. Method: OECD Test Guideline 201
21 days NOEC in Daphnia magna (Water flea): 1.72 mg/l. Method: OECD Test Guideline 211

Biodegradability: Not readily biodegradable. Method: OECD Test Guideline 301D
Bioaccumulative potential: Bioaccumulation is unlikely. Partition coefficient: noctanol/water: log Pow: 2.4 (75 °F / 24 °C)
Mobility in soil: No data available

Methanol

96 hour LC50 in Lepomis marochirus (Bluegill sunfish): 15,400 mg/l
48 hour EC50 in Daphnia magna (Water flea): >10,000 mg/l
96 hour EC50 in Pseudokirchneriella subcapitata (Green algae): 22,000 mg/l. Method: OECD Test Guideline 201
200 hour NOEC in Oryzias latipes (Orange-red killfish): 15,800 mg/l

Biodegradability: Readily biodegradable. 95% biodegradable in 20 days
Bioaccumulative potential: Species: Leuciscus idus (Golden orfe) BCF <10. Partition coefficient: n-octanol/water: log Pow: -0.77
Mobility in soil: No data available

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local regulations. Remove to a permitted waste disposal facility. The product should not be allowed to enter drains, water courses or the soil.

14. TRANSPORT INFORMATION

U.S. DOT
Not Regulated

IATA
Not Regulated

IMDG
Not Regulated

15. REGULATORY INFORMATION

U.S. Federal Regulations

TSCA: All ingredients are listed in TSCA inventory.

1,1,1,2,2,3,4,5,5,5-Decafluoropentane (CAS# 138495-42-8) - The United States Environmental Protection Agency has established a Significant New Use Rule (SNUR; 40 CFR 721.5645) for this product. This product contains one or more substances which requires export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D.

CERCLA Reportable Quantity: Methanol, 67-56-1: Component RQ is 5000 lbs

SARA 304 Extremely Hazardous Substances Reportable Quantity: This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity: This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards: Specific target organ toxicity (single or repeated exposure)

SARA 313: This material contains the following component that is subject to reporting levels established by SARA Title III, Section 313: Methanol

State Regulations (U.S.)

California Proposition 65: This product contains Methanol, known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

16. OTHER INFORMATION

NPCA-HMIS Ratings:

Health	- 3
Flammability	- 0
Reactivity	- 0

Personal Protective rating to be supplied by user depending on the conditions.

FOR INDUSTRIAL USE ONLY

DATE: AUGUST 1, 2023

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.