1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: ShieldSys™ X-DZ
High Performance Surface Lubricant

Product Use: Surface Lubricant and Coating

MANUFACTURER/DISTRIBUTOR:

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

Emergency Phone Number:
(800) 424-9300

2. HAZARDS IDENTIFICATION

GHS Hazard classification
Not a dangerous substance or mixture according to 29 CFR 1910.1200

GHS Label elements:
Pictogram: not required
Signal word: not required

Other hazards which do not result in classification or are not covered by GHS
Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.
Misuse of intentional inhalation abuse may lead to death without warning symptoms, due to cardiac effects.
The thermal decomposition vapors of fluorinated polymers may cause polymer fume fever with flu-like symptoms in humans, especially when smoking contaminated tobacco.

3. INGREDIENTS

Material (s)	CAS No.	Approximate %
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	138495-42-8	85 – 95

4. FIRST AID MEASURES

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

Eye: In case of contact, flush eyes with water. Get medical attention if irritation develops and persists.

Skin: Wash skin with water and soap after contact. Get medical attention if symptoms occur.

Oral: If swallowed, DO NOT induce vomiting. Get medical attention if symptoms occur. Rinse mouth thoroughly with water.

Most important symptoms and effects, both acute and delayed: May cause cardiac arrhythmia.
Inhalation may provoke the following symptoms: Dizziness, Irritation, Shortness of breath
Skin contact may provoke the following symptoms: Irritation, Discomfort, Itching, Redness, Swelling of tissue
Eye contact may provoke the following symptoms: Irritation, Lachrymation, Redness, Discomfort

Notes to Physician: 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

Flash Point: Does not flash **Method:** TCC

Suitable Extinguishing Media: Water spray, Alcohol-resistant foam, Dry Chemical, Carbon Dioxide (CO2).

Unsuitable extinguishing media: None known.

Specific hazards during fire-fighting: Containers may rupture under fire conditions. Exposure to combustion products may be a hazard to health.

Hazardous combustion products: Hydrogen fluoride, Carbonyl fluoride, Carbon oxides, Metal oxides, Nitrogen oxides, Potentially toxic fluorinated compounds.

Special Fire Fighting Instruction: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Use water spray to cool containers. Evacuate personnel to safe area. Use personal protective equipment. Self-contained breathing apparatus (SCBA) maybe required if a large amount of material is released under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up. Evacuate personnel, thoroughly ventilate area. In case of insufficient ventilation use wear suitable respiratory equipment.

Environmental precautions: Dike spill. Prevent material from entering sewers, waterways, or low areas. Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillage cannot be contained.

Methods and materials for containment and clean up: If containers rupture or leak, evacuate the area and provide ventilation. Only personnel equipped with proper respiratory and skin/eye protection should be permitted in area of large spill. Soak up with earth, sand, vermiculite or inert absorbent material. Place in a container for disposal according to local/national regulations (Section 13).

7. HANDLING AND STORAGE

Handling: Use in a well-ventilated area to avoid breathing vapors. Use only with adequate ventilation. Where ventilation is inadequate, use appropriate respiratory protection. Avoid contact with skin, eyes, or clothing. Wash thoroughly after handling. Take care to prevent spills, waste and minimize release to the environment.

Storage Conditions: Store in a clean, dry, well-ventilated place. Do not store near sources of heat, in direct sunlight or where temperatures exceed 52°C (125°F).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:	**TLV (ACGIH)**	**PEL (OSHA)**
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	Not Established	Not Established

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 to chemicals of 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: 131°F (55.0˚C)

Percent Volatile by Volume: 85 - 95%

Density: 1.58 g/cc @ 77°F/25°C

Vapor Pressure: 235 mmHg @ 77°F/25°C

Vapor Density (Air=1): N.A.

Solubility in H_2O: Insoluble

pH Information: Neutral

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

Form: Liquid

Appearance: White Dispersion

Color: White

Odor: Slight

10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.

Chemical stability: Stable under normal conditions.

Possibility of hazardous reactions: Hazardous decomposition products will be formed at elevated temperatures.

Material and Conditions to Avoid: None known.

Hazardous decomposition products: Hydrofluoric acid, Carbonyl difluoride, Carbon dioxide, Carbon monoxide

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
Acute Inhalation (vapor): 4 hour LC50: 114 mg/l in rats
Acute Dermal: LD50: > 5000 mg/kg in rabbits
Skin Corrosion/Irritation: No skin irritation in rabbits.
Serious Eye Irritation/ Eye Irritation: No eye irritation in rabbits.
Skin Sensitization: No skin sensitization in Guinea pigs.
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 as a germ cell mutagen.
STOT-single exposure: Not classified based on available information.
STOT-repeated exposure: No significant health effects observed in animals at concentrations of 1mg/l/6h/d or less.
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 Oncorhynchus mykiss (rainbow trout): 13.9 mg/l
96 hour LC50 in Pimephales promelas (fathead minnow): 27.2 mg/1
96 hour LC50 in Danio rerio (zebra fish): 13 mg/l
48 hour LC50 in Daphnia magna (Water flea): 11.7 mg/l
72 hour EC50 in Pseudokirchneriella subcapitata (Green algae): >120 mg/l
21 days NOEC in Daphnia magna (Water flea): 1.72 mg/l

Biodegradability: Not readily biodegradable.
Bioaccumulative potential: Bioaccumulation is unlikely.
Mobility in soil: No data available

13. DISPOSAL CONSIDERATIONS

Comply with federal, state, and local regulations. Remove to a permitted waste disposal facility.

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. Also, this product requires an export notification under TSCA Section 12(b) and 40 CFR Part 707 Subpart D.

CERCLA Reportable Quantity: This material does not contain any components with a CERCLA RQ.

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 RQ.

SARA 311/312 Hazards: No SARA Hazards

SARA 313: The chemicals listed below may not be intentionally present in the product; however, it is possible that it may be present as an impurity and the maximum concentration would be:
3,3,4,4,5,5,6,6,7,7,8,8,8-Tridecafluorooctanesulphonic acid, CAS No.: 27619-97-2, <15 ppb
Hexafluoropropylene oxide dimer acid, CAS No.: 13252-13-6, <5.4 ppb
Perfluorooctanoic acid, CAS. No.: 335-67-1, <2.5 ppb
Perfluorobutanoic acid, CAS No.: 375-22-4, <0.08 ppb

U.S. State Regulations

California Proposition 65:
WARNING: This product can expose you to chemicals including pentadecafluorooctanoic acid, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. Note to User: This product is not made with PFOA nor is PFOA intentionally present in the product; however, it is possible that PFOA may be present as an impurity at background (environmental) levels.

16. OTHER INFORMATION

NPCA-HMIS Ratings:

Health	- 0
Flammability	- 0
Physical hazard	- 0

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

FOR INDUSTRIAL USE ONLY

REVISION DATE: January 27, 2026