1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Name: MS-532N
DPMS-N0616B-1
Contact Re-Nu®

Product Use: Electrical Contact Cleaning

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 2
Specific Target Organ Toxicity (single exposure): Category 3.

Label elements:
Signal word
Warning

Pictogram

Hazard Statements
Causes serious eye irritation.
May cause respiratory irritation.
May cause drowsiness or dizziness.

Prevention Statements
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Use only in a well-ventilated area.
Wear eye protection/face protection.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTER or doctor/ physician if you feel unwell
If eye irritation persists: Get medical advice/ attention.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/ container to an approved waste disposal plant.

Other Hazards
Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Prolonged skin contact may defat the skin and produce dermatitis. May cause cardiac arrhythmia. Misuse or intentional inhalation abuse may lead to death without warning.

3. INGREDIENTS

Material (s)	CAS No.	Approximate %
1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)	138495-42-8	22 – 30
Trans,1,2-Dichloroethylene	156-60-5	55 – 65
Isopropyl Alcohol	67-63-0	14 - 16

4. FIRST AID MEASURES

Inhalation: Remove patient to fresh air, lie down. Keep patient warm and at rest. If not breathing, give artificial respiration. Give oxygen as necessary, if qualified personnel is available. Get medical attention if necessary.

Eye: Flush with large amounts of water for at least 15 minutes, lifting eyelids until no evidence of the chemical remains. Get medical attention. Remove contact lenses, if present and easy to do. Continue to rinse.

Skin: Wash skin with warm water after contact. Wash contaminated clothing before use. Get medical attention if necessary.

Oral: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Give 2 glasses of water. If vomiting occurs, lean victim forward to reduce the risk of aspiration. Call a physician.

Most important symptoms/effects, acute and delayed: Dizziness

Notes to Physician: Do not give adrenaline or similar drugs. Unless in situations of emergency life support and then needs to be used with special caution.

5. FIRE FIGHTING MEASURES

Flammability: This product is not flammable. Does not flash.

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

Unsuitable extinguishing media: No applicable data available.

Special hazards: Fire or intense heat may cause violent rupture of packages. The product is not flammable. Vapors may form flammable mixture with air. Hazardous combustion products: Hydrogen fluoride, Fluorinated hydrocarbons, Carbonyl fluoride, Carbon oxides, Hydrogen chloride.

Special Fire Fighting Instruction: In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decomposition products may be a hazard to health.

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

Safeguards (Personnel): Evacuate personnel to safe area. Ventilate area, especially low or enclosed places where heavy vapors might collect. In case of insufficient ventilation, wear suitable respiratory equipment.

Environmental precautions: If containers rupture, prevent material from entering sewers, waterways, or low areas. Should not be released into the environment. Do not allow contact with soil, surface or ground water.

Spill Cleanup: Contain spillage, and then collect with non-combustible 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 only with adequate ventilation. Use appropriate respiratory protection when ventilations is inadequate. When using do not eat, drink, or smoke. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.

Storage Conditions: Store tightly sealed in a clean, dry place, and well ventilated place. Do not store in temperatures that exceed 125^{O}F/52^{O}C, because the containers could leak or rupture from pressure and expansion. Protect from freezing temperatures. If solvent is stored below -10°C (14°F), mix prior to use.

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
Trans,1,2-Dichloroethylene	200 ppm, TWA	200 ppm, 8 Hr. TWA
Isopropyl Alcohol	400 ppm, STEL	400 ppm, 8 Hr. TWA

Respiratory Protection: Avoid breathing vapors, mists or spray. Use with sufficient ventilation especially for enclosed or low places. Vapors are heavier than air and can cause suffocation by reducing oxygen. In poorly ventilated areas, use an approved self-contained breathing apparatus.

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 when prolonged or frequently repeated contact occurs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 131°F/55°C

Percent Volatile by Volume: 100

Density: 1.26 g/cc @ 77°F/25°C

Vapor Pressure: 302 mmHg @ 77°F/25°C

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

Solubility in H_2O: N.A.

pH Information: Neutral

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

Form: Liquid

Appearance: Clear & Colorless

Color: Colorless

Odor: Alcohol

10. STABILITY AND REACTIVITY

Stability: Stable at normal temperatures and storage conditions.

Chemical stability: No decomposition if stored and applied as directed.

Possibility of hazardous reactions: No applicable data available.

Material and Conditions to Avoid: Open flames and high temperatures. Alkali or alkaline earth metals, Powder metals, Powdered metal salts, Nitrogen oxides, acids, bases and strong oxidizing agents.

Decomposition: This product can be decomposed by high temperatures (flame, glowing metal surfaces, etc.) forming Fluorinated hydrocarbons, Hydrogen fluoride, Carbon dioxide, Carbon monoxide, Hydrogen chloride gas, Carbonyl fluoride.

11. TOXICOLOGICAL INFORMATION

Animal Data

1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)

Inhalation: 4 hour LC50: 114mg/l in rats, Central nervous system effects, Convulsions
Oral: LD50: > 5,000 mg/kg in rats
Dermal: LD50: > 5,000 mg/kg in rabbits
Skin Irritation: No skin irritation, rabbit
Eye Irritation: No eye irritation, rabbit
Skin Sensitization: Did not cause sensitization on laboratory animals., guinea pig
Repeated dose toxicity: Inhalation, rat
No toxicologically significant effects were found.
Mutagenicity: Animal testing showed no mutagenic effects.
Reproductive toxicity: Animal testing showed no reproductive toxicity.
Teratogenicity: Animal testing showed no developmental toxicity.

Trans-1,2-Dichloroethylene

Oral: LD50: 7902 mg/kg in rats
Dermal: LD50: > 5,000 mg/kg in rabbits
Inhalation: 4 hour LC50: 95.4 mg/l in rats
Target Organs: Central nervous system, narcosis
Skin irritation: Mild skin irritation in rabbits
Eye irritation: Mild eye irritation in rabbits
Repeated dose toxicity: Inhalation, 90 days in rats: No toxicologically significant effects were found.
Oral, 90 days in rats: No toxicologically significant effects were found.
Mutagenicity: Did not cause genetic damage in animals.
Test on bacterial or mammalian cell cultures did not show mutagenic effects.
Reproductive toxicity: Animal testing showed no reproductive toxicity.
Teratogenicity: Animal testing showed no developmental toxicity.

Isopropyl Alcohol

Acute Toxicity
Ingestion: LD50, Rat 4,700 - 5,800 mg/kg. Approximate. Lethal Dose, Human 100 ml
Skin Absorption
LD50, Rabbit 13,000 mg/kg
Inhalation
LC50, 8 h, Vapor, Rat, female 19,000 ppm
Sensitization Skin
Did not demonstrate the potential for contact allergy in mice.
Repeated Dose Toxicity
In animals, effects have been reported on the following organs: Liver. Kidney. Kidney effects have been observed in male rats. These effects are believed to be species specific and unlikely to occur in humans. Observations in animals include: Lethargy.

Chronic Toxicity and Carcinogenicity Inhalation:
Did not cause cancer in laboratory animals.
Developmental Toxicity
Isopropanol has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Reproductive Toxicity
In animal studies, did not interfere with reproduction.
Genetic Toxicology
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative

12. ECOLOGICAL INFORMATION

Aquatic Toxicity:

HFC-43-10mee:

96 hour LC50 in fathead minnows: 27.2 mg/l
96 hour LC50 in rainbow trout: 13.9 mg/l
48 hour LC50 in Daphnia magna: 11.7 mg/l
72 hour EC50 in green algae: > 120mg/l

Trans-1,2-Dichloroethylene

96 hour LC50 in bluegill sunfish: 74 mg/l
48 hour LC50 in Daphnia magna: 79mg/l
96 hour EC50 in green algae: 798 mg/l

Isopropyl Alcohol

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).
Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas), flow-through, 96 h: 9,640 - 10,400 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 48 h, immobilization: 7,550 - 13,299 mg/l
Aquatic Plant Toxicity
EC50, alga Scenedesmus sp., Growth rate inhibition, 72 h: > 1,000 mg/l
Toxicity to Micro-organisms
EC50; activated sludge, respiration inhibition: > 1,000 mg/l

13. DISPOSAL CONSIDERATIONS

If recycling is not practicable, dispose of in compliance 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) is controlled by TSCA Section 5, Significant New Use Rule (SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal, film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.

SARA 313 Regulated Chemicals: Trans-dichloroethylene

16. OTHER INFORMATION

NPCA-HMIS Ratings:

Health	- 1
Flammability	- 0
Reactivity	- 1

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

FOR INDUSTRIAL USE ONLY

REVISION DATE: JUNE 2016

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.