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Material Safety Data Sheet
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1 Product Identification

Tradename:
3M(TM) Novec(TM) 4200 Electronic Surfactant
Product ID:
98-0212-3225-5 98-0212-3226-3 98-0212-3227-1
Intended Use of Product:
Electronic liquid
Division:
BE - Film and Materials Resource Div

2 Composition/Information on Ingredients

Ingredient Name	CAS Number	Percentage
WATER	7732-18-5	70 - 75
Ammoniated Perfluoroalkyl Sulfonamide	484024-67-1	10 - 30
AMMONIUM HYDROXIDE	1336-21-6	1 - 5

NOTE:

Each percentage is expressed as the ratio of the weight of the ingredient to the weight of the controlled product.

3 Hazards Identification

Critical Hazards:

Corrosive (Eye Burns): Signs/symptoms can include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision. See Sections 7 and 11 for further information.

4 First Aid Measures

Instructions for Eye Contact:

Immediately flush eyes with large amounts of water for at least 15 minutes. Get immediate medical attention.

Instructions for Skin Contact:

Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

Instructions for Inhalation:

Remove person to fresh air. If signs/symptoms develop, get medical attention.

Instructions for Ingestion:

Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

5 Fire Fighting Measures

Flash point:	Not applicable
Lower Explosive Limit (%):	Not applicable
Upper Explosive Limit (%):	Not applicable
Autoignition temperature:	Not Available

Suitable Extinguishing Media:

Non-combustible. Choose material suitable for surrounding fire.

Exposure Hazards during Fire:

No unusual fire or explosion hazards are anticipated. Exposure to extreme heat can give rise to thermal decomposition.

Combustion Products from Fire:

- Carbon monoxide - During Combustion;
- Carbon dioxide - During Combustion;
- Hydrogen Fluoride - During Combustion;
- Oxides of Nitrogen - During Combustion;
- Oxides of Sulfur - During Combustion;

Fire Fighting Procedures:

Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

NFPA: Health	3
NFPA: Fire	0
NFPA: Reactivity	0

NFPA: Unusual Reaction Hazard	none
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6 Accidental Release Measures

Personal Precautions:

Observe precautions from other sections. Call 3M- HELPS line (1-800-364-3577) for more information on handling and managing the spill.

Spill Response:

Ventilate the area with fresh air. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Avoid contact with incompatible materials listed in the Reactivity Data Section. Dilute in a large excess of water. Carefully, and with stirring, add appropriate dilute acid such as sulfamic acid or vinegar. Confirm neutrality. Working from around the edges of the spill inward, cover with bentonite,

vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Clean up residue with water. Collect the resulting residue containing solution. Place in a metal container approved for use in transportation by appropriate authorities. The container must be lined with polyethylene plastic or contain a plastic drum liner made of polyethylene. Cover, but do not seal for 48 hours. Dispose of collected material as soon as possible.

7 Handling and Storage

Storage Requirements:

No data available.

Incompatible Materials:

Store away from heat; Store out of direct sunlight. Store away from acids;

Ventilation:

Keep container in well-ventilated area.

Use Instructions:

For industrial or professional use only. Avoid eye contact. Avoid skin contact. Avoid breathing of vapours, mists or spray. Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8 Exposure Controls/Personal Protection

Personal Protection

Eye Protection:

Avoid eye contact. The following should be worn alone or in combination, as appropriate, to prevent eye contact: Indirect vented goggles; Indirect vented goggles and full faceshield;

Hand Protection:

The following glove material(s) are recommended: nitrile rubber;

polyethylene/ethylene vinyl alcohol;

Skin Protection:

Avoid skin contact.

Respiratory Protection:

Avoid breathing of vapours, mists or spray.

During heating: Use a positive pressure supplied-air respirator if there is a potential for exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

Select one of the following approved respirators based on airborne concentration of contaminants and in accordance with regulations:

Fullface air-purifying respirator with ammonia-methylamine cartridges Fullface supplied-air respirator;

Do not breathe thermal decomposition products.

Ingestion (Prevention):

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

Recommended Ventilation:

Use with appropriate local exhaust ventilation. Provide appropriate local exhaust ventilation on open containers. Provide appropriate local exhaust when product is heated. For those situations where the fluid might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits. If ventilation is not adequate, use respiratory protection equipment.

Ingredient Exposure Data

WATER (7732-18-5)

LD50 (rat, oral)

> 90 ml/kg

LC50 (rat, inhalation/4 hours)

No data available.

Exposure Limits

No data available.

Ammoniated Perfluoroalkyl Sulfonamide (484024-67-1)

Specific Ingredient Data

No data available.

LD50 (rat, oral) No data available.

LC50 (rat, inhalation/4 hours) No data available.

Exposure Limits

No data available.

AMMONIUM HYDROXIDE (1336-21-6)

LD50 (rat, oral) 350 mg/kg

LC50 (rat, inhalation/4 hours) No data available.

Exposure Limits

CMRG: TWA 25 ppm (specific form) as ammonia;

CMRG: STEL 35 ppm (specific form) as ammonia;

9 Physical and Chemical Properties

Physical form,Color,Odour: Liquid; Clear; ammonia odour;
Odour Threshold: No data available.
pH: 10
Boiling point/boiling range: 65.56 C
Melting point/melting range: Not applicable
Vapour pressure: 0.34 psia at 20 C
Water Solubility: Complete
Specific gravity: 1.1 Water=1
Vapour density: Not Available
Volatile organic compounds: No data available.
Evaporation rate: No data available.
Viscosity: 10 centipoise
Percent Volatile: 68 - 75 %

10 Stability and Reactivity

Conditions to Avoid:

Store away from heat; Store out of direct sunlight.

Materials to Avoid:

Strong acids;

Hazardous Decomposition:

Carbon monoxide - During Combustion;

Carbon dioxide - During Combustion;

Hydrogen Fluoride - During Combustion;

Oxides of Nitrogen - During Combustion;

Oxides of Sulfur - During Combustion;

Stability and Reactivity:

Stable.

Hazardous polymerization will not occur.

11 Toxicological Information

Effects from Eye Contact:

Corrosive (Eye Burns): Signs/symptoms can include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Effects from Skin Contact:

Mild Skin Irritation: Signs/symptoms can include localized redness, swelling, and itching.

Effects from Inhalation:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

If thermal decomposition occurs: May be harmful if inhaled.

Effects from Ingestion:

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be harmful if swallowed.

Sensitization Information:

No data available.

Carcinogenicity:

No data available.

Mutagenicity:

No data available.

Reproductive Effects:

No data available.

Component Based Information:

No data available.

Product Based Information:

No data available.

Other Effects & Information:

Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of

fluoride as a Short Term Exposure Limit. The odour threshold for HF is 0.04 ppm, providing good warning properties for exposure.

12 Ecological Information

Environmental Data:

Ecotoxicity Data:

Not determined.

Ecofate Data:

Not determined.

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13 Disposal Considerations

Product as Sold:

Dispose of waste product in a facility permitted to accept chemical waste. Combustion products will include HF. Facility must be capable of handling halogenated materials.

Product Packaging:

No data available.

Special Instructions:

Since regulations vary, consult applicable regulations or authorities before disposal.

14 Transportation Information

Transportation of Dangerous Goods

TDG Classification:

Non-Regulated Material

Special Information:: Contact 3M for more information.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulation, packaging, 3M

policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling, or marking requirements. The original 3M package is certified for Canadian ground shipment only. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.

International Dangerous Goods Classification

15 Regulatory Information

WHMIS Classification: D2B

NOTE:

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

Product Certifications:

One or more of the components in this material is not listed on the TSCA inventory but, is approved for specific commercial use(s) under a US EPA low volume exemption (up to 10,000 kg/yr). Research and development production quantities are not included in the 10,

000 kg/yr limit.

One or more of the components of this product have been notified to ELINCS (European List of Notified or New Chemical Substances). Certain restrictions apply. Contact the selling division for additional information.

16 Other Information

Reason for Reissue:

MSDS initial issue

The information in this Material Safety Data Sheet (MSDS) is believed

to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

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