MATERIAL SAFETY DATA SHEET

PRODUCT NAME : VISIONCOAT 2000

1. Product and Company Identification

Product name: VisionCoat 2000

Synonyms: None

Item Numbers: E45022100

European Contact Details

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Toll Free: 1-800-848-9800

24 h Emergency telephone number:

Chemtrec: 1-800-424-9300

2. Hazards Identification

EMERGENCY OVERVIEW

Odourless, colourless, non-flammable liquid. The liquid when properly handled according to good working and hygienic practices is not dangerous to human health. Thermal decomposition may produce toxic products including perfluoro-isobutylene and hydrogen fluoride. Trace amounts of decomposition products may occur at 200 °C, with an increased rate of decomposition above 200 °C.

For short and long term exposure effects see Section 11 Toxicological data.

Eye Effects: Short-term exposure may cause slight irritation.

Skin Effects: Short-term exposure may cause slight irritation.

Ingestion/Oral Effects: No health effects are expected.

Inhalation Effects: The product is not expected to be inhaled in any appreciable quantities under normal ambient conditions. Inhalation of thermal decomposition products may cause severe irritation of the respiratory tract, retention of fluid and swelling in the lungs (oedema) and damage bones and teeth (fluorosis).

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MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Repeated contact may aggravate pre-existing skin conditions.

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	1	Health	1	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight Hazard
Instability	0	Reactivity	0	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe Hazard

3. Composition/Information on Ingredients

Ingredient	% Weight	CAS No	Hazard class*	Risk phrase*
Perfluoro Compounds, C5-18	100	86508-42-1	Not applicable	R53

*Hazard class & Risk phrase. These columns are only completed for ingredients which are classified as hazardous under EU Directive No 1272/2008 (as amended) and are present in sufficient concentration to make the overall substance hazardous. In all other situations, the column will be completed as “Not applicable”.

4. First Aid Measures

Eyes: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

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

Ingestion/Oral: No need for first aid is anticipated. If signs/symptoms develop, get medical attention.

Inhalation: If signs/symptoms develop, remove person to fresh air. If fumes from heated product are inhaled, immediately remove to fresh air and give oxygen or artificial respiration as indicated. Get immediate medical attention for fume inhalation.

Other Information: This product is not expected to be irritating to the eyes, skin or respiratory system at room temperature conditions. This assessment does not account for contaminants from product use. The suggested first aid measures are basic first aid measures for removal of foreign materials from the skin and/or eyes.

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5. Fire Fighting Measures

Extinguishing Media:	The product is non-combustible. Use the agent most appropriate to extinguish the surrounding fire. Cool containers with water until well after fire is out.
Fire and Explosion Hazard:	Toxic fumes (which may include hydrogen fluoride and perfluoroisobutylene) may be given off at elevated temperatures.
Special Protective Equipment for Fire Fighters:	Use self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During fire irritating and highly toxic gases may be generated by thermal decomposition or combustion. Wear appropriate protective clothing to prevent contact with skin and eyes.

For Flammability Properties - see Section 9

6. Accidental Release Measures

Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel.
Isolate the area of the spill. Wear appropriate protective equipment (See Section 8). Ventilate the area with fresh air. Contain the spill. (Dyke well ahead of large spills for later recycling or disposal.) Prevent discharge into sewers, drains or watercourses.

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. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible.

7. Handling and Storage

Handling:	Keep away from sources of ignition. Keep container tightly closed. Avoid inhalation of vapours, mists or spray. No smoking: Smoking while using this product can result in contamination of the tobacco and/ or smoke and lead to the formation of hazardous decomposition products. Store work clothes separately from other clothing, food and tobacco products. Launder work clothes frequently. Dispose of contaminated clothes, shoes and other clothing items which cannot be properly cleaned.
Storage:	Store in tightly closed containers in cool, dry and well-ventilated areas. Store away from heat, direct sunlight, sources of ignition, and incompatible materials: see Section 10 “Stability and Reactivity”.

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8. Exposure Controls/Personal Protection

Exposure Limits:

Ingredient	ACGIH - TLV -	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
Perfluoro Compounds, C5-18	Not applicable	Not applicable	Not applicable

Personal Protection:

Engineering Measures: No special ventilation is required under normal operating conditions. Where the product might be exposed to extreme overheating due to misuse or equipment failure, provide local exhaust ventilation in combination with enclosed processes as necessary to maintain levels of thermal decomposition products below their exposure guidelines.

Respiratory Protection: No respiratory protection is required under normal conditions of use. If thermal degradation products are expected, use self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Hand/Skin Protection: Avoid skin contact with hot material. Wear appropriate gloves when handling this material to prevent thermal burns. Nitrile rubber gloves are recommended.

Eye/Face Protection: Wear safety glasses/goggles with side shields. Ensure an eyewash facility is available.

Hygiene Measures: Practice good workplace hygiene. Do not eat or smoke when handling. Wash thoroughly after handling with soap and water.

Other/General Protection: Launder clothing regularly.

9. Physical and Chemical Properties

Appearance and Odour	Colourless, odourless liquid	Boiling point	90-107 / 194-225	°C/°F
pH (as supplied)	No data available	Freezing Point	Not applicable	°C/°F
Solubility in Water	Insoluble	Auto Ignition	Not applicable	°C/°F
Volatile Content by Volume	No data available	Flash Point	Not applicable	°C/°F
Specific Gravity	1.8			
Vapour Pressure (mbar)	56 @ 20 °C	Vapour Pressure (Torr)	42 @ 68 °F	

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10. Stability and Reactivity

Stability: Stable.

Material/Conditions to Avoid: Finely divided active metals; Alkali and alkaline earth metals.
Heat (Prolonged exposure to temperatures above 200ºC).

Hazardous Decomposition: During combustion Carbon monoxide, Carbon dioxide, Hydrogen Fluoride and Perfluoroisobutylene (PFIB) may be emitted.
The odour threshold for Hydrogen Fluoride is 0.04 ppm, providing good warning properties for exposure.
NOTE: 200 ºC is the recommended temperature limit for a system's entire fluid charge during continuous operation. In certain systems/applications designed to operate below 200 ºC, small portions of the fluid charge may exceed this temperature for brief periods, for example, during failure of immersed electronics. In such applications, thermal decomposition is often insignificant or its effects easily mitigated with in situ fluid treatment. In air filtration or "scrubber" applications, airstreams containing fluid vapours may be deliberately heated above 200 ºC. In such applications, the fluid residence time is short and oxygen gas (known to suppress the formation of PFIB) is present. Under these conditions, significant thermal decomposition is not observed and the safety of perfluorocarbon fluids is well established.

Hazardous Polymerisation: Will not occur.

11. Toxicological Information

For a comprehensive description for the various toxicological (health) effects which may arise if the user comes into contact with the substance or preparation refer to Section 2 Hazards Identification.

Animal data:

LD50 value: No data available.

LC50 value: No data available.

Carcinogenicity:

No known carcinogenic effects.

12. Ecological Information

This product is completely fluorinated (perfluorinated), or contains perfluorinated portions. Pefluoroalkyl groups resist degradation in most natural environments. Perfluoro compounds (PFCs) are photochemically stable and expected to persist in the atmosphere for more than 1000 yrs. PFCs have high global warming potentials (GWP), exceeding 7000 (100-yr ITH calculated using the IPCC 2001 methodology).

The Ozone Depletion Potential (ODP) of this product is Zero.

Precautions should be taken to prevent direct release of this substance to the environment.

Ecotoxicity: This low-solubility substance has insignificant toxicity to aquatic organisms. Lowest LL50 or EL50 is >1000 mg/l (LL50 and EL50 are similar to LC50 and EC50, but tests the water phase from incompletely-miscible mixtures).

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Ecotoxicological Information:

Test Organism	Test Type	Result
Water flea, Daphnia magna	48 hours Effect Concentration 50%	>1500 mg/l
Fathead Minnow, Pimephales promelas	96 hours Lethal Concentration 50%	>1000 mg/l

Chemical Fate Information:

Test Type	Result
Chemical Oxygen Demand	Nil
20 days Biological Oxygen Demand	Nil

13. Disposal Considerations

Reclaim and return the product for recycling if possible. Dispose of the product in accordance with all local and national waste disposal requirements.

The product can be incinerated, in the presence of a combustible material, in an approved industrial or commercial facility capable of handling halogenated materials/waste.

14. Transport Information

This product is not classified as dangerous under transport regulations.

PARAMETER	EUROPEAN	CANADIAN TDG	UNITED STATES DOT
Proper Shipping Name	Not applicable	Not applicable	Not applicable
Hazard Class	Not applicable	Not applicable	Not applicable
Identification Number	Not applicable	Not applicable	Not applicable
Shipping Label	Not applicable	Not applicable	Not applicable

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15. Regulatory Information

European Regulatory Information

This product has been classified in accordance with EU Regulation No 1272/2008 (as amended) on the Classification, Labelling and Packaging of Substances and Mixtures.

Classified as dangerous to supply:	No
Risk Phrases:	R53 - May cause long-term adverse effects in the aquatic environment
Safety Phrases:	Not applicable
Symbols:	None

United States Regulatory Information

All materials contained in this product are either listed on, or are exempt from, the U.S. Toxic Substances Control Act (TSCA) Inventory.

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and 40 CFR Part 372.

California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

OSHA Regulatory Status: This product is not classified as hazardous under OSHA regulations. Fumes from heated product are classified as hazardous.

Canadian Regulatory Information

WHMIS Classification: Not applicable

All ingredients in this product are included in the Canadian DSL.

16. Other Information

This MSDS is compiled in accordance with ANSI Z400.1 and Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Sources of information for this data sheet:

- 3M “Fluorinert FC-77 Electronic Liquid” Material Safety Data Sheet. Document id: 10-3791-0. Version: 13.01. Issue Date: 16/03/2010.

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Glossary:

ACGIH - American Conference of Governmental Industrial Hygienists; **ANSI** - American National Standards Institute; **Canadian TDG** - Canadian Transportation of Dangerous Goods; **CAS** - Chemical Abstracts Service; **Chemtrec** - Chemical Transportation Emergency Center (US); **DSL** - Domestic Substances List; **EH40 (UK)** - HSE Guidance Note EH40 Occupational exposure limits; **EL** - Effect Level; **GWP** - Global Warming Potential; **HMIS** - Hazardous Material Information Service; **IPCC** - Intergovernmental Panel on Climate Change; **ITH** - Integration Time Horizon; **LC** - Lethal Concentration; **LD** - Lethal Dose; **LL** - Lethal Level; **MSHA** - Mine Safety and Health Administration; **NFPA** - National Fire Protection Association; **NIOSH** - National Institute for Occupational Safety and Health; **ODP** - Ozone Depletion Potential; **OSHA** - Occupational Safety and Health Administration, US department of Labour; **PEL** - Permissible exposure limit; **PFC** - Perfluoro Compounds; **PFIB** - Perfluoroisobutylene; **SARA (Title III)** - Superfund Amendments and Reauthorization Act; **SARA 313** - Superfund Amendments and Reauthorization Act, Section 313; **TLV** - Threshold Limit Value; **TSCA** - Toxic Substances Control Act Public Law 94-469; **US DOT** - US Department of Transportation; **WHMIS** - Workplace Hazardous Materials Information System.

Revisions:

August 2010 - Data Sheet updated to reflect the latest supplier safety information.
