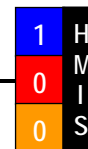




MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

MATERIAL SAFETY DATA SHEET



NAME:

COMPOUND FR-220 HF

PRODUCT # 391201

1. PRODUCT AND COMPANY IDENTIFICATION

EMERGENCY RESPONSE INFORMATION:

Company Offices:	812-273-6000	Weekdays
CHEMTREC:	800-424-9300	24-Hour Service
Steven T. Hale:	812-265-2703	Evenings and Weekends
David R. Goodman, Jr.:	812-273-6213	Evenings and Weekends

PREPARED DATE: 11-15-07

PREPARED BY: Marjorie E. Hare

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Clear, water-white liquid with an ammonia-like odor. Causes burns to skin, eyes and alimentary canal. Harmful if swallowed.

POTENTIAL HEALTH EFFECTS:

EYES: Causes burns.

SKIN: Causes burns.

INGESTION: Harmful if swallowed.

INHALATION: May cause nasal and respiratory irritation.

CHRONIC EFFECTS / CARCINOGENICITY: This material contains no ingredient above de minimus concentrations known or suspected to cause cancer. Chronic exposure to morpholine has apparently been found to cause liver abnormalities and damage to kidneys, eyes and lungs in laboratory animals.

POTENTIAL ENVIRONMENTAL EFFECTS: This material contains no ingredient above de minimus concentrations known to persist in the environment.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>SYNONYM</u>	<u>CAS NO.</u>	<u>% BY WEIGHT</u>
Morpholine	None	110-91-8	5-15

4. FIRST AID MEASURES

EYES: Immediately flush with large quantities of cool water continuously for at least 15 minutes. Call a physician.

SKIN: Immediately flush with large quantities of cool water continuously for at least 15 minutes. Call a physician. Remove contaminated clothing and shoes. Do not put contaminated clothing and shoes back on. Wash clothing and shoes thoroughly in soap and water; rinse repeatedly in clean water and dry before reuse.

INGESTION: Do not induce vomiting. Give water. Never give anything by mouth to an unconscious person. Call a physician.

INHALATION: Move subject to fresh air and get medical attention.

SIGNS AND SYMPTOMS OF EXPOSURE: Contacted areas may exhibit irritation and can be burned if not flushed immediately. Eye contact is likely to lead to impairment or loss of vision. Excessive inhalation can cause nasal and respiratory irritation. Swallowing can cause nausea, vomiting, diarrhea, irritation and burns to stomach, mouth, throat, etc.

PRIMARY ROUTE(S) OF ENTRY: Eyes, skin, inhalation.



MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

NAME:

COMPOUND FR-220 HF

PRODUCT # 391201

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: **FLASH POINT:** None prior to boiling (TOC, ASTM D 1310).
FLAMMABLE LIMITS:
LEL: N.D.
UEL: N.D.

EXTINGUISHING MEDIA: As appropriate for surrounding fire.

FIRE FIGHTING INSTRUCTIONS: Use NIOSH / MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Contain liquid spills with sand and absorb on inert material. Eliminate all ignition sources. Ventilate area. Avoid breathing vapor. Dispose with solid waste. See Waste Disposal Method. Flush remainder to drain with water.

7. HANDLING AND STORAGE

PRECAUTIONS: Normal for alkaline materials. Store away from acids. Keep container closed when not in use.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Use good ventilation. Local exhaust is recommended if TLVs are exceeded.

RESPIRATORY PROTECTION: Use NIOSH / MSHA approved positive pressure supplied air respirator for mists where airborne exposure is excessive.

SKIN PROTECTION: Impermeable type rubber gloves. Other equipment as required to avoid contact.

EYE PROTECTION: Goggles and faceshield necessary.

GENERAL HYGIENE CONSIDERATIONS: Eyewash facility and emergency shower should be in close proximity.

EXPOSURE GUIDELINES:

<u>CHEMICAL IDENTITY</u>	<u>CAS NO.</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Morpholine	110-91-8	20 ppm (skin)	20 ppm (skin)

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE & ODOR:	Clear water-white liquid with an ammonia-like odor.		
BOILING POINT (°F.):	215	SPECIFIC GRAVITY (WATER = 1):	1.01
VAPOR PRESSURE (mm Hg):	N.D.	PERCENT VOLATILE BY VOLUME (%):	100
VAPOR DENSITY (Air = 1):	N.D.	EVAPORATION RATE (WATER = 1):	N.D.
SOLUBILITY IN WATER:	Complete.	pH (100%):	11.0 – 11.5
FLASH POINT (Method used):	None prior to boiling (TOC, ASTM D 1310).	pH (1% by volume):	10.5 – 11.0
LEL:	N.D.		
UEL:	N.D.		

10. STABILITY AND REACTIVITY

STABILITY: Material is stable.

INCOMPATIBILITY (Materials to Avoid): Acids, strong oxidizing agents, halogenated hydrocarbons. Sodium nitrite or other nitrosating agents in contact with morpholine could form suspected cancer-causing nitrosamines.

CONDITIONS TO AVOID: No data found.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, ammonia and other nitrogen compounds, formaldehyde.

HAZARDOUS POLYMERIZATION: Will not occur.



MADISON CHEMICAL CO., INC.

3141 Clifty Drive • Madison, IN 47250

NAME:

COMPOUND FR-220 HF

PRODUCT # 391201

11. TOXICOLOGICAL INFORMATION

This material, as a whole, has not been tested. This material contains no ingredient above de minimus concentrations known or suspected to cause cancer. Chronic exposure to morpholine has apparently been found to cause liver abnormalities and damage to kidneys, eyes and lungs in laboratory animals.

12. ECOLOGICAL INFORMATION

This material contains no hazardous air pollutants (HAPS). This material contains no ingredient above de minimus concentrations known to persist in the environment.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Normal for alkaline wastes containing amines. May require pH adjustment for neutralization. Dispose in accordance with local, state and federal regulations.

14. TRANSPORTATION INFORMATION

DOT PROPER SHIPPING DESCRIPTION: UN3267, Corrosive, liquid, basic, organic, n.o.s., (contains morpholine), 8, PG III, ERG# 153.

15. REGULATORY INFORMATION

TSCA STATUS: All ingredients are listed on the TSCA inventory.

CERCLA REPORTABLE QUANTITY: None established.

SARA 311 / 312 HAZARD CLASSES:	<input checked="" type="checkbox"/> Acute Health	<input checked="" type="checkbox"/> Chronic Health
	<input type="checkbox"/> Fire	<input type="checkbox"/> Reactive
	<input type="checkbox"/> Sudden Release of Pressure	

SARA 312 INFORMATION: Storage of 10,000 pounds or more requires filing a Tier 2 form. This material is not an extremely hazardous substance (EHS). Threshold planning quantity is 10,000 pounds.

SARA 313 INFORMATION: This material contains the following substances subject to the reporting requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

<u>CHEMICAL NAME</u>	<u>CATEGORY CODE</u>	<u>CAS NO.</u>	<u>% BY WEIGHT</u>
None			

STATE REGULATORY INFORMATION:

CALIFORNIA (PROPOSITION 65): California has not identified the ingredients listed in Section 3 as known to cause cancer or reproductive toxicity.

16. OTHER INFORMATION

MSDS STATUS: Revised Sections 1, 3, 4, 7, 8 and 16 on 11-15-07.

PRECAUTIONARY LABELING: **DANGER!** Causes burns to skin, eyes and alimentary canal.
Harmful if swallowed.
Contains morpholine, a strong alkaline material.

FOR INDUSTRIAL USE ONLY – KEEP OUT OF THE REACH OF CHILDREN

MATERIAL SAFETY DATA SHEET

Thank you for your interest in, and use of, this product. This product and all others supplied by Madison Chemical Co., Inc. can be used safely with proper protective equipment and proper handling practices consistent with label instructions and the MSDS. Before using any of this product, be sure to read the complete label and the Material Safety Data Sheet.

TERMS AND ABBREVIATIONS

Listed by Section

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

HMS: - Hazardous Materials Identification System codes are a system developed by the National Paint and Coatings Association for rating the hazard potential of a chemical under normal workplace conditions. These risk assessments are indicated by a numerical rating given in each of three (3) hazard areas (Health / Flammability / Physical Hazard) ranging from a low of zero to a high of 4.

SECTION 2 – HAZARDS IDENTIFICATION

Chronic Effects are adverse effects that are most likely to occur from repeated exposure over a long period of time. A Carcinogen is a chemical listed by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Safety and Health Administration (OSHA) as a definite or possible human cancer causing agent.

Potential Environmental Effects: Chemicals listed in this section have a CERCLA RQ, are considered a toxic chemical listed under SARA Section 313, or have other known environmental hazards.

CERCLA – Comprehensive Environmental Response, Compensation and Liability Act of 1980. This Act designates a Reportable Quantity (RQ) for hazardous substances and provides the notification requirements for releases or spills.

SARA Section 313 – Superfund Amendments and Reauthorization Act aka Emergency Planning and Community Right to Know Act (EPCRA)

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical substances are listed that are determined to be potential health or physical hazards based on the criteria established in the OSHA Hazard Communication Standard – 29 CFR 1910.1200.

Chemical Abstract Services (CAS) Number – A universally accepted numbering system for chemical substances.

SECTION 4 – FIRST AID MEASURES

These are considered **EMERGENCY** procedures only; the exposed person should be examined by a physician as soon as possible. The Signs and Symptoms of Exposure listed here are **ACUTE** effects of the product. An Acute Effect is an adverse effect on the human body from a single exposure with symptoms developing almost immediately after exposure or within a relatively short time.

SECTION 5 – FIRE FIGHTING MEASURES

Flash Point refers to the temperature at which a liquid will give off enough flammable vapors to form an ignitable mixture with air near the surface of the liquid or within the test vessel. Flammable Limits refer to the range of gas or vapor concentration (as % by volume in air) which will burn or explode if an ignition source is present. **LEL** – Lower Explosive Limit; **UEL** – Upper Explosive Limit

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

MSHA – Mine Safety and Health Administration. **NIOSH** – National Institute for Occupational Safety and Health

The Time Weighted Average (TWA) is the airborne concentration at which most workers can be exposed without any expected adverse effects.

ACGIH – American Conference of Governmental Industrial Hygienists

TLV – Threshold Limit Value - A set of time weighted average exposure limits, established by ACGIH, for a normal 8-hour day and a 40-hour work-week.

OSHA – Occupational Safety and Health Administration

PEL – Permissible Exposure Limit – A set of time weighted average exposure values, established by OSHA, for a normal 8-hour day and a 40-hour work-week.

CEILING LIMIT – The concentration that should not be exceeded in the workplace during any part of the working exposure.

SKIN – Skin contact with substance can contribute to overall exposure.

THORACIC FRACTION – Applicable for those materials that are hazardous when deposited anywhere within the lung airways and the gas-exchange region.

STEL – Short Term Exposure Limit – Maximum concentration for a continuous 15 minute exposure period.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

All physical properties listed on MSDS are typical values not specifications!

BOILING POINT – The approximate boiling point of liquids.

VAPOR PRESSURE – This refers to the pressure (usually measured in millimeters of mercury) of a vapor in equilibrium with its liquid form.

VAPOR DENSITY – This refers to the relative weight of a vapor or gas compared with an equal volume of air. As compared with air which is set at 1, vapors with less density or weight will rise and those with greater density or weight will sink.

SOLUBILITY IN WATER – A description of the amount of the product capable of dissolving in water.

SPECIFIC GRAVITY – This refers to the ratio of the density of the material to the density of water where water = 1.

PERCENT VOLATILE BY VOLUME – The percent of a liquid that evaporates at 65°F. to 75°F.

EVAPORATION RATE – Refers to the rate of change from the liquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water).

pH – A value representing the acidity or alkalinity of an aqueous solution (Highly Acidic pH = 1; Neutral pH = 7; Highly Alkaline pH = 14).

SECTION 10 – STABILITY AND REACTIVITY

STABILITY – This is to indicate stability under reasonably foreseeable conditions of storage, use or misuse.

INCOMPATIBILITY – Keep product away from listed substances or conditions to prevent hazardous reactions.

CONDITIONS TO AVOID – List of conditions that should be avoided for reasons of safety and performance.

HAZARDOUS DECOMPOSITION PRODUCTS – Breakdown products expected to be produced upon product decomposition by extreme heat or fire.

HAZARDOUS POLYMERIZATION – This indicates the tendency of the product's molecules to combine with themselves in a chemical reaction releasing excess pressure and heat.

SECTION 11 – TOXICOLOGICAL INFORMATION

Listed are any known chronic or carcinogenic data on specific ingredients.

SECTION 12 – ECOLOGICAL INFORMATION

Listed are any ingredients that have a CERCLA RQ and any ingredients that are listed under the Clean Air Act Amendments of 1990. The Act required EPA to establish regulations setting emission standards for Hazardous Air Pollutants (HAPS). If the product contains an ingredient listed under SARA Section 313 that is also stated here.

SECTION 14 – TRANSPORTATION INFORMATION

DOT (Department of Transportation) shipping description for the product.

SECTION 15 – REGULATORY INFORMATION

TSCA Status – Toxic Substances Control Act – A federal law requiring all commercial chemical substances to appear on an inventory maintained by the EPA.

CERCLA Reportable Quantity – The amount of the specific ingredient that, when released into the environment must be reported to the National Response Center, and other regulatory agencies.

SARA 311 / 312 Hazard Classes – The appropriate characteristics have an X in front of all that apply.

SARA 312 INFORMATION – All storage of 10,000 pounds or greater of non-Extremely Hazardous Substances (EHS) requires filing a Tier 2 form. Substances which are designated in SARA Title III to be Extremely Hazardous Substances will have a much lower threshold planning quantity. These reports go to emergency planning agencies.

SARA 313 INFORMATION – An ingredient listed in this section is subject to the reporting requirements of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (Code of Federal Regulations).