



MATERIAL SAFETY DATA SHEET

FIRESTORM

Version: 2.1
Date of Issue: 06/26/2007
Date printed: 06/27/2007

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : FIRESTORM

Chemical name: 1,1'-Dimethyl-4,4'-bipyridinium dichloride

Use of substance/preparation: Herbicide

Supplier: Chemtura Corporation
199 Benson Road
Middlebury, CT 06749 USA

Emergency telephone number: CHEMTREC (24 hours) 800-424-9300
Chemtura Corporation Emergency Response (24 hours) 800-292-5898

Environmental, Health and Safety Department: 866-430-2775

Prepared by Product Safety Department Date of Issue: 06/26/2007
(US) +1 866-430-2775
(EU) +44 (0) 1753.603.000
Email: MSDSRequest@chemtura.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER!

TOXIC
MAY BE FATAL IF SWALLOWED.
MAY BE FATAL IF INHALED.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.
CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
CAUSES SUBSTANTIAL BUT TEMPORARY EYE INJURY.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	% BY WEIGHT
1,1'-Dimethyl-4,4'-bipyridinium dichloride CAS# 1910-42-5	43.8
Inerts CAS# -	56.2



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4. FIRST AID MEASURES

Swallowing

Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

Inhalation

Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

Skin contact

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

Eye contact

Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lens, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for further treatment advice.

5. FIRE-FIGHTING MEASURES

Flammable limits

Lower limit: Non explosive.

Upper limit:

NFPA CLASSIFICATION

Health: 4	Flammability: 1	Reactivity: 1	Special provisions:
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Hazardous combustion products

Combustion may produce the following products:

- Carbon dioxide.
- Carbon monoxide.
- Chlorine.
- Hydrogen chloride.
- Toxic fumes.

Special fire fighting procedures

Do not discharge extinguishing waters into streams, rivers and lakes.

Special protective equipment for firefighters

Body covering protective clothing, full "turn-out" gear.
Self-contained breathing apparatus.

Extinguishing media

Suitable: **Large fires:**
 - alcohol-type foam or universal-type foams
 Small fires:
 - CO2
 - dry chemical

Unsuitable: - water jets

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Evacuate unnecessary personnel., Avoid all contact with material., Wear suitable protective equipment.

Environmental precautions

Prevent from entering sewer system, surface water or soil.

Methods for cleaning up



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Observe government regulations.

Small spills: Absorb on inert material such as sand, earth, vermiculite.
Collect for disposal.

Large spills Dike to contain spill.
Pump excess material into suitable container (metal drums, metal tank, or such).

7. HANDLING AND STORAGE

HANDLING

Handling precautions

Wear recommended personal protection equipment., Warn personnel about the dangers of the product., Keep container tightly closed.

Other precautions

NOTE TO END-USERS: The employee protection recommendations on this MSDS may differ from those on the product label. For normal use of this product, always refer to the personal protective equipment requirements on the product label.

STORAGE

Storage requirements

Store in a cool, dry place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

<u>Component</u>	<u>Country</u>	<u>Type</u>	<u>Value</u>	<u>Remark</u>
1,1'-Dimethyl-4,4'-bipyridinium dichloride	USA	TWA, OSHA	0.5 mg/m ³	Respirable

PERSONAL PROTECTION

Respiratory protection

Toxic vapors may be evolved., NIOSH approved respirator with any N, R, P or HE filter.

Hand protection / protective gloves

Chemical resistant protective gloves, (Category A)

Eye protection

Full face shield.

Skin protection

Chemical resistant protective clothing.

Other protective equipment

Eye bath, Safety shower

Industrial hygiene measures

Before eating, drinking or smoking, wash hands and face thoroughly with soap and water.

ENGINEERING CONTROLS

Ventilation

Provide local exhaust or process enclosure ventilation system.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Color Dark



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Odor Green
Strong Pungent Unpleasant

OTHER PROPERTIES

Boiling point 105 °C
pH 5.0
1%, solution
Specific gravity (H2O=1) 1.126
Solubility in water Miscible
Evaporation rate (Butyl Acetate=1) Not available
Flash point Non-Flammable
Lower explosion limits Non explosive.
Percent volatiles Negligible

10. STABILITY AND REACTIVITY

Stability: This product is stable under normal storage and handling conditions.

Stability - Conditions to avoid:

Avoid temperatures:
<0 °C

Incompatible materials:

Reacts with:
Aluminum.
Some metals (hydrogen release) e.g. Alumina

Hazardous combustion products:

Combustion may produce the following products:
Carbon dioxide.
Carbon monoxide.
Chlorine.
Hydrogen chloride.
Toxic fumes.

Hazardous polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

GENERAL

The following information is applicable to a component of this material:

Component data 1,1'-Dimethyl-4,4'-bipyridinium dichloride Acute toxicity - Swallowing:	LD50 - Rat (Females) Result: 283 mg/kg Remark: Highly toxic.
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Component data 1,1'-Dimethyl-4,4'-bipyridinium dichloride Acute toxicity - Skin absorption:	LD50 - Rat Result: > 2,000 mg/kg Remark: Slightly toxic.
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<u>Component data</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride Acute toxicity - Inhalation:	LC50 - Rat Result: 0.0006 mg/l Exposure time: 4 h Remark: Highly toxic.
<u>Component data</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride Skin irritation - Skin contact:	Species: Rabbit Result: Slight
<u>Component data</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride Eye irritation - Eye contact:	Species: Rabbit Result: Moderate
<u>Component data</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride Sensitization:	Result: Non sensitizing.

CARCINOGENICITY

Component (1,1'-Dimethyl-4,4'-bipyridinium dichloride): No evidence of carcinogenic activity

TOXICITY TO REPRODUCTION/FERTILITY

Component(1,1'-Dimethyl-4,4'-bipyridinium dichloride): Negative

12. ECOLOGICAL INFORMATION

The following information is based on a component of this material:

<u>Component ecotoxicology</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride <u>Acute toxicity fish:</u>	LC50 - Bluegill (<i>Lepomis macrochirus</i>) Result: 13 ppm
<u>Component ecotoxicology</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride <u>Acute toxicity fish:</u>	LC50 - Rainbow trout (<i>Salmo gairdneri</i>) Result: 55 ppm
<u>Component ecotoxicology</u> 1,1'-Dimethyl-4,4'-bipyridinium dichloride <u>Acute toxicity to aquatic invertebrates:</u>	LC50 - Water flea (<i>Daphnia magna</i>) Result: 4.0 mg/l

13. DISPOSAL CONSIDERATIONS

General: Dispose of in accordance with appropriate Federal, State, and local regulations., Avoid discharge to sewers and natural waters.

US waste

In accordance with EPA/RCRA regulation 40CFR 261.22 Corrosivity D002

14. TRANSPORT INFORMATION



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DOT Classification

Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S.
Class: 8 (6.1)
UN ID #: 2922
Packing group: III

IMDG Classification

Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S.
Class: 8 (6.1)
UN ID #: UN 2922
Packing group: III

ICAO Classification

Proper shipping name: CORROSIVE LIQUID, TOXIC, N.O.S.
Class: 8 (6.1)
UN ID #: UN 2922
Packing group: III

15. REGULATORY INFORMATION

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40CFR372 (for SARA 313). This information must be included in MSDS's that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

Chemical name	CAS#	Max weight %
1,1'-Dimethyl-4,4'-bipyridinium dichloride	1910-42-5	43.80

Massachusetts Right-To-Know Substance List (MSL)--Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

Chemical name	CAS#	Max weight %
1,1'-Dimethyl-4,4'-bipyridinium dichloride	1910-42-5	43.80

Pennsylvania Right-To-Know Hazardous Substance List--Hazardous Substances and Special Hazardous Substances on the list must be identified when present in products.

Components present in this product at a level which could require reporting under the statute are:

Chemical name	CAS#	Max weight %
1,1'-Dimethyl-4,4'-bipyridinium dichloride	1910-42-5	43.80

New Jersey Worker and Community Right-To-Know Act (Labeling Requirements)

Chemical name	CAS#	New Jersey TS Number
1,1'-Dimethyl-4,4'-bipyridinium dichloride	1910-42-5	

Paraquat Emetic -

Inerts -

EPA Hazard Categories (SARA 311, 312): Immediate Health Hazard

California Proposition 65

**** NONE ****

CHEMICAL INVENTORY

United States: This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and is therefore exempt from TSCA Inventory listing requirements.



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16. OTHER INFORMATION

RECOMMENDED USES AND RESTRICTIONS: NOTE TO END-USERS: This MSDS is being provided to all interested persons in accordance with federal and state right-to-know laws. Precautionary Statements, First Aid Statements and Directions for Use of this product by end-users are contained on the product label and must be followed at all times.

HMIS RATING

Health: 3	Flammability: 1	Reactivity: 1	PPI:
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STP	Standard temperature and pressure
W/W	0 (HMIS)
1 (HMIS)	Slight hazard
2 (HMIS)	Moderate hazard
3 (HMIS)	Serious hazard
4 (HMIS)	Severe hazard
X (HMIS)	Personal protection rating to be supplied by user depending on use conditions

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