1. Product and Company Identification

Material name: PYRO-CHEM FM-200
Version #: 01
Revision date: 01-08-2014
CAS #: 431-89-0
Product use: Fire extinguishing agent

Manufacturer / Importer / Supplier
Name: Tyco Fire Protection Products
Address: One Stanton Street
Marinette, WI 54143-2542
Phone: 715-732-3465
Internet: http://www.pyrochem.com
Emergency Phone Number: CHEMTREC 800-424-9300 or 703-527-3887

2. Hazards Identification

Emergency overview: DANGER
Contents under pressure. Heat may cause the containers to explode.

OSHA regulatory status: This product is considered not hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects
Routes of exposure: Eye contact. Skin contact. Inhalation.
Eyes: Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Skin: Contact with liquefied gas might cause frostbites, in some cases with tissue damage.
Inhalation: Severe overexposure may cause cardiac sensitization and result in irregular rhythm. Intentional misuse by concentrating and inhaling the product can be harmful or fatal.

Ingestion: Not likely, due to the form of the product.

Potential environmental effects: Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Non-hazardous components | CAS # | Percent
--- | --- | ---
1,1,1,2,3,3-HEPTAFLUOROPROPANE | 431-89-0 | 90 - 100

4. First Aid Measures

First aid procedures
Eye contact: Flush thoroughly with water for at least 15 minutes. Get medical assistance.
Skin contact: Wash frost-bitten areas with plenty of water. Do not remove clothing. Get medical attention if irritation persists after washing.
Inhalation: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Ingestion: Not likely, due to the form of the product.
General advice: If you feel unwell, seek medical advice (show the label where possible).

5. Fire Fighting Measures

Flammable properties: The product is not flammable. No unusual fire or explosion hazards noted.
Extinguishing media
Suitable extinguishing media
This product is not flammable. Use fire-extinguishing media appropriate for surrounding materials.

Protection of firefighters
Specific hazards arising from the chemical
Contents under pressure. Pressurized container may explode when exposed to heat or flame.

Specific methods
In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions
Ventilate closed spaces before entering them. Consider initial downwind evacuation for at least 500 meters (1/3 mile). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

Environmental precautions
Do not contaminate water. Prevent further leakage or spillage if safe to do so.

Methods for containment
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Move the cylinder to a safe and open area if the leak is irreparable. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up
Large Spills: Ventilate the area. Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.
Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Allow liquid to evaporate from the surface.

7. Handling and Storage

Handling
When using do not smoke. All equipment used when handling the product must be grounded. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight.

Storage
Contents under pressure. Keep away from heat and sources of ignition. Keep at temperature not exceeding 49 °C. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRO-CHEM FM-200 (431-89-0)</td>
<td>Ceiling</td>
<td>1000.0000 ppm</td>
<td>DuPont's Acceptable Exposure Limit (AEL), 8 &amp; 12 Hr, TWA</td>
</tr>
</tbody>
</table>

Engineering controls
General ventilation normally adequate.

Personal protective equipment
Eye / face protection
Wear approved chemical safety glasses or goggles where eye exposure is reasonably probable.

General hygiene considerations
Handle in accordance with good industrial hygiene and safety practice.

9. Physical & Chemical Properties

Appearance
Form
Compressed liquefied gas.
Color
Colorless.
Odor
None.

Physical state
Gas.
pH
Not available.
Melting point
Not available.
Freezing point
Not available.
Boiling point: Not available.
Flash point: Not available.
Evaporation rate: Not available.
Flammability limits in air, upper, % by volume: Not available.
Flammability limits in air, lower, % by volume: Not available.
Vapor pressure: Not available.
Vapor density: 3.72
Specific gravity: Not available.
Relative density: Not available.
Solubility (water): Not available.
Partition coefficient (n-octanol/water): 1.1
Auto-ignition temperature: Not available.
Decomposition temperature: Not available.
VOC: Not available.
Molecular weight: 108.14 g/mol
Molecular formula: C3HF7

10. Chemical Stability & Reactivity Information

Chemical stability: Stable under normal temperature conditions.
Incompatible materials: This product may react with strong reducing agents and Alkaline metals.

11. Toxicological Information

Toxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>PYRO-CHEM FM-200 (431-89-0)</td>
<td>Acute Inhalation AT_LC50 Rat: 788 g/l 4.00 hours</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Carcinogenicity: This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
Further information: This product has no known adverse effect on human health.

12. Ecological Information

Ecotoxicity: This product has no known eco-toxicological effects.
Persistence and degradability: Not available.

13. Disposal Considerations

Disposal instructions: This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.
Waste from residues / unused products: Not applicable.

14. Transport Information

DOT

Basic shipping requirements:
UN number: UN3296
Proper shipping name: Heptafluoropropane
Hazard class: 2.2
Additional information:
Special provisions: T50
Packaging exceptions: 306
Packaging non bulk: 304
15. Regulatory Information

US federal regulations
This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.

US TSCA Section 12(b) Export Notification: Export Notification requirement/De minimis concentration
1,1,1,2,3,3,3-HEPTAFLUOROPROPANE (CAS 431-89-0) 1.0 % One-Time Export Notification only.

CERCLA (Superfund) reportable quantity
None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Acute Health - No
Chronic Health - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance
No

Section 311 hazardous chemical
No

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>No</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations
This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other Information

Further information
HMIS® is a registered trade and service mark of the NPCA.
HMIS® ratings
- Health: 0
- Flammability: 0
- Physical hazard: 0

NFPA ratings
- Health: 0
- Flammability: 0
- Instability: 0

Disclaimer
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.

Issue date
01-08-2014