1. IDENTIFICATION

Product identifier
Product Name
Trifluoroacetic Acid / Dichloromethane 50/50%

Other means of identification
Product Code
8320
UN/ID no.
UN2922
Synonyms
Trifluoroacetic acid: Perfluoroacetic acid; trifluoroethanoic acid
Dichloromethane: DCM; Methylene chloride (MC); Methylene Dichloride; Methylene bichloride; Methane dichloride

Recommended use of the chemical and restrictions on use
Recommended Use
Laboratory chemicals.
Uses advised against
No information available

Details of the supplier of the safety data sheet
Manufacturer Address
Harrell Industries, Inc.
2495 Commerce Drive
Rock Hill, SC 29730
www.harrellindustries.com

Emergency telephone number
Company Phone Number
803-327-6335
Fax Number
803-327-7808
24 Hour Emergency Phone Number
800 633-8253 (PERS)

2. HAZARDS IDENTIFICATION

Classification
OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Inhalation (Dusts/Mists)</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1 Sub-category A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label elements
Emergency Overview

Danger

Hazard statements
Harmful if inhaled
Causes severe skin burns and eye damage
Trifluoroacetic acid: DANGER! CORROSIVE. CAUSES BURNS. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MATERIAL IS EXTREMELY DESTRUCTIVE TO THE UPPER RESPIRATORY TRACT, EYES AND SKIN.
Dichloromethane: WARNING! HARMFUL IF SWALLOWED, INHALED, OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER, CARDIOVASCULAR SYSTEM, AND BLOOD. CAUSES IRRITATION TO SKIN, EYES, ANBD RESPIRATORY TRACT. MAY CAUSE CANCER.

Precautionary Statements - Prevention
Use only outdoors or in a well-ventilated area
Do not breathe dust
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response
Immediately call a POISON CENTER or doctor/physician
TFA: Extremely destructive to eyes. DCM: Vapors can cause eye irritation. Contact can produce pain, inflammation and temporal eye damage.
TFA: Extremely destructive to skin. May be absorbed through skin. DCM: Causes irritation, redness and pain. Prolonged contact can cause burns. Liquid degrades the skin. May be absorbed through skin.
TFA: Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. DCM: Causes irritation to respiratory tract. Has a strong narcotic effect with symptoms of mental confusion, light-headedness, fatigue, nausea, vomiting and headache. Causes formation of carbon monoxide in blood which affects cardiovascular system and central nervous system. Continued exposure may cause increased light-headedness, staggering, unconsciousness, and even death. Exposure may make the symptoms of angina (chest pains) worse.
TFA: Swallowing can cause burns of the mouth, throat and stomach. Symptoms include sore throat, vomiting and diarrhea. DCM: May cause irritation of the gastrointestinal tract with vomiting. If vomiting results in aspiration, chemical pneumonia could follow. Absorption through gastrointestinal tract may produce symptoms of central nervous system depression ranging from light headedness to unconsciousness.

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Not applicable

Other Information
Harmful to aquatic life with long lasting effects
Unknown acute toxicity 0.1% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance</th>
<th>Synonyms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trifluoroacetic acid</td>
<td>Perfluoroacetic acid; trifluoroethanoic acid, Dichloromethane: DCM; Methylene chloride (MC); Methylene Dichloride; Methylene dichloride; Methane dichloride.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trifluoroacetic acid</td>
<td>76-05-1</td>
<td>50</td>
</tr>
<tr>
<td>Dichloromethane</td>
<td>75-09-2</td>
<td>50</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of first aid measures
Eye contact  Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician immediately.

Skin contact  Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse. Wash with soap and water.

Inhalation  Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Ingestion  Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Give large amounts of water. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed

Symptoms  No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians  Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media  Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Trifluoroacetic acid: Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases. Dichloromethane: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media  Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical  Dichloromethane: Carbon oxides and hydrogen chloride gas expected to be the primary hazardous combustion products.

Explosion data
Sensitivity to Mechanical Impact  None.
Sensitivity to Static Discharge  None.

Protective equipment and precautions for firefighters  As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions  Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal equipment.

Environmental precautions

Environmental precautions  See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment  Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb and place into an chemical waste container.

Methods for cleaning up  Absorb with inert materials (e.g., vermiculite, dry sand, earth). Do not use combustible materials, such as saw dust. Do not flush to sewer!! Dry lime or soda ash may be used to neutralize spills.

7. HANDLING AND STORAGE
Precautions for safe handling

Advice on safe handling
Protect from physical damage. Keep out of direct sunlight and away from heat and incompatible materials. Do not wash out container and use it for other purposes. When diluting, always add the acid to water; never add water to the acid. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep in a dry, cool and well-ventilated place. Keep in storage with acid resistant floors and good drainage.

Incompatible materials
Trifluoroacetic acid: Bases, Oxidizers, Reducing agent, Moisture. Dichloromethane: Alkali metals, aluminum, strong oxidizing agents, bases, amines, magnesium, strong acids, and strong bases, vinyl compounds.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane 75-09-2</td>
<td>TWA: 50 ppm</td>
<td>TWA: 25 ppm (vacated) TWA: 500 ppm</td>
<td>IDLH: 2300 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) STEL: 2000 ppm 5 min in any 3 h</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) Ceiling: 1000 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 125 ppm see 29 CFR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1910.1052</td>
<td></td>
</tr>
</tbody>
</table>

Appropriate engineering controls

Engineering Controls
- Showers
- Eyewash stations
- Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection
Use chemical safety goggles and/or full face shield. Maintain eye wash fountain and quick-drench facilities in work area.

Skin and body protection
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear, colorless liquid</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>clear colorless</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Strong, pungent</td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>No information available / °F</td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable under ordinary conditions of use and storage.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization
Will not occur.

Conditions to avoid

Incompatible materials
Trifluoroacetic acid: Bases, Oxidizers, Reducing agent, Moisture. Dichloromethane: Alkali metals, aluminum, strong oxidizing agents, bases, amines, magnesium, strong acids, and strong bases, vinyl compounds.

Hazardous Decomposition Products
Trifluoroacetic acid: Burning may produce carbon monoxide, carbon dioxide and other toxic materials including hydrogen fluoride. Dichloromethane: Carbon oxides and hydrogen chloride gas are expected to be, under fire conditions, the primary hazardous decomposition products.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane 75-09-2</td>
<td>= 1600 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects
Symptoms
No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>A3</td>
<td>Group 2A</td>
<td>Reasonably Anticipated</td>
<td>X</td>
</tr>
<tr>
<td>75-09-2</td>
<td></td>
<td>Group 2B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document.

12. ECOLOGICAL INFORMATION

Ecotoxicity

0.1% of the mixture consists of components(s) of unknown hazards to the aquatic environment

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>500: 96 h Pseudokirchneriella subcapitata mg/L EC50: 72 h Pseudokirchneriella subcapitata mg/L EC50</td>
<td>140.8 - 277.8: 96 h Pimephales promelas mg/L LC50 flow-through 262 - 855: 96 h Pimephales promelas mg/L LC50 static 193: 96 h Lepomis macrochirus mg/L LC50 static 193: 96 h Lepomis macrochirus mg/L LC50 flow-through</td>
<td>1532 - 1847: 48 h Daphnia magna mg/L EC50 Static 190: 48 h Daphnia magna mg/L EC50</td>
</tr>
<tr>
<td>75-09-2</td>
<td>500: 96 h Pseudokirchneriella subcapitata mg/L EC50: 72 h Pseudokirchneriella subcapitata mg/L EC50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Persistence and degradability

Bioaccumulation

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Partition coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>1.25</td>
</tr>
<tr>
<td>75-09-2</td>
<td></td>
</tr>
</tbody>
</table>

Other adverse effects
No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes
Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Do not reuse container.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>RCRA</th>
<th>RCRA - Basis for Listing</th>
<th>RCRA - D Series Wastes</th>
<th>RCRA - U Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>U080</td>
<td>Included in waste streams: F001, F002, F024, F025, F039, K009, K010, K156, K157, K158</td>
<td>-</td>
<td>U080</td>
</tr>
<tr>
<td>75-09-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>Category I - Volatiles</td>
<td>-</td>
<td>Toxic waste number F025</td>
<td>-</td>
</tr>
<tr>
<td>75-09-2</td>
<td></td>
<td></td>
<td>Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from</td>
<td></td>
</tr>
</tbody>
</table>
the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane</td>
<td>Toxic</td>
</tr>
</tbody>
</table>

### 14. TRANSPORT INFORMATION

**DOT**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I
- **Reportable Quantity (RQ)** 1000 lbs (454 kg)

**TDG**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I

**MEX**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I

**ICAO (air)**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I

**IATA**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I

**IMDG**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
- **Hazard Class** 8
- **Subsidiary class** (6.1),
- **Packing Group** I

**ADR**
- **Regulated**
- **UN/ID no.** UN2922
- **Proper shipping name** Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
8320 - Trifluoroacetic Acid / Dichloromethane 50/50%

Revision Date 30-Sep-2015

Hazard Class 8
Packing Group I
ADN Regulated
UN Number UN2922
Proper shipping name Corrosive Liquids, Toxic, N.O.S., (Trifluoroacetic Acid)
Hazard Class 8
Packing Group I

15. REGULATORY INFORMATION

International Inventories
TSCA Complies
DSL/NDSL Complies
EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL Complies
PICCS Complies
AICS Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane - 75-09-2</td>
<td>0.1</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

- Acute health hazard No
- Chronic Health Hazard No
- Fire hazard No
- Sudden release of pressure hazard No
- Reactive Hazard No

CWA (Clean Water Act)
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane 75-09-2</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA/SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane 75-09-2</td>
<td>1000 lb 1 lb</td>
<td>-</td>
<td>RQ 1000 lb final RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RQ 454 kg final RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RQ 1 lb final RQ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RQ 0.454 kg final RQ</td>
</tr>
</tbody>
</table>

US State Regulations
California Proposition 65
This product contains the following Proposition 65 chemicals

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dichloromethane - 75-09-2</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

U.S. State Right-to-Know Regulations
This product may contain substances regulated by state right-to-know regulations

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trifluoroacetic acid</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>76-05-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dichloromethane</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>75-09-2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

U.S. EPA Label Information
EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Health hazards 3</th>
<th>Flammability 0</th>
<th>Instability 0</th>
<th>Physical and Chemical Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>Health hazards 0</td>
<td>Flammability 0</td>
<td>Physical hazards 0</td>
<td>Personal protection X</td>
</tr>
</tbody>
</table>

Issue Date 27-Apr-2015
Revision Date 30-Sep-2015
Revision Note No information available

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.

End of Safety Data Sheet