Material Safety Data Sheet

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M Scotch-Weld Hi-Strength 90 Cylinder Spray Adhesive, Clear
MANUFACTURER: 3M
DIVISION: Industrial Adhesives and Tapes Division
ADDRESS: 3M Center, St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)
Issue Date: 05/14/13
Supercedes Date: 08/11/10
Document Group: 23-3000-9

Product Use:
Limitations on Use: Sale and use severely restricted due to high VOC in CT, DE, ME, MD, NH, NJ, NY, PA, RI, VA, DC, IL, IN, OH, in CA per R-1168.
Specific Use: general purpose solvent based adhesive
Intended Use: Industrial use

SECTION 2: INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>C.A.S. No.</th>
<th>% by Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl Ether</td>
<td>115-10-6</td>
<td>15 - 40</td>
</tr>
<tr>
<td>Non-Volatile Components - N.J.</td>
<td>109-66-0</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Trade Secret Registry No. 04499600-6133P</td>
<td>110-82-7</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Pentane</td>
<td>67-64-1</td>
<td>10 - 30</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>75-28-5</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Acetone</td>
<td>74-98-6</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Isobutane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: clear, solvent odor
General Physical Form: Gas
Immediate health, physical, and environmental hazards: Extremely flammable liquid and vapor. Vapors may travel long
distances along the ground or floor to an ignition source and flash back. May cause target organ effects.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, and itching.

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Intentional concentration and inhalation may be harmful or fatal.

May be absorbed following inhalation and cause target organ effects.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:
Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.
Skin Contact: Wash affected area with soap and water. If signs/symptoms develop, get medical attention.
Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.
If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoignition temperature</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>-50 °F [Test Method: Closed Cup] [Details: Flammable Gas]</td>
</tr>
<tr>
<td>Flammable Limits(LEL)</td>
<td>1.2 % volume</td>
</tr>
<tr>
<td>Flammable Limits(UEL)</td>
<td>27 % volume</td>
</tr>
</tbody>
</table>

5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).
5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Water may be used to blanket the fire. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
If possible, seal leaking container. Place leaking containers in a well-ventilated area, preferably an operating exhaust hood, or if necessary outdoors on an impermeable surface until appropriate packaging for the leaking container or its contents is available.

Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Remove all ignition sources such as flames, smoking materials, and electrical spark sources. Use only non-sparking tools. Ventilate the area with fresh air.

6.2. Environmental precautions
Collect the resulting residue containing solution. Place in a metal container approved for transportation by appropriate authorities. Dispose of collected material as soon as possible.

Clean-up methods
Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Call 3M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and MSDS.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Contents may be under pressure, open carefully. Keep away from heat, sparks, open flame, pilot lights and other sources of ignition. Ground containers securely when transferring contents. Wear low static or properly grounded shoes. Avoid breathing of vapors, mists or spray. Avoid skin contact. Avoid static discharge. Avoid eye contact with vapors, mists, or spray. Keep out of the reach of children. Vapors may ignite explosively. May cause flash fire. Prevent build-up of vapors - open all windows and doors. Maintain vapor concentrations below recommended exposure limits. Use only with cross-ventilation. Without adequate ventilation, vapors may settle in low-lying areas. Keep away from heat, sparks, and open flame. Do not smoke or ignite matches, lighters, etc. For industrial or professional use only. Avoid contact with oxidizing agents. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits. If ventilation is not adequate, use respiratory protection equipment.

7.2 STORAGE
Store away from heat. Store out of direct sunlight. Keep container in well-ventilated area. Keep container tightly closed. Store away from oxidizing agents.
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS
Use with functioning spray booth or local exhaust. Do not use in a confined area or areas with little or no air movement. Do not remain in area where available oxygen may be reduced. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapor, or spray. If ventilation is not adequate, use respiratory protection equipment.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection
Avoid eye contact with vapors, mists, or spray.
The following eye protection(s) are recommended: Safety Glasses with side shields
Indirect Vented Goggles

8.2.2 Skin Protection
Avoid skin contact.
Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.
Gloves made from the following material(s) are recommended: Nitrile Rubber Polyvinyl Alcohol (PVA)

8.2.3 Respiratory Protection
Avoid breathing of vapors, mists or spray.
An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapors
For questions about suitability for a specific application, consult with your respirator manufacturer. Organic vapor cartridges may have short service life.

8.2.4 Prevention of Swallowing
Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Authority</th>
<th>Type</th>
<th>Limit</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>ACGIH</td>
<td>TWA</td>
<td>500 ppm</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>ACGIH</td>
<td>STEL</td>
<td>750 ppm</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>OSHA</td>
<td>TWA</td>
<td>2400 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>ACGIH</td>
<td>TWA</td>
<td>100 ppm</td>
<td></td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>OSHA</td>
<td>TWA</td>
<td>1050 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Dimethyl Ether</td>
<td>AIHA</td>
<td>TWA</td>
<td>1880 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Dimethyl Ether</td>
<td>CMRG</td>
<td>TWA</td>
<td>1000 ppm</td>
<td></td>
</tr>
<tr>
<td>Pentane</td>
<td>ACGIH</td>
<td>TWA</td>
<td>600 ppm</td>
<td></td>
</tr>
<tr>
<td>Pentane</td>
<td>OSHA</td>
<td>TWA</td>
<td>2950 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Propane</td>
<td>OSHA</td>
<td>TWA</td>
<td>1800 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

SOURCE OF EXPOSURE LIMIT DATA:
ACGIH: American Conference of Governmental Industrial Hygienists  
CMRG: Chemical Manufacturer Recommended Guideline  
OSHA: Occupational Safety and Health Administration  
AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor, Color, Grade</td>
<td>clear, solvent odor</td>
</tr>
<tr>
<td>General Physical Form</td>
<td>Gas</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Flash Point</td>
<td>-50 ºF [Test Method: Closed Cup] [Details: Flammable Gas]</td>
</tr>
<tr>
<td>Flammable Limits(LEL)</td>
<td>1.2 % volume</td>
</tr>
<tr>
<td>Flammable Limits(UEL)</td>
<td>27 % volume</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>&lt;=68 ºF</td>
</tr>
<tr>
<td>Density</td>
<td>0.69 g/ml</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>&gt;=1.0 [Ref Std: AIR=1]</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>84.7 psia [@ 68 ºF]</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.69 [Ref Std: WATER=1]</td>
</tr>
<tr>
<td>pH</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Nil</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Hazardous Air Pollutants</td>
<td>0 % weight [Test Method: Calculated]</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>616 g/l [Details: EU VOC content]</td>
</tr>
<tr>
<td>Kow - Oct/Water partition coeff</td>
<td>No Data Available</td>
</tr>
<tr>
<td>Percent volatile</td>
<td>80 - 90 % weight</td>
</tr>
<tr>
<td>VOC Less H2O &amp; Exempt Solvents</td>
<td>586 g/l [Test Method: calculated SCAQMD rule 443.1]</td>
</tr>
<tr>
<td>VOC Less H2O &amp; Exempt Solvents</td>
<td>4.89 lb/gal [Test Method: calculated SCAQMD rule 443.1]</td>
</tr>
<tr>
<td>VOC Less H2O &amp; Exempt Solvents</td>
<td>72.4 % [Test Method: calculated per CARB title 2]</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Solids Content</td>
<td>10 - 20 %</td>
</tr>
</tbody>
</table>

**SECTION 10: STABILITY AND REACTIVITY**

Stability: Stable.

Materials and Conditions to Avoid:

10.1 Conditions to avoid
Heat  
Sparks and/or flames

10.2 Materials to avoid
Strong oxidizing agents

Hazardous Polymerization: Hazardous polymerization will not occur.

**Hazardous Decomposition or By-Products**

<table>
<thead>
<tr>
<th>Substance</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Incinerate in a permitted hazardous waste incinerator. As a disposal alternative, dispose of waste product in a permitted hazardous waste facility.
The facility should be equipped to handle gaseous waste.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14: TRANSPORT INFORMATION

ID Number(s):
62-4994-8030-9, 62-4994-8150-5, 62-4994-8300-6

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS
Contact 3M for more information.

311/312 Hazard Categories:
Fire Hazard - Yes  Pressure Hazard - Yes  Reactivity Hazard - No  Immediate Hazard - Yes  Delayed Hazard - No

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>C.A.S. No</th>
<th>% by Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexane</td>
<td>110-82-7</td>
<td>10 - 30</td>
</tr>
</tbody>
</table>
STATE REGULATIONS
Contact 3M for more information.

CHEMICAL INVENTORIES
The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS. Contact 3M for more information.

INTERNATIONAL REGULATIONS
Non hazardous according to WHMIS criteria.

Contact 3M for more information.

WHMIS: Non-hazardous

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification
Health: 2 Flammability: 4 Reactivity: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision Changes:
Section 1: Product use information was modified.
Section 16: Disclaimer (second paragraph) was modified.
Section 3: Immediate physical hazard(s) was modified.
Section 5: Unusual fire and explosion hazard information was modified.
Section 7: Handling information was modified.
Section 8: Engineering controls information was modified.
Section 10: Hazardous decomposition or by-products table was modified.
Section 8: Respiratory protection - recommended respirators information was modified.
Section 8: Respiratory protection - recommended respirators was modified.
Section 15: Inventories information was modified.
Section 9: Density information was modified.
Section 9: Vapor density value was modified.
Section 9: Vapor pressure value was modified.
Section 9: Boiling point information was modified.
Section 5: Flammable limits (UE) information was modified.
Section 5: Flammable limits (LEL) information was modified.
Section 5: Autoignition temperature information was modified.
Section 5: Flash point information was modified.
Section 9: Property description for required properties was modified.
Section 9: Property description for optional properties was modified.
Section 9: Specific gravity information was modified.
Section 9: pH information was modified.