Material Safety Data Sheet

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SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M™ Hi-Strength Spray Adhesive 90 (aerosol)
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: 04/04/12
Supercedes Date: 03/30/12
Document Group: 16-4935-9

Product Use:
Intended Use: aerosol adhesive
Specific Use: hi-strength aerosol adhesive

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>35 - 45</td>
</tr>
<tr>
<td>Methyl acetate</td>
<td>79-20-9</td>
<td>25 - 35</td>
</tr>
<tr>
<td>N.J.T.S. Reg No. 0449960-6448P</td>
<td>Trade Secret</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>110-82-7</td>
<td>7 - 13</td>
</tr>
<tr>
<td>Propellant R-152a</td>
<td>75-37-6</td>
<td>1 - 5</td>
</tr>
<tr>
<td>Pentane</td>
<td>109-66-0</td>
<td>1 - 5</td>
</tr>
</tbody>
</table>

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Specific Physical Form: Aerosol
Odor, Color, Grade: clear, sweet fruity odor
General Physical Form: Gas
Immediate health, physical, and environmental hazards: Closed containers exposed to heat from fire may build pressure and explode. Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back. Aerosol container contains flammable material under pressure. 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.

Cardiac Sensitization: Signs/symptoms may include irregular heartbeat (arrhythmia), faintness, chest pain, and may be fatal.

Prolonged or repeated exposure may cause:
Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

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. Get immediate 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.

4.2 NOTE TO PHYSICIANS

Exposure may increase myocardial irritability. Do not administer sympathomimetic drugs unless absolutely necessary.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature  No Data Available
### Flash Point
-42.00 °F [Test Method: Tagliabue Closed Cup]

### Flammable Limits (LEL)
No Data Available

### Flammable Limits (UEL)
No Data Available

### OSHA Flammability Classification:
Class IA Flammable Liquid

#### 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:** Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

**Unusual Fire and Explosion Hazards:** Closed containers exposed to heat from fire may build pressure and explode. Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back. Aerosol container contains flammable material under pressure.

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.

**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. Contain spill. Clean up residue.

**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. Keep away from heat, sparks, open flame, pilot lights and other sources of ignition. Avoid prolonged or repeated skin contact. 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.

#### 7.2 STORAGE
Store away from acids. Store away from heat. Store out of direct sunlight.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

8.1 ENGINEERING CONTROLS
Use with appropriate local exhaust ventilation. Do not use in a confined area or areas with little or no air movement. 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. Avoid eye contact with vapors, mists, or spray. The following eye protection(s) are recommended: Safety Glasses with side shields.

8.2.2 Skin Protection
Avoid skin contact. Avoid prolonged or repeated 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.

8.2.3 Respiratory Protection
Avoid breathing of vapors, mists or spray.
Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges. Select and use respiratory protection to prevent an inhalation exposure based on the results of an exposure assessment. Consult with your respirator manufacturer for selection of appropriate types of respirators. 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>Propellant R-152a</td>
<td>AIHA</td>
<td>TWA</td>
<td>2700 mg/m3</td>
<td></td>
</tr>
<tr>
<td>Propellant R-152a</td>
<td>CMRG</td>
<td>TWA</td>
<td>1000 ppm</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>Methyl acetate</td>
<td>ACGIH</td>
<td>TWA</td>
<td>200 ppm</td>
<td></td>
</tr>
<tr>
<td>Methyl acetate</td>
<td>ACGIH</td>
<td>STEL</td>
<td>250 ppm</td>
<td></td>
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<tr>
<td>Methyl acetate</td>
<td>OSHA</td>
<td>TWA</td>
<td>610 mg/m3</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>
</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

Specific Physical Form: Aerosol
Odor, Color, Grade: clear, sweet fruity odor
General Physical Form: Gas
Autoignition temperature: No Data Available
Flash Point: -42.00 °F [Test Method: Tagliabue Closed Cup]
Flammable Limits(LEL): No Data Available
Flammable Limits(UEL): No Data Available
Boiling Point: Not Applicable
Density: 0.726 g/ml
Vapor Density: 2.97 [Ref Std: AIR=1]

Specific Gravity: 0.726 [Ref Std: WATER=1]
pH: No Data Available
Melting point: Not Applicable

Solubility in Water: Nil
Evaporation rate: 1.90 [Ref Std: ETHER=1]
Hazardous Air Pollutants: <=0 % weight [Test Method: Calculated]
Volatile Organic Compounds: <=631 g/l [Details: EU VOC content]
Kow - Oct/Water partition coef: No Data Available
Percent volatile: <=75 % weight
VOC Less H2O & Exempt Solvents: <= 55 % [Test Method: calculated SCAQMD rule 443.1]
VOC Less H2O & Exempt Solvents: <=3.32 lb/gal [Test Method: calculated SCAQMD rule 443.1]
VOC Less H2O & Exempt Solvents: <=55 % [Test Method: calculated per CARB title 2]
Viscosity: Not Applicable

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid:
10.1 Conditions to avoid
Heat

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>Carbon monoxide</td>
<td>During Combustion</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>During Combustion</td>
</tr>
<tr>
<td>Irritant Vapors or Gases</td>
<td>During Combustion</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. Facility must be capable of handling aerosol cans. Dispose of empty product containers in a sanitary landfill.

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

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

SECTION 14: TRANSPORT INFORMATION

ID Number(s):

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 - Yes

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>
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</tr>
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<tr>
<td>Cyclohexane</td>
<td>110-82-7</td>
<td>7 - 13</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
Contact 3M for more information.

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
Aerosol Storage Code: 3

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 9: Property description for optional properties was modified.
Section 2: Ingredient table was modified.
Section 8: Exposure guidelines ingredient information was modified.

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