Material Safety Data Sheet
Acetic acid, 70-80% w/w

Section 1 - Chemical Product and Company Identification

MSDS Name: Acetic acid, 70-80% w/w
Catalog Numbers: A37-1, A37-4, NC9626606, NC9726690, XX70%HAC200L
Synonyms: Ethanoic acid; Ethylic acid; Methanecarboxylic acid; Vinegar acid.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>70-80</td>
<td>200-580-7</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>20-30</td>
<td>231-791-2</td>
</tr>
</tbody>
</table>

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Appearance: colorless liquid. Flash Point: > 61 deg C.

Danger! Causes severe digestive and respiratory tract burns. Causes severe eye and skin burns. Lachrymator (substance which increases the flow of tears). May be harmful if absorbed through the skin. Combustible liquid and vapor. May cause central nervous system depression. May cause reproductive and fetal effects.
Target Organs: Kidneys, central nervous system, teeth.

Potential Health Effects
Eye: Causes severe eye irritation. Contact with liquid or vapor causes severe burns and possible irreversible eye damage. Lachrymator (substance which increases the flow of tears). May cause chemical conjunctivitis and corneal damage.
Skin: Causes skin burns. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May be harmful if absorbed through the skin. Contact with the skin may cause blackening and hyperkeratosis of the skin of the hands. May cause cyanosis of the extremities.
Ingestion: May cause severe and permanent damage to the digestive tract. May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Causes severe pain, nausea, vomiting, diarrhea, and shock. May cause polyuria, oliguria (excretion of a diminished amount of urine in relation to the fluid intake) and anuria (complete suppression of urination). Ingestion of large amounts may cause CNS depression. Rapidly absorbed from the gastrointestinal tract.
Inhalation: Effects may be delayed. Causes chemical burns to the respiratory tract. Aspiration may lead to pulmonary edema. Vapors may cause dizziness or suffocation. Exposure may lead to bronchitis, pharyngitis, and dental erosion. May be absorbed through the lungs. May cause burning sensation in the chest.
Chronic: Prolonged or repeated skin contact may cause dermatitis. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Repeated exposure may lead to blackening and hyperkeratosis of the skin and hands, conjunctivitis, bronchitis and pharyngitis and erosion of the teeth. Prolonged exposure may cause corneal erosion, conjunctivitis, and possible blindness.

Section 4 - First Aid Measures

Eyes: Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed. Extensive irrigation with water is required (at least 30 minutes).
Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Destroy contaminated shoes.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.
Notes to Physician: Persons with pre-existing skin disorders or impaired respiratory or pulmonary function may be at increased risk to the effects of this substance. Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Wear appropriate protective clothing to prevent contact with skin and eyes.
Wear a self-contained breathing apparatus (SCBA) to prevent contact with thermal decomposition products. Reacts with most metals to form highly flammable hydrogen gas which can form explosive mixtures with air. Containers may explode in the heat of a fire. Flammable liquid and vapor. Containers may explode when heated.

**Extinguishing Media**: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point**: > 61 deg C (> 141.80 deg F)

**Autoignition Temperature**: 516 deg C ( 960.80 deg F)

**Explosion Limits, Lower**: 4.0 vol %

**Upper**: 19.9 vol %

**NFPA Rating**: (estimated) Health: 3; Flammability: 2; Instability: 0

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**Section 6 - Accidental Release Measures**

**General Information**: Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks**: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Wash area with soap and water. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. Cover with material such as dry soda ash or calcium carbonate and place into a closed container for disposal. A vapor suppressing foam may be used to reduce vapors.

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**Section 7 - Handling and Storage**

**Handling**: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep away from heat, sparks and flame. Do not get on skin or in eyes. Do not ingest or inhale. Discard contaminated shoes. Use a spark-proof tool. Provide adequate ventilation. Cover with material such as dry soda ash or calcium carbonate and place into a closed container for disposal. A vapor suppressing foam may be used to reduce vapors.

**Storage**: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Do not store near alkaline substances.

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**Section 8 - Exposure Controls, Personal Protection**

**Engineering Controls**: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>10 ppm TWA; 15 ppm STEL</td>
<td>10 ppm TWA; 25 mg/m³ TWA 50 ppm IDLH</td>
<td>10 ppm TWA; 25 mg/m³ TWA</td>
</tr>
<tr>
<td>Water</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

**OSHA Vacated PELs**: Acetic acid: 10 ppm TWA; 25 mg/m³ TWA Water: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes**: Wear chemical splash goggles.

**Skin**: Wear appropriate protective gloves to prevent skin exposure.

**Clothing**: Wear appropriate protective clothing to prevent skin exposure.

**Respirators**: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

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**Section 9 - Physical and Chemical Properties**

**Physical State**: Liquid

**Appearance**: colorless

**Odor**: pungent odor - vinegar odor

**pH**: 2.4 (1M), 2.9 (0.1M)

**Vapor Pressure**: 16 mm Hg @ 25 deg C

**Vapor Density**: 2.10 (Air=1)

**Evaporation Rate**: 0.97 (n-Butyl acetate=1)

**Viscosity**: 1.22 cP @ 20 deg C

**Boiling Point**: 117-118 deg C

**Freezing/Melting Point**: 7 deg C

**Decomposition Temperature**: Not available.

**Solubility**: Miscible.

**Specific Gravity/Density**: 1.07 (Water=1)

**Molecular Formula**: C₂H₄O₂

**Molecular Weight**: 60.05

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**Section 10 - Stability and Reactivity**

**Chemical Stability**: Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid**: Incompatible materials, ignition sources, excess heat.

**Incompatibilities with Other Materials**: Metals, acetic anhydride, alcohols, amines, ammonium nitrate, chlorine trifluoride, nitric acid, peroxides, sodium hydroxide, sodium peroxide, hydrogen peroxide, acetaldehyde, caustics (e.g. ammonia, ammonium
hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), acid anhydrides, chlorosulfonic acid, oleum, chromium trioxide, potassium hydroxide, carbonates, bromine pentfluoride, perchloric acid, chromic anhydride, potassium tert-butoxide, calcium salts, ethyleneimine, Attacks some forms of plastics, rubbers, and coatings., 2-aminoethanol, ethylene diamine, phosphorus trichloride, chromic acid anhydride, phosphorus isocyanate, diallyl methyl carbinol + ozone, nitric acid + acetone, xylene, sodium salts.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** May occur.

### Section 11 - Toxicological Information

**RTECS#:**
- CAS# 64-19-7: AF1225000
- CAS# 7732-18-5: ZC0110000

**LD50/LC50:**
- CAS# 64-19-7:
  - Draize test, rabbit, skin: 50 mg/24H Mild;
  - Inhalation, mouse: LC50 = 5620 ppm'1H;
  - Oral, rat: LD50 = 3310 mg/kg;
  - Skin, rabbit: LD50 = 1060 uL/kg;
- CAS# 7732-18-5:
  - Oral, rat: LD50 = >90 mL/kg;

**Carcinogenicity:**
- CAS# 64-19-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.
- CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No data available.

**Teratogenicity:** No data available.

**Reproductive Effects:** No data available.

**Mutagenicity:** No data available.

**Neurotoxicity:** No data available.

**Other Studies:**

### Section 12 - Ecological Information

**Ecotoxicity:**
- Fish: Fathead Minnow: LC50 = 88 mg/L; 96 Hr; Static bioassay @ 18-22°C
- Fish: Bluegill/Sunfish: LC50 = 75 mg/L; 96 Hr; Unspecified
- Fish: Goldfish: LC50 = 423 mg/L; 24 Hr; Unspecified
- Water flea Daphnia: EC50 = 32-47 mg/L; 5,15,25 min; Microtox test
- Bacteria: Phytobacterium phosphoreum: EC50 = 8.86-11 mg/L; 5,15,25 min; Microtox test

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

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<tr>
<th></th>
<th>US DOT</th>
<th>Canada TDG</th>
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<tbody>
<tr>
<td><strong>Shipping Name:</strong></td>
<td>ACETIC ACID SOLUTION</td>
<td>No information available.</td>
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<td><strong>Hazard Class:</strong></td>
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<td><strong>UN Number:</strong></td>
<td>UN2790</td>
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<tr>
<td><strong>Packing Group:</strong></td>
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</table>

### Section 15 - Regulatory Information

**US FEDERAL**

**TSCA**
- CAS# 64-19-7 is listed on the TSCA inventory.
- CAS# 7732-18-5 is listed on the TSCA inventory.

**Health & Safety Reporting List**
- None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**
- None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**
- None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**
- None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**
CAS# 64-19-7: 5000 lb final RQ; 2270 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**
None of the chemicals in this product have a TPQ.

**SARA Codes**
- CAS # 64-19-7: immediate, delayed, fire.

**SARA Section 313**
None of the chemicals are reportable under Section 313.

**Clean Air Act:**
- This material does not contain any hazardous air pollutants.
- This material does not contain any Class 1 Ozone depleters.
- This material does not contain any Class 2 Ozone depleters.

**Clean Water Act:**
- CAS# 64-19-7 is listed as a Hazardous Substance under the CWA.
  - None of the chemicals in this product are listed as Priority Pollutants under the CWA.
  - None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**
None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**
- CAS# 64-19-7 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
  - CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Prop 65**
California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**
- C

**Risk Phrases:**
- R 34 Causes burns.

**Safety Phrases:**
- S 23 Do not inhale gas/fumes/vapour/spray.
- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**
- CAS# 64-19-7: 1
- CAS# 7732-18-5: No information available.

**Canada - DSL/NDSL**
- CAS# 64-19-7 is listed on Canada’s DSL List.
- CAS# 7732-18-5 is listed on Canada’s DSL List.

**Canada - WHMIS**
This product has a WHMIS classification of B3, E.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**
- CAS# 64-19-7 is listed on the Canadian Ingredient Disclosure List.

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**Section 16 - Additional Information**

**MSDS Creation Date:** 7/21/1999
**Revision #7 Date:** 3/22/2006

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.