SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label: Acetic Acid 1-10%
Product Code(s): Not available.
Recommended use of the chemical and restrictions on use:
- Reagent; Chemical intermediate.
- Use pattern: Professional Use Only
- Restriction on use: None known
Chemical family: Carboxylic acid

Name, address, and telephone number of the supplier:
Borden & Remington Corp
63 Water St.
PO Box 2573
Fall River, MA, USA 02722
Supplier's Telephone #: 508-675-0096

Name, address, and telephone number of the manufacturer:
Refer to supplier

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical:
Clear colourless liquid. Vinegar odour.

This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
- Skin Corrosion/Irritation - Category 1
- Eye Damage/Irritation - Category 1

Label elements

Hazard pictogram(s)

Signal Word
Danger

Hazard statement(s)
- Causes severe skin burns and eye damage.

Precautionary statement(s)
SAFETY DATA SHEET

Do not breathe mist or vapor.
Wash thoroughly after handling.
Wear protective gloves/clothing and eye/face protection.

If swallowed: Rinse mouth. Do not induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Wash contaminated clothing before reuse.
If inhaled: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a POISON CENTER or doctor/physician.

Store locked up.

Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards
Other hazards which do not result in classification: Ingestion can cause irritation and corrosive action in the mouth, stomach and digestive tract. May cause respiratory irritation. May be corrosive to metals. Contact with metals may release small amounts of flammable hydrogen gas.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS #</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid glacial</td>
<td>Acetic Acid</td>
<td>64-19-7</td>
<td>1.0 - 10.0</td>
</tr>
<tr>
<td>Water</td>
<td>H2O</td>
<td>7732-18-5</td>
<td>Balance</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

**Ingestion**
Seek immediate medical attention/advice. Do not induce vomiting. Have victim rinse mouth with water, then give one to two glasses of water to drink. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.

**Inhalation**
Immediately remove person to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen by qualified medical personnel only. Seek immediate medical attention/advice.

**Skin contact**
Remove/Take off immediately all contaminated clothing. Flush affected skin with gently flowing lukewarm water for at least 20 minutes. Seek immediate medical attention/advice. Wash contaminated clothing before re-use. Leather and shoes that have been contaminated with the solution may need to be destroyed.

**Eye contact**
Immediately flush eyes thoroughly with running water for at least 20 to 30 minutes. Seek immediate medical attention/advice.

Most important symptoms and effects, both acute and delayed

Causes serious eye damage. Symptoms may include severe pain, blurred vision, redness and corrosive damage. Causes severe skin irritation. Symptoms may include redness, blistering, pain and swelling. May cause respiratory irritation. Symptoms may include persistent coughing, shortness of breath, coughing up blood and wheezing. Ingestion may cause severe irritation to the mouth, throat and stomach.

Indication of any immediate medical attention and special treatment needed

Immediate medical attention is required. Causes chemical burns. Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES
SAFETY DATA SHEET

Extinguishing media
- **Suitable extinguishing media**: Use water fog or fine spray, foams, carbon dioxide or dry chemical.
- **Unsuitable extinguishing media**: Do not use a solid water stream as it may scatter and spread fire.

Special hazards arising from the substance or mixture / Conditions of flammability
- Burning produces obnoxious and toxic fumes. Vapors are heavier than air and may spread along floors. Vapors may travel considerable distance to a source of ignition and flash back.

Flammability classification (OSHA 29 CFR 1910.106)
- Not considered flammable.

Hazardous combustion products
- Carbon oxides and other irritating fumes and smoke.

Special protective equipment and precautions for firefighters
- **Protective equipment for fire-fighters**: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
- **Special fire-fighting procedures**: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
- All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus. Refer to protective measures listed in sections 7 and 8. Keep all other personnel upwind and away from the spill/release. Restrict access to area until completion of clean-up.

Environmental precautions
- Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. For large spills, dike the area to prevent spreading.

Methods and material for containment and cleaning up
- Ventil ate the contaminated area. Stop the flow of material, if this is without risk. Dike for water control. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13).

Special spill response procedures
- If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).

EPA/CERCLA Reportable quantity (RQ): acetic acid (5000 lbs / 2270 kg)

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
- Use only outdoors or in a well-ventilated area. Wear protective gloves/clothing and eye/face protection. Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Keep away from metals and incompatibles. No smoking in the area. When preparing or diluting solution, always add to water, slowly and with stirring. Use only non-sparking tools. Take precautionary measures against static discharge. Ground/Bond container and receiving equipment. When diluting, always add the product to water. Never add water to the product. Label containers appropriately. Keep containers tightly closed when not in use. Wash thoroughly after handling.
SAFETY DATA SHEET

Conditions for safe storage : Store in a cool, dry, well-ventilated area. Store away from incompatibles and out of direct sunlight. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area. Store in corrosion-resistant containers. Not corrosive to some stainless steels (e.g. types 304, 316). Copper and alloys, except those with high zinc content, show good resistance at all concentrations. High concentrations (> 99%) may be used with or stored and shipped in aluminum (alloys not specified). Aluminum slowly corrodes, forming a layer of aluminum acetate that prevents further corrosion. Water will increase the corrosion rate.

Incompatible materials : Alkalies; Strong oxidizing agents; Metals (Carbon steel; Brass; Zinc; bronze); Acetaldehyde..

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th></th>
<th>OSHA PEL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>STEL</td>
<td>PEL</td>
<td>STEL</td>
</tr>
<tr>
<td>Acetic acid glacial</td>
<td>10 ppm</td>
<td>15 ppm</td>
<td>10 ppm ; 25 mg/m³</td>
<td>N/Av</td>
</tr>
<tr>
<td>Water</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Exposure controls

Ventilation and engineering measures : Provide exhaust ventilation or other engineering controls to keep the airborne concentration of vapours below their respective threshold limit value.

Respiratory protection : Respiratory protection is required if the concentrations exceed the TLV. A NIOSH/MSHA approved air-purifying respirator with the appropriate chemical cartridges or a positive-pressure, air-supplied respirator may be used to reduce exposure. Advice should be sought from respiratory protection specialists.

Skin protection : Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers.

Eye / face protection : Chemical splash goggles are recommended. A full face shield may also be necessary.

Other protective equipment : Wear resistant clothing and boots. An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

General hygiene considerations : Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Do not eat, drink, smoke or use cosmetics while working with this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear colourless liquid.

Odour : Vinegar-like.

Odour threshold : N/Av

pH : >2.3

Melting/Freezing point : Not available.

Initial boiling point and boiling range : Not available.

Flash point : 49°C (103 °F)

Flashpoint (Method) : closed cup

Evaporation rate (BuAe = 1) : Not available.
SAFETY DATA SHEET

Flammability (solid, gas) : Not applicable.
Lower flammable limit (% by vol.) : Not available.
Upper flammable limit (% by vol.) : Not available.
Oxidizing properties : Not available.
Explosive properties : None known.
Vapour pressure : Not available.
Vapour density : Not available.
Relative density / Specific gravity : ~1.06
Solubility in water : Soluble
Other solubility(ies) : Soluble in most organic solvents.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution : -0.17
Auto-ignition temperature : Not available.
Decomposition temperature : Not available.
Viscosity : Not available.
Volatile (% by weight) : Not available.
Volatile organic Compounds (VOC’s) : N/Av
Absolute pressure of container : N/Ap
Flame projection length : N/Ap
Other physical/chemical comments : None known or reported by the manufacturer.

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Not normally reactive. May be corrosive to metals. Contact with metals may release small amounts of flammable hydrogen gas.
Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions : No dangerous reaction known under conditions of normal use.
Conditions to avoid : Avoid heat and open flame. Ensure adequate ventilation, especially in confined areas. Avoid contact with incompatible materials.
Incompatible materials : Alkalis; Strong oxidizing agents; Metals (Carbon steel; Brass; Zinc; bronze); Acetaldehyde..
Hazardous decomposition products : None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
Routes of entry inhalation : YES
Routes of entry skin & eye : YES
Routes of entry Ingestion : YES
Routes of exposure skin absorption : NO
SAFETY DATA SHEET

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation
: May cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, choking and wheezing. Symptoms of pulmonary edema (chest pain, shortness of breath) may be delayed.

Sign and symptoms ingestion
: May cause severe irritation and corrosive damage in the mouth, throat and stomach. Symptoms may include abdominal pain, vomiting, burns, perforations, bleeding and eventually death.

Sign and symptoms skin
: Causes severe skin irritation. Direct skin contact may cause corrosive skin burns, deep ulcerations and possibly permanent scarring.

Sign and symptoms eyes
: Causes serious eye damage. Chemical burns, corneal damage, and possibly blindness can result from direct contact.

Potential Chronic Health Effects
: Chronic skin contact with low concentrations may cause dermatitis. Prolonged or repeated inhalation of fumes or vapours, may cause chronic lung effects, such as bronchitis, and tooth enamel erosion.

Mutagenicity
: Not expected to be mutagenic in humans.

Carcinogenicity
: No expected to be a skin or respiratory sensitizer.

Reproductive effects & Teratogenicity
: Not expected to have other reproductive effects.

Sensitization to material
: Not expected to be a skin or respiratory sensitizer.

Specific target organ effects
: This material is not classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Medical conditions aggravated by overexposure
: Pre-existing skin, eye and respiratory disorders.

Synergistic materials
: Not available.

Toxicological data
: There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data. The calculated ATE values for this mixture are:
ATE inhalation (vapours) = 114 mg/L
ATE dermal = 10600 mg/kg

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>LC50(4hr) inh, rat</th>
<th>LD50 (Oral, rat)</th>
<th>LD50 (Rabbit, dermal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid glacial</td>
<td>11.4 mg/L</td>
<td>3310 mg/kg</td>
<td>1060 mg/kg</td>
</tr>
<tr>
<td>Water</td>
<td>N/Av</td>
<td>&gt;90 mL/kg</td>
<td>N/Av</td>
</tr>
</tbody>
</table>

Other important toxicological hazards
: None known or reported by the manufacturer.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity
: The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters. See the following tables for individual ingredient ecotoxicity data.
SAFETY DATA SHEET

Ecotoxicity data:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LC50 / 96h</td>
</tr>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>&gt;300.82mg/L (Zebra fish)</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>No information available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Daphnia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EC50 / 48h</td>
</tr>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>65mg/L (Water flea)</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>No information available.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No</th>
<th>Toxicity to Algae</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>EC50 / 96h or 72h</td>
</tr>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>37.9mg/L (Green algae)</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>No information available.</td>
</tr>
</tbody>
</table>

Persistence and degradability: Readily biodegradable.

Bioaccumulation potential: No data is available on the product itself.

<table>
<thead>
<tr>
<th>Components</th>
<th>Partition coefficient n-octanol/ater (log Kow)</th>
<th>Bioconcentration factor (BCF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid glacial (CAS 64-19-7)</td>
<td>-0.17</td>
<td>3.2</td>
</tr>
<tr>
<td>Water (CAS 7732-18-5)</td>
<td>N/Ap</td>
<td>N/Ap</td>
</tr>
</tbody>
</table>

Mobility in soil: No data is available on the product itself.

Other Adverse Environmental effects: No data is available on the product itself.

SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal: Handle waste according to recommendations in Section 7. Empty containers retain residue (liquid and/or vapour) and can be dangerous.

Methods of Disposal: Dispose of in accordance with federal, provincial and local hazardous waste laws.

RCRA: The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

SECTION 14. TRANSPORTATION INFORMATION

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN Number</th>
<th>UN proper shipping name</th>
<th>Transport hazard class(es)</th>
<th>Packing Group</th>
<th>Label</th>
</tr>
</thead>
</table>
SAFETY DATA SHEET

TDG UN2790 ACETIC ACID SOLUTION, 8 III
May be shipped as LIMITED QUANTITY in containers of less than 500 mL, in packages not exceeding 30 kg gross mass. Under the TDGR, refer to Section 1.17 for additional exemption information, if shipping under this exemption. ERAP: 3000 L

49CFR/DOT UN2790 ACETIC ACID SOLUTION 8 III
US CERCLA Reportable quantity (RQ): (5000 lbs / 2270 kg)

ICAO/IATA UN2790 Acetic acid solution 8 III
Refer to ICAO/IATA Packing Instruction

IMDG UN2790 ACETIC ACID SOLUTION 8 III
May be shipped as limited quantity, consult the IMDG regulations for more information.

Special precautions for user: Keep away from heat, sparks and open flame. - No smoking.
Environmental hazards: See ECOLOGICAL INFORMATION, Section 12.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:
Components listed below are present on the following U.S. Federal chemical lists:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>Yes</td>
<td>5000 lb/ 2270 kg</td>
<td>NA/NA</td>
<td>NA/NA</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>Yes</td>
<td>NA/NA</td>
<td>NA/NA</td>
<td>NA/NA</td>
</tr>
</tbody>
</table>

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: Fire Hazard; Acute Health Hazard. Under SARA Sections 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

US State Right to Know Laws:
The following chemicals are specifically listed by individual States:
SAFETY DATA SHEET

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>California Proposition 65</th>
<th>State &quot;Right to Know&quot; Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Listed</td>
<td>Type of Toxicity</td>
</tr>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>No</td>
<td>N/Ap</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>No</td>
<td>N/Ap</td>
</tr>
</tbody>
</table>

**Canadian Information:**
Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Canadian WHMIS Classification: Refer to Section 2 for a WHMIS Classification for this product.

**International Information:**
Components listed below are present on the following International Inventory list:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS #</th>
<th>European EINECs</th>
<th>Australia AICS</th>
<th>Philippines PICCS</th>
<th>Japan ENCS</th>
<th>Korea KECI/KECL</th>
<th>China IECSC</th>
<th>NewZealand IOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid glacial</td>
<td>64-19-7</td>
<td>200-580-7</td>
<td>Present</td>
<td>Present</td>
<td>(2)-688</td>
<td>KE-00013</td>
<td>Present</td>
<td>HSR000975, HSR001580, HSR001581, HSR001582 (dilution)</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Present</td>
<td>Listed</td>
<td>Listed</td>
<td>KE-35400</td>
<td>Present</td>
<td>Listed</td>
</tr>
</tbody>
</table>

**SECTION 16. OTHER INFORMATION**

**Legend**
- ACGIH: American Conference of Governmental Industrial Hygienists
- CAS: Chemical Abstract Services
- ERAP: Emergency Response Assistance Plan
- HSDB: Hazardous Substances Data Bank
- IARC: International Agency for Research on Cancer
- Inh: Inhalation
- LC: Lethal Concentration
- LD: Lethal Dose
- MSHA: Mine Safety and Health Administration
- N/Ap: Not Applicable
- N/Av: Not Available
- NIOSH: National Institute of Occupational Safety and Health
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PEL: Permissible exposure limit
- RTECS: Registry of Toxic Effects of Chemical Substances
- STEL: Short Term Exposure Limit
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- TLV: Threshold Limit Values
- TWA: Time Weighted Average
- WHMIS: Workplace Hazardous Materials Identification System

**References**
- Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2015 (Chempendium, RTECS, HSDB, INCHEM).

Material Safety Data Sheet from manufacturer
SAFETY DATA SHEET

Preparation Date (mm/dd/yyyy): 09/30/2015

Other special considerations for handling:
- Provide adequate information, instruction and training for operators.

Prepared for:
Borden & Remington Corp
63 Water St.
Fall River, MA 02722
Telephone: 508-675-0096

Prepared by:
ICC The Compliance Center Inc.
Telephone: (888) 442-9628 (U.S.); (888) 977-4834 (Canada)
http://www.thecompliancecenter.com

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END OF DOCUMENT