COMPANY DETAILS

Name: NCP Alcohols
Address: 121 Sea Cow lake Road, Durban, 4001, South Africa
Emergency telephone No.: +27 (31) 579 2004
Telephone: +27 (31) 560 1111
Fax: +27 (31) 579 1541

1. Product and Company Identification

Trade name: Spirit Vinegar
Chemical abstract No.: 64-19-7 (Acetic Acid)
Chemical Family: Carboxylic Acid
Molecular Mass: 60.05 g/mol
Chemical name: Acetic Acid
NIOSH No.: AF 1225000 (Acetic Acid)
Synonyms: Ethanoic acid, Ethylic acid,
Hazchem code: 2P
Methane Carboxylic acid
UN No.: 2790

2. Composition:

Hazardous components: Acetic acid (10-17 % by volume)
EEC classification: 607-002-01-3 (Acetic acid 100%)
R Phrases: R34 - Causes burns, R35 (Acetic Acid) - Causes severe burns.

3. Hazards Identification:

Main Hazard: Vinegar is an irritant to eyes, skin and respiratory tract.
Flammability: Under normal conditions, vinegar is unlikely to be flammable.
Chemical Hazard: Vinegar is corrosive to many metals and may liberate flammable and explosive hydrogen. Vinegar reacts with basic materials such as Sodium Carbonate.
Biological Hazard: If ingested in large amounts, vinegar may cause pain, irritation and burns in the mouth, oesophagus and stomach.
Reproductive hazard: No teratogenic effects were reported in rabbits following administration of apple cider vinegar (47). Therefore, vinegar is not a reproductive hazard.
Health effects – eyes: Eye contact with vinegar causes immediate pain, irritation and may cause conjunctivitis and corneal damage. If not removed promptly, may result in permanent damage including blindness.
Health effects – skin: Contact may cause mild injury and burns from vinegar of 10% acetic acid or greater. Vinegar may cause slight irritation to normal or abraded skin and may even cause dermatitis in some sensitive individuals.
# Spirit Vinegar (CH₃COOH)

**MATERIALS SAFETY DATA SHEET (MSDS)**

<table>
<thead>
<tr>
<th>MSDS Number</th>
<th>NCP/P/2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version number</td>
<td>Version 4.0</td>
</tr>
<tr>
<td>Date issued</td>
<td>13th May 2016</td>
</tr>
<tr>
<td>Next Review date</td>
<td>May 2018</td>
</tr>
<tr>
<td>Page No.</td>
<td>Page 2 of 9</td>
</tr>
</tbody>
</table>

## Health effects

- **Ingestion**: If ingested in large amounts vinegar may cause pain, irritation and burns in the mouth, oesophagus and stomach.

- **Inhalation**: Vinegar vapour is irritating to the respiratory tract, membranes lining the nose, throat and lungs. Conjunctival and upper respiratory tract irritation and hyperkeratotic dermatitis have been reported in workers exposed for over two years to mean airborne acetic concentrations of 0.125mg/l. Breathing of vapours or mists should be avoided.

## Carcinogenicity

Vinegar has been used as a food additive for a considerable period of time and there is no evidence to indicate that it is a potential carcinogen, i.e. No known cancer hazards.

## Mutagenicity

In several studies, acetic acid was not mutagenic in the Salmonella/microsome test. Mutagenic for mammillary somatic cells (Acetic acid) Mutagenic for bacteria and/or yeast (Acetic acid).

## Neurotoxicity

No information available.

## 4. First aid Measures:

- **Product in eye**: Immediately flush eyes with plenty of water for at least 20 minutes. Take care not to rinse contaminated water into the non-affected eye. Obtain medical attention immediately.

- **Product on skin**: Avoid direct skin contact with vinegar. Wear impervious protective gloves, if necessary. Flush contaminated area with running water. Remove contaminated clothing and shoes. Obtain medical attention if skin irritation persists. Completely decontaminate clothing and shoes before re-use.

- **Product ingested**: If swallowed, at least 240 to 300ml of water should be consumed to dilute. DO NOT INDUCE VOMITTING. Do not give the person emetics or baking soda. If the person’s condition deteriorates obtain medical attention immediately.

- **Product inhaled**: If a person is exposed to excessive levels of fumes, move the person to fresh air. If breathing is difficult, Oxygen may be beneficial if administered by a person trained in its use, preferably on a Physician’s advice. If breathing has stopped, a trained person should begin artificial respiration. If the person’s condition deteriorates obtain medical attention immediately.

## 5. Fire-fighting Measures:

- **Extinguishing media**: Under normal conditions vinegar is not flammable however, should there be an incident involving vinegar, use Carbon Dioxide, Dry Chemical Powder, foam or water spray to extinguish the fire.

- **Special hazards**: None. Vinegar is not flammable.

- **Protective clothing**: As in any fire, wear a self-contained breathing apparatus and full protective gear.
6. Accidental Release Measures:

**Personal precautions**: Restrict access to area until completion of the clean-up. Ensure that the clean-up is conducted by trained personnel only. Protective clothing should be worn to prevent excessive skin contact. Vinegar should be handled wearing the appropriate protective clothing as defined in Section 8.

**Environmental precautions**: Keep non-neutralized material out of sewers, storm water drains, soil and ditches that lead to waterways.

**Small spills**: Ventilate the area. Dilute with water and mop up or absorb with an inert dry material and place in an appropriate waste disposal container that is suitably covered and labelled. The spilled material may also be neutralized with a dilute solution of Sodium Carbonate. Flush area with water. Treat or dispose of waste material as a weak acid in accordance with all local, state/provincial and national requirements.

**Large spills**: Corrosive liquid. Stop or reduce leak if safe to do so. Contain spill with earth, sand, or inert absorbent material. Large spills may be neutralized with dilute alkaline solutions of Soda Ash or Lime. Avoid runoff into storm water drains and ditches that lead to waterways. Prevent material from entering sewers or confined spaces. Remove liquid by pumps or vacuum equipment where possible. Finish cleaning by spreading water on the contaminated surface and allow evacuation through the sanitary/effluent system. Place waste material into suitable, covered, labelled containers for removal and disposal at a controlled site, in accordance with all local, state/provincial and national requirements.

7. Handling and Storage:

**Suitable material**: Vinegar may be stored in rubber-lined, polythene-lined, stainless steel or glass-lined vessels.

**Handling/storage precautions**: Most metals may react with vinegar with the exception of Aluminium and Stainless Steel. Store in a well-ventilated place. Keep container tightly closed. Personnel handling the material should avoid breathing in the vapours, avoid contact with eyes, skin and clothing. Contaminated clothing should be washed before use. Store only with compatible materials.
### 8. Exposure Control / Personal Protection:

#### Occupational exposure limits:

<table>
<thead>
<tr>
<th>Country</th>
<th>8 Hour - TWA Hygiene Limit</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>25 mg/m³ (10ppm)</td>
<td>27 mg/m³ (15ppm)</td>
</tr>
<tr>
<td>NIOSH</td>
<td>25 mg/m³ (10ppm)</td>
<td>37 mg/m³ (15ppm)</td>
</tr>
<tr>
<td>Canada</td>
<td>26 mg/m³ (10ppm)</td>
<td>39 mg/m³ (15ppm)</td>
</tr>
<tr>
<td>ACGIH</td>
<td>25 mg/m³ (10ppm)</td>
<td>37 mg/m³ (15ppm)</td>
</tr>
</tbody>
</table>

#### Engineering control measures:

Facilities storing/utilizing this material should be equipped with an eye wash facility and a safety shower. Exhaust ventilation or other engineering controls should be provided to keep the airborne concentrations of vapours below their respective threshold limit values. Use a corrosion resistant ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed by exhaust systems.

#### Personal protection – respiratory:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. The appropriate equipment should be available for use in emergencies, such as spills. When there is potential for airborne exposures in excess of applicable limits, wear suitable approved respiratory protection. Under normal use conditions, with adequate ventilation, no special handling equipment are required.

#### Personal protection – hand:

Rubber or Neoprene gloves are recommended.

#### Personal protection – eye:

Wear chemical safety goggles.

#### Personal protection – skin:

When prolonged or frequently repeated contact could occur, use protective clothing that is Impermeable or resistant to this material such as boots and overalls. Wear protective gloves to minimize skin contamination.

#### Other protection:

Have a safety shower/eye wash fountain readily available in the work area.
### 9. Physical and Chemical Properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>Colourless water-like liquid.</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Sharp, sour, pungent odour and burning taste.</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>2.2 @ 10 % acetic acid.</td>
</tr>
<tr>
<td><strong>Boiling point</strong></td>
<td>105°C.</td>
</tr>
<tr>
<td><strong>Melting point</strong></td>
<td>-3°C.</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability</strong></td>
<td>5.4 - 16 % v/v (Acetic Acid).</td>
</tr>
<tr>
<td><strong>Autoflammability</strong></td>
<td>465°C (Acetic Acid).</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>None.</td>
</tr>
<tr>
<td><strong>Oxidizing properties</strong></td>
<td>None.</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>20mm Hg @ 20°C.</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>1014 kg/m³ @ 20°C.</td>
</tr>
<tr>
<td><strong>Solubility - water</strong></td>
<td>Completely miscible with water.</td>
</tr>
<tr>
<td><strong>Solubility – solvent</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Solubility – coefficient</strong></td>
<td>-0.322 (Acetic Acid).</td>
</tr>
</tbody>
</table>

### 10. Stability and Reactivity:

**Condition to avoid**: Metals and basic substances. As the material can react with metals, strong bases, Amines, Carbonate, Hydroxides, Phosphates, many Oxides, Cyanides, Sulphides, Chromic acid, Nitric acid, Hydrogen Peroxide, Carbonates, Ammonium Nitrate, Ammonium Thiosulfate, Chlorine Trifluoride, Chlorosulfonic acid, Perchloric acid, Permanganates, Xylene, Oleum, Potassium Hydroxide, Sodium Hydroxide, Phosphorous Isocyanate, Ethylenediamine, Ethylene imine (Acetic acid).

The material is corrosive in the presence of zinc. Slightly corrosive in the presence of steel, of Aluminium, of Copper and Brass and has moderate corrosive effects on Bronze.

**Incompatible materials**: Most metals (except Aluminium), bases and reducing agents. Also avoid contact with strong oxidizing agents such as Acetaldehyde. Avoid contact with strong bases as it reacts violently with oxidising agents, and Acetic Anhydride.
### 11. Toxicological Information:

**Acute toxicity**

: No toxic effects are likely to occur, however vinegar is an irritant to eyes, skin and respiratory tract.

**Short-term hazards**

- Acute oral toxicity: LD$_{50}$ rat: 33 100 mg/kg
- Acute inhalation toxicity: LD$_{50}$ mouse: 56 200 ppm/1H

**Skin and eye contact**

: Vinegar may cause slight irritation to normal/abraded skin. Immediate eye contact with vinegar causes immediate pain, discomfort, irritation and may cause conjunctivitis and corneal damage.

**Chronic toxicity**

: Refer to section 3

**Carcinogenicity**

: Refer to section 3

**Mutagenicity**

: Refer to section 3

**Neurotoxicity**

: Refer to section 3

**Reproductive hazards**

: Refer to section 3

### 12. Ecological Information (Acetic acid):

**Aquatic toxicity – fish**

: Slightly toxic to fish:
  - Fathead Minnow species; LC$_{50}$ (96 hours) – 88mg/L; Static bioassay @ 18 – 22°C
  - Bluegill/Sunfish; LC$_{50}$ (96 hours) – 75mg/L
  - Goldfish; LC$_{50}$ (24 hours) – 423mg/L

**Aquatic toxicity – daphnia**

: Unspecified water flea Daphnia: EC$_{50}$ = 32 – 47mg/L (24 – 48 hours)

**Aquatic toxicity – algae**

: Unspecified bacteria; Phytobacterium phosphoreum: EC$_{50}$ = 8.86 - 11mg/L (5, 15, 25 minutes)

**Biodegradability**

: Biodegrades readily under aerobic and anaerobic conditions. Evaporation from dry surfaces is likely to occur. When spilled on the soil, the liquid will spread on the surface and penetrate into the soil at a rate dependent on the soil type and its water content.
13. Disposal Considerations:

Disposal methods: Treat or dispose of waste material in accordance with all local, state/provincial, and national requirements.

Disposal of packaging: Empty containers may contain harmful residues and are subject to proper waste disposal.

14. Transport Information:

UN No: 2790
Substance Identity No: UN 2790
ADR/RID class: 8
ADR/RID item No: UN 2790
ADR/RID hazard identity No: 80
IMDG – shipping name: Acetic Acid Solution
IMDG – class: 8
IMDG – packaging group: III
IMDG – marine pollutant: No
IMDG – EMS No: F-A, S-B
IMDG – MFAG table No: 8100
IATA – shipping name: Acetic Acid Solution
IATA – class: 8
IATA – subsidiary risk(s): None
ADNR – class: 8
UK – description: Not available
UK- emergency action class: Not available
UK – classification: Not available
Tremcard No: 2790
# Regulatory Information

**EEC classification**: 607-002-01-3 (Acetic acid 100%)

**R Phrases**: R34 - Causes burns, R35 (Acetic Acid) - Causes severe burns.

**Safety phrases**: S23.2 - Do not breathe vapour.  
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S45 - In case of accident or if you feel unwell, seek medical advice immediately.

**National legislation**: Hazardous Substances Act 15 of 1973 and Regulations  
Occupational Health and Safety Act 85 of 1993 (Hazardous Chemical Substances Regulations)


# Sources of Information

1. Chemical Safety Data Sheets Volume 1 - Royal Society of Chemistry Information Services (Numbers in parenthesis refer to this article, see below).
3. Canadian Centre for Occupational Health and Safety. Record No. 516022

# Other Information

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 NCP Alcohols 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 NCP Alcohols has been advised of the possibility of such damages.

# Change Details

**Revision: 2.0**  
- Changed MSDS Format  
- Updated contents to include current information available

**Revision 3.0**  

**Revision 4.0**  
- Updated company fax number  
- Updated IATA Reference  
- Included reference to IMDG Code
19. References

2. Anon. BCISC Quart. Safety Summ. 1966, 37, 30
13. MCA Case History No. 1865
14. MCA Case History No. 1764
17. Sittig, M. Hazards and Toxic Effects of Industrial Chemicals (Noyes Data Corp., New Jersey, 1979)
18. Sterner, J.H. Ind. Med. 1943, 12, 518
26. Toxicological Index (CSST. 1986)
35. Mori, K. Gann 1952, 43, 433-466
38. Survey of compounds which have been tested from carcinogenic activity: through 1972-1973 volume, Public Health Service Publication No. 149, (U.S. Govt. Printing Office, Washington, DC)
41. McMahon, R.E.; et al. Cancer Res. 1979, 39, 682
46. Takizawa, Y.; et al. Mutat. Res. 1985, 147, 275
48. HAZMAT data: For first response, transportation, storage and security. Richard .P. Pohanish, Pg 3
49. www.newworldencyclopedia.org

Compiled By: D.D. Liebenberg Reviewed and updated by: L. Mudaly ( SHEQ Manager) Approved By: G. Bregovits