SAFETY DATA SHEET
Acetic Acid 80% Solution

1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

REACH REGISTRATION NUMBER: 01·2119475328·30·xxxx
CAS-NO: 000064·19·7
EU INDEX NO: 607-002-00·6
EC (EINECS) NO: 200-580-7
PRODUCT NO: A009, A012
INTERNAL ID: A007, G006, G007.
SYNONYMS, TRADE NAMES: PYROLIGNEOUS ACID, ETHYLIC ACID, GLACIAL ACETIC ACID, ETHANOIC ACID, METHANE CARBOXYLIC ACID, VINEGAR ACID
APPLICATION: Used in the manufacture of acetates and acetyl compounds. Acidulant and preservative in foods.

Company name: Nexchem Ltd
Unit 1 Underwood Court
Elm Tree Avenue
Glenfield
Leicester
Leicestershire
LE3 8SG
Tel: 0116 2311130
Fax: 0116 2311124
Emergency Tel: +44 (0) 116 2877916 or +44 (0) 7714 303742 (24 Hours)
Email: sales@nexchem.co.uk

2. HAZARDS IDENTIFICATION

CLASSIFICATION (1999/45) C·R34.
Human health Skin Corr. 1B - H314
Environment Not classified.

LABEL IN ACCORDANCE WITH (EC) NO. 1272/2008

SIGNAL WORD Danger
CONTAINS ACETIC ACID 80%
HAZARD STATEMENTS

H314: Causes severe skin burns and eye damage.

PRECAUTIONARY STATEMENTS

P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician.

SUPPLEMENTARY PRECAUTIONARY STATEMENTS

P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P264: Wash … thoroughly after handling.
P301+330+331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+361+353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P321: Specific treatment (see … on this label).
P363: Wash contaminated clothing before reuse.
P405: Store locked up.
P501: Dispose of contents/container to

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>ACETIC ACID ...%</th>
<th>60-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.: 64-19-7</td>
<td>EC No.: 200-580-</td>
</tr>
<tr>
<td></td>
<td>Registration Number: 01-2119475328-30-xxxx</td>
</tr>
</tbody>
</table>

Classification (EC 1272/2008) Classification (67/548/EEC)
Flam. Liq. 3 - H226 R10
Skin Corr. 1A - H314 C;R35

The Full Text for all R-Phrases and Hazard Statements is displayed in Section 16

EU INDEX NO. 607-002-00-6
EC (EINECS) NO. 200-580-7
GROSS FORMULA 99-100%
CAS-NO. 000064-19-7

COMPOSITION COMMENTS

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation GHS)
4. FIRST AID MEASURES

GENERAL INFORMATION
Remove all contaminated clothing. Remove affected person from source of contamination.

NOTES TO THE PHYSICIAN
Rescuers must not expose themselves to contact. Personal protective equipment must be worn. Symptomatic treatment. In case of lung irritation first treatment with dexamethason aerosol (spray). In case of choking: gastroscopy inclusive of aspiration and acidosis compensation.

INHALATION
Remove victim immediately from source of exposure. If respiratory problems, artificial respiration/oxygen. Get medical attention.

INGESTION
DO NOT induce vomiting. Get medical attention immediately. Promptly get affected person to drink large volumes of water to dilute the swallowed chemical. NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS!

SKIN CONTACT
Promptly flush contaminated skin with water. Promptly remove clothing if soaked through and flush the skin with water. Get medical attention immediately.

EYE CONTACT
Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention immediately. Continue to rinse…

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA
Water spray, fog or mist. Foam. Alcohol resistant foam. Carbon dioxide (CO₂).

SPECIAL FIRE FIGHTING PROCEDURES
Use water to keep fire exposed containers cool and disperse vapours. If a leak or spill has not ignited, use water spray to disperse vapours and protect men stopping the leak. Water spray may be used to flush spills away from exposures and dilute spills to non-flammable mixtures. Keep run-off water out of sewers and water sources. Dike for water control. Cool containers exposed to flames with water until well after the fire is out. Move container from fire area if it can be done without risk. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Use water spray to reduce vapours. Do not get water inside container. If risk of water pollution occurs, notify appropriate authorities.

UNUSUAL FIRE & EXPLOSION HAZARDS
May explode in a fire. May develop highly toxic or corrosive fumes if heated. May travel considerable distance to source of ignition and flash back. Vapour explosion and poison hazard indoors, outdoors and in sewers.

SPECIFIC HAZARDS
PROTECTIVE MEASURES IN FIRE

Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Acid resistant personal protective equipment is necessary.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Use a respirator (See section 8).

ENVIRONMENTAL PRECAUTIONS

Do not allow spillage to enter watercourses, drains or sewers. Fire Brigade and Local Authority must be informed if this happens as a potential explosive hazard may be created. Stop leak if possible without risk. Cover with dry sand or earth, do NOT use sawdust or other combustible materials. Shovel up residue and collect for authorised disposal.

SPILL CLEAN UP METHODS

Ventilate well, stop flow of gas or liquid if possible. Remove ignition sources. Do not allow chemical to enter confined spaces such as sewers due to explosion risk. Sewers designed to preclude formation of explosive concentrations of vapour may be permitted. Absorb small quantities with paper towels and evaporate in safe place (fume hood). Allow sufficient time for vapours to completely clear the hood ducts, then burn the paper in a location away from combustible materials. Large spills, dilute, then neutralise with caustic solution. Neutralise with alkaline material (Lime, crushed limestone, sodium bicarbonate or soda ash). Flush area with water. Clean-up personnel should use respiratory and/or liquid contact protection. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Ventilate.

7. HANDLING AND STORAGE

USAGE PRECAUTIONS

Keep away from heat, sparks and open flame. Avoid spilling, skin and eye contact. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level. Avoid acids, moisture, and combustible materials. Wear full protective clothing for prolonged exposure and/or high concentrations. Do not use contact lenses. Do not handle broken packages without protective equipment.

STORAGE PRECAUTIONS

Flammable/combustible - Keep away from oxidisers, heat and flames. Isolate from other materials. May attack some plastics, rubber and coatings. Store in tightly closed original container in a dry, cool and well-ventilated place. Keep above the chemical's freezing point. Store away from: Alkalis. Oxidising material and caustic products

STORAGE CLASS

Flammable liquid storage. Corrosive storage.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

INGREDIENT COMMENTS
EU TWA 25 mg/m3 10PPM

ENGINEERING MEASURES
Provide adequate general and local exhaust ventilation.

RESPIRATORY EQUIPMENT
Chemical respirator with organic vapour cartridge and full face piece. Gas mask with organic vapour canister (chin-style or front- or back-mounted). Supplied-air respirator with full face piece, helmet or hood. Self-contained breathing apparatus with full face piece.

HAND PROTECTION
Use protective gloves made of: Neoprene. Polyethylene. Butyl rubber. The penetration time of the recommended gloves depend not only on the material. Also other factors may have influence on the penetration time, as the thickness of them or the specific use or conditions (temperature). In any case certificate materials (for example following EN 374) should be selected. Please ask your supplier if the gloves are suitable for the extended use. Breakthrough time 480 min

EYE PROTECTION
Wear splash-proof eye goggles to prevent any possibility of eye contact. Contact lenses should not be worn when working with this chemical! EN 166 recommended

OTHER PROTECTION
Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station and safety shower. Impervious clothing, gloves and minimum 8 inches face shield. Wear appropriate clothing to prevent any possibility of skin contact with solutions containing 10% or more of this chemical.

HYGIENE MEASURES
Wash at the end of each work shift and before eating, smoking and using the toilet. Promptly remove any clothing that becomes wet or contaminated. Contaminated clothing to be placed in closed container until disposal or decontamination. Warn cleaning personnel of chemical's hazardous properties. Promptly remove non-impervious clothing contaminated with solid or liquid chemical or stronger than 10% solutions.

SKIN PROTECTION
Impervious clothing

ENVIRONMENTAL EXPOSURE CONTROLS
Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPEARANCE</td>
<td>Liquid</td>
</tr>
<tr>
<td>COLOUR</td>
<td>Colourless</td>
</tr>
<tr>
<td>ODOR</td>
<td>Acetic acid</td>
</tr>
<tr>
<td>PHYSICAL DATA COMMENTS</td>
<td>Information given concerns the active ingredient.</td>
</tr>
<tr>
<td>VOLATILITY DESCRIPTION</td>
<td>Volatile</td>
</tr>
<tr>
<td>SOLUBILITY</td>
<td>Miscible with water</td>
</tr>
<tr>
<td>MOL. WEIGHT</td>
<td>60.05</td>
</tr>
<tr>
<td>BOILING POINT (°C)</td>
<td>118</td>
</tr>
<tr>
<td>MELTING POINT (°C)</td>
<td>17</td>
</tr>
<tr>
<td>RELATIVE DENSITY</td>
<td>~ 1.07 @ 20 °C</td>
</tr>
<tr>
<td>VAPOUR DENSITY (air=1)</td>
<td>2.07</td>
</tr>
<tr>
<td>VAPOUR PRESSURE</td>
<td>~ 1.54 kPa @ 20 °C</td>
</tr>
<tr>
<td>EVAPORATION RATE</td>
<td>0.97 BuAc=1</td>
</tr>
<tr>
<td>pH-VALUE, CONC. SOLUTION</td>
<td>~ 4.5</td>
</tr>
<tr>
<td>VISCOSITY</td>
<td>~ 1.056 cps @ 25 °C</td>
</tr>
<tr>
<td>CRITICAL TEMPERATURE (°C)</td>
<td>~ 321</td>
</tr>
<tr>
<td>ODOR THRESHOLD, LOWER</td>
<td>24.3</td>
</tr>
<tr>
<td>FLASH POINT (°C)</td>
<td>~ 61 CC (Closed cup)</td>
</tr>
<tr>
<td>AUTO IGNITION</td>
<td>~ 425 (as acetic acid)</td>
</tr>
<tr>
<td>TEMPERATURE (°C)</td>
<td></td>
</tr>
<tr>
<td>FLAMMABILITY LIMIT - LOWER(%)</td>
<td>5.4 vol. as acetic acid</td>
</tr>
<tr>
<td>FLAMMABILITY LIMIT - UPPER(%)</td>
<td>16 vol. as acetic acid</td>
</tr>
<tr>
<td>PARTITION COEFFICIENT</td>
<td>-0.17 (measured)</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STABILITY</td>
<td>Stable under normal temperature conditions and recommended use.</td>
</tr>
<tr>
<td>CONDITIONS TO AVOID</td>
<td>Avoid heat, flames and other sources of ignition. Avoid static discharges.</td>
</tr>
<tr>
<td>HAZARDOUS POLYMERISATION</td>
<td>Will not polymerise.</td>
</tr>
<tr>
<td>HAZARDOUS DECOMPOSITION PRODUCTS</td>
<td>Toxic gases/vapours/fumes of: Carbon monoxide (CO).</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOXIC DOSE 1 - LD 50</td>
<td>3310 mg/kg (oral rat)</td>
</tr>
<tr>
<td>TOXIC CONC. - LC 50</td>
<td>40 mg/l/4h (inh-rat)</td>
</tr>
<tr>
<td>INHALATION</td>
<td>Irritating to respiratory system.</td>
</tr>
<tr>
<td>INGESTION</td>
<td>Causes severe burns.</td>
</tr>
<tr>
<td>SKIN CONTACT</td>
<td>Causes burns. Corrosive to rabbit skin OECD 404</td>
</tr>
<tr>
<td>EYE CONTACT</td>
<td>Corrosive to rabbit eye OECD 405</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
Acetic Acid 80% Solution

Issued: 15/11/2011

HEALTH WARNINGS
Exposure: This chemical has adequate warning properties. Gas or vapour is harmful on prolonged exposure or in high concentrations. This chemical may cause skin/eye irritation and burns (corrosive). Irritant of eyes and mucous membranes. Repeated exposure may cause chronic eye irritation. Contact with concentrated chemical may very rapidly cause severe eye damage, possibly loss of sight. Serious damage to the lining of nose, throat and lungs. Chronic inflammation of nose, throat and bronchial tubes. Acute eczematous dermatitis, contact type erythema, oedema, papules, vesicles, bullae, crusts, desquamation. Swallowing concentrated chemical may cause severe internal injury. Erosion of exposed front teeth. Keratosis (thickening of the horny layer of the skin).

ROUTE OF ENTRY
Inhalation. Ingestion. Skin and/or eye contact.

TARGET ORGANS
Eyes Respiratory system, lungs Skin Teeth Mucous membranes

MEDICAL SYMPTOMS

MEDICAL CONSIDERATIONS
Chronic respiratory and obstructive airway diseases. Skin disorders and allergies. Pre-existing eye problems.

12. ECOLOGICAL INFORMATION

ECOTOXICITY
Highly toxic to aquatic life.

MOBILITY
Completely miscible with water.

BIOACCUMULATION
No evidence of bioaccumulation. There is no evidence of accumulation in animals.

DEGRADABILITY
Readily biodegradable.

WATER HAZARD CLASSIFICATION
WGK 1 WGK (German) one (1): mild water pollutant.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Follow all applicable community, national or regional regulations regarding waste management methods. Contaminated packaging: Can be used after re conditioning

WASTE CLASS
Contaminated adsorbent must be removed in sealed plastic lined drums and disposed of via an authorised waste disposal contractor.

14. TRANSPORT INFORMATION

PROPER SHIPPING NAME
ACETIC ACID SOLUTION

SEA TRANSPORT NOTES
UN 2790 refers to solutions with more than 10% but not more than 80% (+ 0.5%) acetic acid by weight.

[cont..]
SAFETY DATA SHEET
Acetic Acid 80% Solution

Issued: 15/11/2011

ENVIRONMENTALLY HAZARDOUS SUBSTANCE/MARINE POLLUTANT
UN NO. ROAD 2790
ADR CLASS NO. 8
ADR CLASS Class 8: Corrosive substances.
ADR PACK GROUP II
TUNNEL RESTRICTION CODE (E)
HAZARD NO. (ADR) 80 Corrosive or slightly corrosive substance.

HAZARD No. (ADR) 80
ADR LABEL No. 8
HAZCHEM CODE •2R
UN NO. SEA 2790
IMDG CLASS 8
IMDG PACK GR. II
EMS F-A, S-B
UN NO. AIR 2790
AIR CLASS 8
AIR PACK GR. II

15. REGULATORY INFORMATION

Hazard symbols: No significant hazard.
Note: The regulatory information given above only indicates the principal regulations specifically applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

16. OTHER INFORMATION

RISK PHRASES IN FULL
R35 Causes severe burns.
R10 Flammable.
HAZARD STATEMENTS IN FULL
H314 Causes severe skin burns and eye damage.
H226 Flammable liquid and vapour.

Legal disclaimer: The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.

[final page]