Safety Data Sheet

1. Product and company identification

Trade Name

Acetic acid solution > 25% to <= 50%

Celanese Ltd.
222 W. Las Colinas Blvd., Suite 900N
Irving, TX 75039
United States
Phone: 972 443 4000
Internet: www.celanese.com

Transportation emergency phone numbers:
In USA, call 800 424 9300
Outside USA, call 703 527 3887, collect calls accepted.

Identified uses
Chemical intermediate, Agrochemicals, Cleaning agent, Process chemicals

2. Hazard Identification

GHS Classification

<table>
<thead>
<tr>
<th>Hazards</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquid</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 1A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label elements

Signal Word: Danger

Hazard Statements
Combustible liquid
Causes severe skin burns and eye damage
Causes serious eye damage
Precautionary statements
Keep away from flames and hot surfaces - No smoking
In case of fire:
Use foam, dry chemical, carbon dioxide (CO2), water spray to extinguish.
Wear protective gloves/ eye protection/ face protection.
Do not breathe dusts or mists
Wash face, hands and any exposed skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ 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.
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.
Store locked up.
Store in a well-ventilated place. Keep cool.
Dispose of contents/ container to an approved waste disposal plant.

3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No</th>
<th>Percent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>64-19-7</td>
<td>&gt; 25 - &lt; 50</td>
</tr>
</tbody>
</table>

4. First aid measures

General Information
Remove contaminated, soaked clothing immediately and dispose of safely. Pay attention to own protection. In any case show the physician the Safety Data Sheet.

Skin
Obtain medical attention. Wash off immediately with plenty of water for at least 15 minutes.

Eyes
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Inhalation
Keep at rest. Move to fresh air. Call a physician immediately.

Ingestion
If conscious, drink plenty of water. If swallowed, do not induce vomiting - seek medical advice.

Notes to physician
Observe for latent pulmonary edema.
5. Fire-fighting measures

**Suitable extinguishing media**
Foam, Dry chemical, Carbon dioxide (CO2), Water spray

**Extinguishing media which must not be used for safety reasons**
Do not use a solid water stream as it may scatter and spread fire.

**Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases**
Under conditions giving incomplete combustion, hazardous gases produced may consist of
Carbon monoxide
Carbon dioxide (CO2)
Nitrogen oxides (NOx)
Combustion gases of organic materials must in principle be graded as inhalation poisons

**Special protective equipment for fire-fighters**
Wear self-contained breathing apparatus and protective suit.

**Environmental precautions**
Water used to fight fire runoff can cause environmental damage. Dike and collect water used to fight fire.

**Other Information**
Cool containers / tanks with water spray

6. Accidental release measures

**Personal precautions**
Avoid contact with the skin and the eyes. Keep away from heat and sources of ignition. Provide adequate ventilation.

**Isolation**
Keep unnecessary people away; isolate hazard area and deny entry. Isolate for 800 meters or 0.5 miles in all directions if tank, rail car, or tank truck in involved in fire. Evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate. Spills may expose downwind areas to toxic or flammable concentrations over considerable distances in some cases.

**Environmental precautions**
Prevent further leakage or spillage. Do not discharge into the drains/surface waters/groundwater. Dike and collect water used to fight fire.

**Methods for cleaning up**
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

**Authority Notification**
Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:

6250 lb/2835kg
7. Handling and storage

Advice on safe handling
Provide sufficient air exchange and/or exhaust in work rooms.

Protection - fire and explosion:
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge. Ground and bond containers when transferring material. In case of fire, emergency cooling with water spray should be available.

Technical measures/Storage conditions
Keep tightly closed in a dry, cool and well-ventilated place. Handle an open container with care.

Material storage
Store locked up. Keep in a dry, cool and well-ventilated place.

Incompatible products
Keep away from: bases, amines

8. Exposure controls / personal protection

OSHA Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>10 PPM</td>
</tr>
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</table>

ACGIH Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>10 PPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>STEL</th>
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<tr>
<td>Acetic acid</td>
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</table>

2005 NIOSH IDLH

<table>
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<th>2005 NIOSH IDLH</th>
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</thead>
<tbody>
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<td>50 PPM</td>
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</table>

Mexico National Exposure Limits

<table>
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<tr>
<th>Components</th>
<th>LMPE - PPT</th>
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<tr>
<td>Acetic acid</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>STEL</th>
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</thead>
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<tr>
<td>Acetic acid</td>
<td>37 mg/m³</td>
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</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Mexican Carcinogen Category</th>
</tr>
</thead>
</table>
Exposure controls

Engineering measures
General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Protective equipment
A safety shower and eyewash should be readily available.

General advice
Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Use only in an area equipped with a safety shower. Hold eye wash fountain available.

Respiratory protection
For concentrations > 1 and < 10 times the occupational exposure level: Use air-purifying respirator with full facepiece and organic vapor cartridge(s) or air-purifying full facepiece respirator with an organic vapor canister or a full facepiece powered air-purifying respirator fitted with organic vapor cartridge(s). The air purifying element must have an end of service life indicator, or a documented change out schedule must be established. Otherwise, use supplied air.

For concentrations more than 10 times the occupational exposure level and less than the lower of either 100 times the occupational exposure level or the IDLH: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuous-flow mode.

For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system.

For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Skin protection:
Wear impervious clothing and gloves to prevent contact. Neoprene is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Eye/face protection:
Wear chemical goggles when there is a reasonable chance of eye contact. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

9. Physical and chemical properties

Appearance

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colourless</td>
</tr>
<tr>
<td>Odor</td>
<td>pungent</td>
</tr>
</tbody>
</table>
9. Physical and chemical properties

Flash point
- Method: closed cup
- > 61°C (141.8°F)

Melting point/range
- > -20 - < -9 °C (calculated) (-4 - 15.8°F)

Boiling point/range
- 101 - 102°C @ 1013 hPa (calculated) (213.8 - 215.6°F)

Density
- 1.035 - 1.061 g/ml @ 15°C
- Method: calculated

pH
- 2.2

Vapor density
- > 1 (Air=1)

Water solubility
- miscible

10. Stability and reactivity

Chemical stability
Stable under normal conditions of handling, use and transportation.

Conditions to avoid
Avoid any source of ignition. Avoid contact with heat, sparks, open flame, and static discharge.

Incompatible Materials
Keep away from:
- amines
- bases

Hazardous Combustion or Decomposition Products:
Thermal decomposition products may include oxides of carbon.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

11. Toxicological information

Potential health effects

Routes of exposure
- Skin, eyes, inhalation, ingestion.

Immediate effects

Skin
- Causes skin burns. May be harmful if absorbed through skin. Symptoms of overexposure include: Redness or discoloration, swelling, itching, burning or blistering of skin.

Eyes
- Exposure to liquid causes severe eye burns, damage irreversible. Exposure to vapors Causes eye irritation. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision.

Inhalation
- Causes respiratory tract irritation. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty. Accumulation of fluid in the lungs (pulmonary edema); symptoms can be delayed for several hours.
Ingestion
Causes digestive tract burns. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea. Inflammation of mouth, throat, esophagus and/or stomach.

Target organ effects
Overexposure (prolonged or repeated exposure) may cause:
- Injury to the eyes
- Digestive tract damage
- Respiratory tract damage
- Skin damage.

Medical conditions which may be aggravated by exposure:
- Respiratory Tract
- Skin
- Eyes

### Acetic acid

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50: 3310 mg/kg</td>
<td></td>
</tr>
<tr>
<td>LC50 (4h): &gt; 40000 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Species Corrosive</td>
<td></td>
</tr>
<tr>
<td>Method OECD 404</td>
<td></td>
</tr>
<tr>
<td>In vivo Mammalian Erythrocyte Micronucleus Test: negative - Method: EU Method B.12 (Reference substance: Acetic anhydride)</td>
<td></td>
</tr>
<tr>
<td>Acute oral toxicity</td>
<td></td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td></td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td></td>
</tr>
<tr>
<td>Species Rabbit eye</td>
<td></td>
</tr>
<tr>
<td>Method OECD 405</td>
<td></td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td></td>
</tr>
<tr>
<td>Species Rabbit eye</td>
<td></td>
</tr>
<tr>
<td>Method OECD 405</td>
<td></td>
</tr>
<tr>
<td>Carcinogenic effects in vitro Mutagenicity</td>
<td></td>
</tr>
<tr>
<td>Corrosive</td>
<td></td>
</tr>
<tr>
<td>Nonsensitizer</td>
<td></td>
</tr>
<tr>
<td>No evidence of carcinogenicity</td>
<td></td>
</tr>
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</table>

12. Ecological Information

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute fish toxicity</td>
<td>LC50: &gt; 300.82 mg/l (96h)</td>
</tr>
</tbody>
</table>
12. Ecological Information

Species: Oncorhynchus mykiss (rainbow trout)
Method: OECD 203
Acute daphnia toxicity
Species: Daphnia magna
Method: OECD 202
Toxicity to aquatic plants
Species: Skeletonema costatum
Method: ISO 10253
Toxicity to bacteria
Species: Pseudomonas putida
Method: OECD 301 C

Biodegradation
Species: Pseudomonas putida
Method: OECD 301 C

Other potential hazards
The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

13. Disposal considerations

Dispose of spilled material in accordance with state and local regulations for hazardous waste. Recommended methods are incineration or biological treatment at a federally or state-permitted disposal facility. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste.

EPA Hazardous Waste Code(s): D001, D002

14. Transport information

US Department of Transportation
UN/NA Number: UN 2790
Proper Shipping Name: Acetic acid solution
Hazard class: 8
Packing Group: III
Reportable Quantity (RQ): 6250 lb/2835kg

TDG
UN/NA Number: UN 2790
Proper Shipping Name: ACETIC ACID SOLUTION
Class: 8
Packing Group: III
### Safety Data Sheet

**Product name**: Acetic acid solution > 25% to <= 50%

**ICAO/IATA**
- **UN-No.**: UN 2790
- **Proper Shipping Name**: Acetic acid solution
- **Hazard Class**: 8
- **Packing group**: III

**IMDG**
- **UN/ID No.**: UN 2790
- **Proper Shipping Name**: Acetic acid solution
- **Hazard Class**: 8
- **Packing group**: III
- **Marine pollutant**: no
- **EmS Code**: F-A, S-B

### 15. Regulatory Information

**US State Regulations**
Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

**Acetic acid 64-19-7**
- Pennsylvania: Listed
- New York: Listed
- New Jersey: Listed
- Illinois: Listed
- Massachusetts: Listed
- Rhode Island: Listed

**U.S. FEDERAL REGULATIONS**

**TSCA Inventory:**
We certify that all components are either on the TSCA inventory or qualify for an exemption.

**Environmental Regulations:**

**Acetic acid 64-19-7**
- CERCLA Hazardous Substance: Listed

**SARA 311:**
- Acute health: Yes
- Chronic health: No
- Fire: Yes
- Sudden release of pressure: No
- Reactive: No

**INTERNATIONAL REGULATIONS**
International Inventories
Listed on the chemical inventories of the following countries or qualifies for an exemption:
Australia (AICS)
Canada (DSL)
China (IECSC)
Europe (EINECS)
Japan (ENCS)
Japan (ISHL)
Korea (KECI)
New Zealand (NZIoC)
Philippines (PICCS)
United States (TSCA)

16. Other information

NFPA: Health: 3  Flammability: 2  Instability: 0
HMIS: Health: 3  Flammability: 2  Physical Hazard: 0

Prepared By
Product Stewardship Department
Celanese

Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on Celanese owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or 1907/2006/EC indicates that no data meeting these requirements is available.

Other Information:
Observe national and local legal requirements
Changes against the previous version are marked by ***

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Celanese makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. Effects can be aggravated by other materials and/or this material may aggravate or add to the effects of other materials. This material may be released from gas, liquid, or solid materials made directly or indirectly from it. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards. Material safety data sheets are provided on the Internet by Celanese as a service to its customers. Possession of an Internet MSDS does not indicate that the possessor of the MSDS was a purchaser or user of the subject product.
### Abbreviation and Acronym:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR</td>
<td>Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>CLP</td>
<td>Classification, Labelling and Packaging</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived No Effect Level</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System of Classification and Labelling of Chemicals</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IBC Code</td>
<td>International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IMO)</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Code for Dangerous Goods</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration</td>
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<tr>
<td>LD50</td>
<td>Lethal Dose</td>
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<td>LOAEC</td>
<td>Low Observed Adverse Effect Concentration</td>
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<td>LOAEL</td>
<td>Low Observed Adverse Effect Level</td>
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<tr>
<td>LOEL</td>
<td>Low Observed Effect Level</td>
</tr>
<tr>
<td>MEST</td>
<td>Mouse Ear Swelling Test</td>
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<tr>
<td>NOAEC</td>
<td>No Observed Adverse Effect Concentration</td>
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<tr>
<td>NOAEL</td>
<td>No Observed Adverse Effect Level</td>
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<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<td>NOEL</td>
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<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
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<td>PNEC</td>
<td>Predicted No Effect Concentration</td>
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<td>Risk Characterization Ratio</td>
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<td>RID</td>
<td>Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)</td>
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<td>STOT RE</td>
<td>Specific Target Organ Toxicity Repeated Exposure</td>
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<td>STOT SE</td>
<td>Specific Target Organ Toxicity Single Exposure</td>
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<tr>
<td>STP</td>
<td>Sewage Treatment Plant</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
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