1. Product and company identification

Trade Name

Acetic acid 99-100%

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.
In Mexico, call (921) 211-5048, 211-5000

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

2. Hazard Identification

GHS Classification

Hazards | Category
--- | ---
Flammable liquid | Category 3
Skin corrosion/irritation | Category 1A
Serious eye damage/eye irritation | Category 1

Label elements

Signal Word
Danger

Hazard Statements
Flammable liquid and vapor
Causes severe skin burns and eye damage
Causes serious eye damage
Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
In case of fire:
Use foam, dry chemical, carbondioxide (CO2), water spray to extinguish.
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF SWALLOWED: rinse mouth. Do NOT induce vomiting
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.
Wash contaminated clothing before reuse.
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>84-19-7</td>
<td>min 99.85</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
Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

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

Inhalation
Move to fresh air. Keep at rest. 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

NFPA:  Health: 3  Flammability: 2  Instability: 0

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:

5000 lb/2270kg
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>
</tbody>
</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>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>15 PPM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>2005 NIOSH IDLH</th>
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</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>50 PPM</td>
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</tbody>
</table>

Mexico National Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>LMPE - PPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>25 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>37 mg/m³</td>
</tr>
</tbody>
</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
<table>
<thead>
<tr>
<th>Form</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>colourless</td>
</tr>
<tr>
<td>Odor</td>
<td>pungent</td>
</tr>
</tbody>
</table>
9. Physical and chemical properties

Molecular Weight 60.05
Flash point 39°C (104°F)
Method closed cup
Ignition temperature 463°C (865°F)
Decomposition Temperature not determined
Lower explosion limit 4.0 Vol. %
Upper explosion limit 19.9 Vol. %
Melting point/range 17°C (62.6°F)
Boiling point/range 118°C (244.4°F)
Density 1.045 g/ml @ 25°C
pH 2.4 @ 60 g/l
Viscosity 1.056 mPa*s @ 25°C
Vapor pressure 21 hPa @ 25°C
77 hPa @ 50°C
Vapor density 2.07 (Air=1)
Evaporation Rate 0.97 (n-Butyl acetate = 1)
Water solubility miscible
Solubility in other solvents miscible with Ethanol Diethyl ether Acetone Benzene soluble in Chloroform
Partition coefficient -0.17 (measured)

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 vapors and liquid causes severe eye burns, damage irreversible. 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>Acute oral toxicity</th>
<th>LD50: 3310 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 (4h): &gt; 40000 mg/m³</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>corrosive</td>
</tr>
<tr>
<td>Species</td>
<td>rabbit</td>
</tr>
<tr>
<td>Method</td>
<td>OECD 404</td>
</tr>
<tr>
<td>Skin Sensitization</td>
<td>nonsensitizer</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>corrosive</td>
</tr>
<tr>
<td>Species</td>
<td>rabbit eye</td>
</tr>
<tr>
<td>Method</td>
<td>OECD 405</td>
</tr>
<tr>
<td>Carcinogenic effects</td>
<td>No evidence of carcinogenicity</td>
</tr>
<tr>
<td>in vitro Mutagenicity</td>
<td>Ames Test: negative - with and without metabolic activation - Method: OECD 471</td>
</tr>
<tr>
<td></td>
<td>In vitro Mammalian Chromosome aberrations in Chinese Hamster Cells: negative - with and without metabolic activation - Method: OECD 473</td>
</tr>
<tr>
<td>in vivo Mutagenicity</td>
<td>No evidence of reproductive and developmental toxicity</td>
</tr>
<tr>
<td>Developmental effects</td>
<td>oral gavage</td>
</tr>
<tr>
<td>Routes of exposure</td>
<td>rabbit rat mouse</td>
</tr>
</tbody>
</table>

Revision Date: May.07.2015
Issuing date: May.07.2015
Acetic acid

12. Ecological Information

Acetic acid

Acute fish toxicity
Species: Oncorhynchus mykiss (rainbow trout)
Method: OECD 203
LC50: > 300.82 mg/l (96h)

Acute daphnia toxicity
Species: Daphnia magna
Method: OECD 202
EC50: > 300.82 mg/l (48h)

Toxicity to aquatic plants
Species: Skeletonema costatum
Method: ISO 10253
EC50: > 300.82 mg/l (72h)

Toxicity to bacteria
Species: Pseudomonas putida
Method: OECD 301 C
EC3 (16h): 850 mg/l

Biodegradation
Readily biodegradable

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): D002, D001

14. Transport information

US Department of Transportation
UN/NA Number: UN 2789
Proper Shipping Name: Acetic acid, glacial
Hazard class: 8
### 14. Transport Information

- Subsidiary hazard: 3
- Packing Group: II
- Reportable Quantity (RQ): 5000 lb/2270kg

**TDG**

- UN/NA Number: UN 2789
- Proper Shipping Name: ACETIC ACID, GLACIAL
- Class: 8
- Subsidiary Risk: 3
- Packing Group: II

**Mexico Transport Information**

- UN-No.: UN 2789
- Proper Shipping Name: Acetic acid, glacial
- Hazard Class: 8
- Subsidiary Risk: 3
- Packing Group: II

**ICAO/IATA**

- UN-No.: UN 2789
- Proper Shipping Name: Acetic acid, glacial
- Hazard Class: 8
- Subsidiary Risk: 3
- Packing group: II

**IMDG**

- UN/ID No.: UN 2789
- Proper Shipping Name: Acetic acid, glacial
- Hazard Class: 8
- Subsidiary Risk: 3
- Packing group: II
- Marine pollutant: no
- EmS Code: F-E, S-C

### 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):
Safety Data Sheet

Product name: Acetic acid 99-100%
MSDS number: 80002
Revision Number: 0.01
Revision Date: May.07.2015
Issuing date: May.07.2015

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
16. Other information

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