Product name	Acetic anhydride 60% /Acetic acid 40% blend		NAGH/EN
MSDS number	80477	**Revision Date**	Jun.15.2015
Revision Number	0	**Issuing date**	Jun.15.2015

1. Product and company identification

Trade Name

Acetic anhydride 60% /Acetic acid 40% blend

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:
For Chemical Emergency: Spill Leak Fire Exposure or Accident
Call CHEMTREC Day or Night
DOMESTIC NORTH AMERICA: 800-424-9300
INTERNATIONAL, CALL +1 703-527-3887 (collect calls accepted)

2. Hazard Identification

GHS Classification

Hazards	**Category**
Flammable liquid	Category 3
Acute oral toxicity	Category 4
Acute inhalation toxicity	Category 2
Skin corrosion/irritation	Category 1A
Serious eye damage/eye irritation	Category 1

Label elements



Signal Word Danger

Hazard Statements
Flammable liquid and vapor
Harmful if swallowed
Fatal if inhaled
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, carbon dioxide (CO2) to extinguish.
Do not breathe dusts or mists
Use only outdoors or in a well-ventilated area.
Do not eat, drink or smoke when using this product
In case of inadequate ventilation wear respiratory protection
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Wash face, hands and any exposed skin thoroughly after handling.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
Wash contaminated clothing before reuse.
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
Call a POISON CENTER or doctor if you feel unwell.
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

Components	CAS-No	Percent %
Acetic acid	64-19-7	40
Acetic anhydride	108-24-7	60

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. Remove contact lenses. Call a physician immediately.

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

Ingestion
Rinse with plenty of water. 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:** 1

Suitable extinguishing media
Foam, Dry chemical, Carbon dioxide (CO2), Water spray or fog may be used to knock down corrosive vapor cloud. Water may be applied to the sides of the containers exposed to flames provided the water does not come in contact with the tank contents

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 run-off and vapor cloud may be corrosive. Water used to fight fire runoff can cause environmental damage. Dike and collect water used to fight fire.

Other Information
In the event of fire, cool tanks with water spray. May react violently with water

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. For personal protection see section 8.

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
Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Provide sufficient air exchange and/or exhaust in work rooms. Always open containers slowly to allow any excess pressure to vent. . Avoid breathing vapors or mists. Keep containers closed when not in use. Store in a place accessible by authorized persons only.

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 containers tightly closed in a dry, cool and well-ventilated place. Take measures to prevent the build up of electrostatic charge. Handle an open container with care.

Material storage
Store locked up.

Incompatible products
Keep away from alkalies., bases, amines, water

8. Exposure controls / personal protection

OSHA Exposure Limits

Components	TWA
Acetic acid	10 PPM
Acetic anhydride	5 PPM

ACGIH Exposure Limits

Components	TWA
Acetic acid	10 PPM
Acetic anhydride	5 PPM

Components	STEL
Acetic acid	15 PPM

Components	Celanese Workplace Exposure Limit
Acetic anhydride	1 ppm TWA

Components	2005 NIOSH IDLH
Acetic acid	50 PPM
Acetic anhydride	200 ppm

Mexico National Exposure Limits

Components	LMPE - PPT	
Acetic acid	25 mg/m^3	10 PPM
Acetic anhydride	20 mg/m^3	5 PPM

Components	STEL	
Acetic acid	37 mg/m^3	15 PPM

Components	Mexican Carcinogen Category
Acetic acid	Not applicable

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 eyebath 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. Remove and wash contaminated clothing before re-use.

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. Butyl rubber 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

Form	liquid
Color	clear colourless
Odor	of vinegar
Molecular Weight	60 Acetic acid 102 Acetic anhydride
Flash point	42.8°C(109°F)
Freezing point	-6.0 C
Boiling point/range	124 C
Vapor pressure	9.4 mm Hg @ 20°C
Specific Gravity	1.07
Water solubility	100 % @ 20°C

10. Stability and reactivity

Chemical stability
May react with evolution of heat and/or toxic gases on contact with water.

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
strong oxidizing agents
peroxides
acids
Aqueous solution of alkali salts
alcohols
water
steam

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

Possibility of hazardous reactions
Reacts violently with water, alkalies, alcohols, amines.

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. May be fatal if inhaled. 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. Harmful if swallowed. Symptoms of exposure may include: Inflammation of mouth, throat, esophagus and/or stomach. Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea.

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: Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Eyes
Respiratory Tract
Skin

Acetic acid

Acute oral toxicity	LD50: 3310 mg/kg
Acute inhalation toxicity	LC50 (4h): > 40000 mg/m³
Skin corrosion/irritation	corrosive
Species	rabbit
Method	OECD 404
Skin Sensitization	nonsensitizer
Serious eye damage/eye irritation	corrosive
Species	rabbit eye
Method	OECD 405
Carcinogenic effects	No evidence of carcinogenicity
in vitro Mutagenicity	Ames Test: negative - with and without metabolic activation - Method: OECD 471 In vitro Mammalian Chromosome aberrations in Chinese Hamster Cells: negative - with and without metabolic activation - Method: OECD 473
in vivo Mutagenicity	In vivo Mammalian Erythrocyte Micronucleus Test: negative - Method: EU Method B.12 (Reference substance: Acetic anhydride)
Developmental effects	No evidence of reproductive and developmental toxicity
Routes of exposure	oral gavage
Species	rabbit rat mouse
	NOAEL: 1600 mg/kg bw/day
Repeated exposure	No adverse effects
Routes of exposure	oral gavage
Species	rat male
	NOAEL: 290 mg/kg bw/day

Acetic anhydride

Acute oral toxicity	LD50: 630 mg/kg- harmful- Not toxic
Acute inhalation toxicity	LC100 (6h): 400 ppm - harmful
Method	Similar to OECD 412
Skin corrosion/irritation	corrosive
Species	Humans
Skin Sensitization	nonsensitizer
Serious eye damage/eye irritation	irritant
Species	rat
Method	OECD 413
Carcinogenic effects	No evidence of carcinogenicity

Acetic acid

in vitro Mutagenicity	Ames Test: negative - with and without metabolic activation - Method: OECD 471 In vitro Mammalian Chromosome aberrations in Chinese Hamster Cells: negative - with and without metabolic activation - Method: OECD 473
in vivo Mutagenicity	Did not cause chromosomal damage in rat bone marrow Method: EU B.12
Developmental effects	no adverse developmental effects
Routes of exposure	Inhalation
Species	rat
Repeated exposure	No adverse effects
Routes of exposure	Inhalation
Species	rat
Method	OECD 412
	LOAEC: 104 mg/m³

12. Ecological Information

Acetic acid

Acute fish toxicity	LC50: > 300.82 mg/l (96h)
Species:	Oncorhynchus mykiss (rainbow trout)
Method	OECD 203
Acute daphnia toxicity	EC50: > 300.82 mg/l (48h)
Species:	Daphnia magna
Method	OECD 202
Toxicity to aquatic plants	EC50: > 300.82 mg/l (72h)
Species:	Skeletonema costatum
Method	ISO 10253
Toxicity to bacteria	EC3 (16h): 850 mg/l
Species:	Pseudomonas putida
Biodegradation	Readily biodegradable
Method	OECD 301 C
Other potential hazards	The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

Acetic anhydride

Acute fish toxicity	LC50: > 300.82 mg/l (96h) (Reference substance: Potassium acetate solution)
Species:	Oncorhynchus mykiss (rainbow trout)
Method	SOP E257
Acute daphnia toxicity	EC50: > 300.82 mg/l (48h) (Reference substance: Potassium acetate solution)
Species:	Daphnia magna
Method	OECD 202
Toxicity to aquatic plants	EC50: > 300.82 mg/l (72h) (Reference substance: Potassium acetate solution)
Species:	Skeletonema costatum
Method	ISO 10253

12. Ecological Information

Toxicity to bacteria	EC3 (16h): 1150 mg/l
Species:	Pseudomonas putida
Biodegradation	Readily biodegradable
Method	BOD Standard Method
Other potential hazards	The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

13. Disposal considerations

Disposal considerations
Dispose of spilled material in accordance with state and local regulations for waste that is non-hazardous by Federal definition. 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 2920
Proper Shipping Name	Corrosive liquid, flammable, n.o.s.
Hazard Inducer	(Acetic Anhydride / Acetic acid)
Hazard class	8
Subsidiary hazard	3
Packing Group	II
Reportable Quantity (RQ)	5000 lb/2270kg
Emergency Resp. Guide	132

TDG

UN/NA Number:	UN 2920
Proper Shipping Name	CORROSIVE LIQUID, FLAMMABLE, N.O.S.
Hazard Inducer	(ACETIC ANHYDRIDE / ACETIC ACID)
Class:	8
Subsidiary Risk:	3
Packing Group:	II

Mexico Transport Information

UN-No.	UN 2920
Proper Shipping Name	Corrosive liquids, flammable, n.o.s.
Hazard Inducer	(Acetic Anhydride / Acetic Acid)
Hazard Class	8
Subsidiary Risk	3

Packing Group	II
Emergency Response Guide	132

ICAO/IATA

UN-No.	UN 2920
Proper Shipping Name	Corrosive liquid, flammable, n.o.s.
Hazard Inducer	(Acetic Anhydride / Acetic acid)
Hazard Class	8
Subsidiary Risk	3
Packing group	II

IMDG

UN/ID No.	UN 2920
Proper Shipping Name	Corrosive liquid, flammable, n.o.s.
Hazard Inducer	(Acetic Anhydride / Acetic acid)
Hazard Class	8
Subsidiary Risk	3
Packing group	II
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):

Acetic acid 64-19-7

Pennsylvania	Listed
New York	Listed
New Jersey	Listed
Illinois	Listed
Massachusetts	Listed
Rhode Island	Listed

Acetic anhydride 108-24-7

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

Acetic anhydride 108-24-7
CERCLA Hazardous Substance Listed

SARA 311:

Acute health:	Yes
Chronic health:	No
Fire:	Yes
Sudden release of pressure:	No
Reactive:	Yes

INTERNATIONAL REGULATIONS

International Inventories
Listed on the chemical inventories of the following countries or qualifies for an exemption:
Australia (AICS)
Canada (NDSL)
China (IECSC)
Europe (EINECS)
Japan (ISHL)
Korea (KECI)
Philippines (PICCS)

16. Other information

NFPA:	Health: 3	Flammability: 2	Instability: 1
HMIS:	Health: 3	Flammability: 2	Physical Hazard: 1

Prepared By
Product Stewardship Department
Celanese

For more information, other material safety data sheets or technical data sheets please consult the Celanese homepage (www.celanese.com)

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..

Changes against the previous version are marked by ***

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