DUDA ENERGY LLC

Safety Data Sheet
ACETIC ACID GLACIAL FCC KOSHER

SECTION 1: Identification

1.1 Product identifier

Product name	ACETIC ACID GLACIAL FCC KOSHER
Product number	Unavailable
Brand	Unavailable
Substance name	ACETIC ACID
EC no.	200-580-7
CAS no.	64-19-7
Index no.	607-002-00-6

1.2 Other means of identification

UN2789, Glacial Acetic Acid, Vinegar

1.3 Recommended use of the chemical and restrictions on use

Used in the production of acetate solutions, dilute acetic acids, pharmaceuticals, plastics, liniments, solvents, and many other substances.

1.4 Supplier's details

Name	Duda Energy LLC
Address	1112 Brooks St. Decatur, AL 35601 USA
Telephone	256.340.4866
Fax	Unavailable
email	Unavailable

1.5 Emergency phone number(s)

800.255.3924 (Chemtel)

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: (US) OSHA (29 CFR 1910.1200)

- Skin corrosion/irritation (chapter 3.2), Cat. 1A

- Flammable liquids (chapter 2.6), Cat. 3
- Eye damage/irritation (chapter 3.3), Cat. 1

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word	**Danger**
Hazard statement(s)	
H314	Causes severe skin burns and eye damage
H226	Flammable liquid and vapor
H318	Causes serious eye damage
Precautionary statement(s)	
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

2.3 Other hazards which do not result in classification

None known.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name	ACETIC ACID
EC no.	200-580-7
CAS no.	64-19-7
Index no.	607-002-00-6
Formula	C2H4O2
Molecular weight	60.05
Other names / synonyms	VINEGAR ACID; UN 2789; GLACIAL ACETIC ACID
Impurities and stabilizing additives	N/A

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Wash contaminated clothing before reuse.
If inhaled	IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth,

	throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Respirator Recommendation.
In case of skin contact	IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. IMMEDIATELY call a hospital or poison control center even if no symptoms (such as redness or irritation) develop. IMMEDIATELY transport the victim to a hospital for treatment after washing the affected areas.
In case of eye contact	First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.
If swallowed	DO NOT INDUCE VOMITING. Corrosive chemicals will destroy the membranes of the mouth, throat, and esophagus and, in addition, have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. IMMEDIATELY transport the victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. Transport the victim IMMEDIATELY to a hospital.
Personal protective equipment for first-aid responders	Be sure to use any applicable PPE to protect from any present material.

4.2 Most important symptoms/effects, acute and delayed

Depending on the intensity and duration of exposure, effects of exposure to this chemical may vary from mild irritation to severe destruction of tissue. Vapors of this compound may produce irritation of the eyes, nose, throat and lungs. Inhalation of concentrated vapors may cause serious damage to the lining membranes of the nose, throat and lungs. Other symptoms may include severe damage to the skin and severe eye damage which may result in loss of sight. Repeated or prolonged exposure may cause darkening of the skin, erosion of exposed front teeth, and chronic

inflammation of the nose, throat and bronchi. Exposure to 50 ppm or more is intolerable to most persons and results in intense lacrimation and irritation of the eyes, nose and throat with pharyngeal edema and chronic bronchitis. Unacclimatized individuals experience extreme eye and nasal irritation at concentrations of 25 ppm. Conjuncti- vitis from concentrations below 10 ppm has been reported. Eye contact may result in permanent opacification of the cornea, severe iritis, small pupils fixed by posterior synechias, photophobia, hyperemia of the conjunctiva, inflammation and permanent corneal anesthesia. Ingestion of this compound may cause severe corrosion of the mouth and gastrointestinal tract with vomiting, hematemesis, diarrhea, circulatory collapse, uremia and death. Ingestion may also cause severe pain in the mouth, throat and abdomen; and to the formation of white plaques and ulcers on the mucous mem- branes. Hoarseness, rapid and shallow respiration, and low body temperature may develop. Ingestion of as little as 1.0 mL of this compound has caused perforation of the esophagus. It may later cause strictures of the esophagus and pylorus. The vapors are capable of producing bronchial constriction. Other results of ingestion include bloody vomiting, shock, hemolysis and hemoglobinurea followed by anuria. Bronchopneumonia and pulmonary edema may develop following acute overexposure. Chronic exposure may result in pharyngitis and catarrhal bronchitis. Delayed breathing difficulties may occur. Skin contact may result in hyperkeratotic dermatitis. Other symptoms include coughing and chest pain. Contact with skin may cause second-degree burns after a few minutes of contact. It may also cause redness and skin sensitization.

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Provide general supportive measures and treat symptomatically.
Thermal and chemical burns: Flush with water immediately. While flushing, remove any clothing not adhered to the affected area. Call an ambulance. Continue flushing wiht water during transport to hospital.
Keep victim under observation. Symptoms may be delayed.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Water fog, alcohol resistant foam, dry chemical powder, carbon dioxide (CO2)

5.2 Specific hazards arising from the chemical

Flash back along vapour trail may occur; eliminate sources of ignition. Emits toxic fumes under fire conditions. Empty container may contain explosive or flammable residue.
Hazardous combustion products: Oxides of carbon.

5.3 Special protective actions for fire-fighters

Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Do not enter fire area without proper protective equipment, including respiratory protection.

Further information

COMBUSTIBLE LIQUID AND VAPOUR.
Can form explosive mixtures with air at, or above, 39°C. Vapour is heavier than air and may travel a considerable distance to a source of ignition and flash back to a leak or open container.
Vapours from warm liquid can accumulate in confined spaces, resulting in a flammability and toxicity hazard. Closed containers amy rupture violently when heated. NOTE: The fire properties of acetic acid depend upon the strength of the solution. In concentrated form, is properties approach those of glacial acetic acid. Reacts with most metals for form highly flammable hydrogen gas, which can form explosive mixtures with the air.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

MINIMUM PROTECTIVE CLOTHING:
If Tyvek-type disposable protective clothing is not worn during handling of this chemical, wear disposable Tyvek-type sleeves taped to your gloves.
STORAGE PRECAUTIONS:
You should store this chemical at ambient temperatures, and protect it from light and moisture.

6.2 Environmental precautions

Avoid discharge into drains, water courses, or onto the ground.

6.3 Methods and materials for containment and cleaning up

If you should spill this chemical, use absorbent paper to pick up all liquid spill material. Seal the absorbent paper, as well as any of your clothing which may be contaminated, in a vapor-tight plastic bag for eventual disposal. Wash any surfaces you may have contaminated with a soap and water solution. Do not reenter the contaminated area until the Safety Officer (or other responsible person) has verified that the area has been properly cleaned.

Reference to other sections

None.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not handle, store, or open near an open flame or any other source of heat/ignition. Protect material from direct sunlight. When using, do not smoke. Use explosion-proof general and local exhaust ventilation. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not breathe mist nor vapour. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2 Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks, and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated area. Keep in an area equipped with sprinklers. Store away from incompatible materials.

Specific end use(s)

Not classified.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

1. ACETIC ACID (CAS: 64-19-7 EC: 200-580-7)

TWA: 10 ppm (ACGIH)

2. ACETIC ACID (CAS: 64-19-7 EC: 200-580-7)

TWA: 10 ppm (NIOSH)

3. ACETIC ACID (CAS: 64-19-7 EC: 200-580-7)
TWA: 10 ppm (OSHA)

4. ACETIC ACID (CAS: 64-19-7 EC: 200-580-7)
STEL: 15 ppm (ACGIH)

5. ACETIC ACID (CAS: 64-19-7 EC: 200-580-7)
STEL: 15 ppm (NIOSH)

8.2 Appropriate engineering controls

Adequate general or local exhaust ventilation should be used to keep airborne concentrations below the permissible exposure limits.
Eye wash facilities and emergency shower must be available when handling this product.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
Goggles, full-face respirator

Skin protection
Wear appropriate chemical resistant gloves and chemical resistant protective clothing; cover arms.

Body protection
Goggles, Chemical resistant gloves. Chemical resistant clothing.

Respiratory protection
Wear a NIOSH- approved half face respirator equipped with an organic vapor/acid gas cartridge (specific for organic vapors, HCl, acid gas and SO2) with a dust/mist filter. Splash proof safety goggles should be worn while handling this chemical. Alternatively, a full face respirator, equipped as above, may be used to provide simultaneous eye and respiratory protection.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

Environmental exposure controls
Unavailable

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form (physical state, color, etc.)	Liquid;
Odor	Irritating/pungent, Vinegar
Odor threshold	1 ppm
pH	2.4
Melting point/freezing point	16.6
Initial boiling point and boiling range	118
Flash point	40
Evaporation rate	Not available
Flammability (solid, gas)	None available
Upper/lower flammability limits	None available.
Vapor pressure	16 hPa (20 °C)
Vapor density	2.1

Relative density	1.0492 @ 20/4 C [017,047,062,205]
Solubility(ies)	Not available
Partition coefficient: n-octanol/water	-0.17
Auto-ignition temperature	485 °C
Decomposition temperature	None Available
Viscosity	Not available
Explosive properties	Not explosive.
Oxidizing properties	Not available

Other safety information

OTHER PHYSICAL DATA:
Density: 1.266 @ 16.60 C (solid)
Boiling point: 17 C @ 10 mm Hg; 30 C @ 31 mm Hg;
80 C @ 202 mm Hg
Chloroform solubility also given as insoluble
Vapor pressure: 10 mm Hg @ 17.5 ; 40 mm Hg @ 43.0 C
Refractive index: 1.3720 @ 20 C
Pungent vinegar odor
Odor threshold: 5 ppm (lower); 24.3 ppm (medium); 80 ppm (upper)
Taste threshold: 300 ppm (lower); 1000 ppm (upper)
Critical temperature: 321.6 C
Critical pressure: 43400 mm Hg
pKa: 4.734 @ 25 C
Translucent crystalline mass below 15 C; crystallizes at about 15 C
Weakly ionized in aqueous solutions: Ka = 0.000018
pH of aqueous solutions: 1.0 M = 2.4; 0.1 M = 2.9; 0.01 M = 3.4
Freezing point not lower than 14.8 C
Crystallizes when cooled to about 10 C and does not completely remelt until warmed to about 15 C
Molecular Fp depression: 39; Molecular Bp elevation: 29.9
Saturated concentration: 38 g/m3 @ 20 C; 63 g/m3 @ 30 C
Log Poct: -0.31/-0.17
Viscosity: 1.22 cps @ 20 C
Evaporation rate: 0.97

SECTION 10: Stability and reactivity

10.1 Reactivity

The product is stable and non-reactive under normal conditions of use, storage, and transport.

10.2 Chemical stability

Material is stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerization does not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames, and other ignition sources. Avoid temperatures exceeding the flash point. Avoid contact with incompatible materials.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products
No hazardous decomposition products are known.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Not available

Skin corrosion/irritation
Causes severe skin burns.

Serious eye damage/irritation
Causes serious eye damage.

Respiratory or skin sensitization
Not a respiratory or skin sensitizer.

Germ cell mutagenicity
No data available to indicate product or any other components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity
This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive toxicity
This product is not expected to cause reproductive or developmental effects.

Summary of evaluation of the CMR properties
Not available

STOT-single exposure
Not classified.

STOT-repeated exposure
Not classified.

Aspiration hazard
Not an aspiration hazard.

Additional information
Burning pain and severe corrosive skin damage. Causes serious eye damage. Symtoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage, including going blind, could result..

SECTION 12: Ecological information

Toxicity

Ecology - general: Not classified as dangerous for the environment according to the criteria of Regulation (EC) No
1272/2008.

Ecology - air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included
in the list of substances which may contribute to the greenhouse effect (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.5/II.

Ecology - water: Slightly harmful to fishes (LC50(96h) >100 mg/l). Slightly harmful to invertebrates (Daphnia)
(EC50 (48h) > 100 mg/l). Not harmful to algae (EC50 (72h) >1000 mg/l). pH shift. Inhibition of activated sludge.

Persistence and degradability
Persistence and degradability: Readily biodegradable in water. Biodegradable in the soil. Highly mobile in soil.

Biochemical oxygen demand (BOD): 0.6 - 0.74 g O_2/g substance

Chemical oxygen demand (COD): 1.03 g O_2/g substance

ThOD: 1.07 g O_2/g substance

Bioaccumulative potential
BCF fish 1: 3.16 (BCF; Pisces)
Log Pow: -0.17 (Experimental value; 25 °C)
Bioaccumulative potential: Low potential for bioaccumulation (Log Kow < 4).

Mobility in soil
Surface tension: 0.028 N/m (20 °C)
Log Koc: log Koc,0.06; QSAR

Ecology - soil: May be harmful to plant growth, blooming and fruit formation.

Results of PBT and vPvB assessment
Unavailable

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

Disposal of the product
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Disposal of contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Waste treatment
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner. (See: Disposal of the product)

Sewage disposal
Unavailable

Other disposal recommendations
Dispose of all chemical material in accordance with all applicable regulations.

SECTION 14: Transport information

DOT (US)
UN Number: UN2789
Class: 8 (3)
Packing Group: II
Proper Shipping Name: ACETIC ACID, GLACIAL

IMDG
Unavailable

IATA
Unavailable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

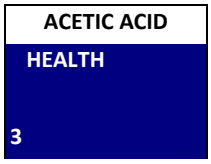
Pennsylvania Right To Know Components
Chemical name: Acetic acid
CAS number: 64-19-7

New Jersey Right To Know Components
Common name: ACETIC ACID
CAS number: 64-19-7

Massachusetts Right To Know Components
Chemical name: Acetic acid
CAS number: 64-19-7

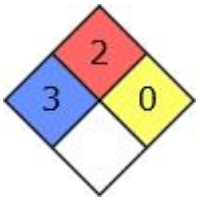
15.2 Chemical Safety Assessment
Not available

HMIS Rating



FLAMMABILITY
3
PHYSICAL HAZARD
0
PERSONAL PROTECTION

NFPA Rating



SECTION 16: Other information

16.1 Further information/disclaimer

The information provided in this Safety Data Sheet is correct to the best of Duda Energy LLC's knowledge, information, and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. This Safety Data Sheet only contains information relating to safety and does not replace any product information or product specification. Please note, the content may be changed, corrected, or deleted at any time without notice, and may not always necessarily reflect the most current data. Duda Energy LLC will assume no responsibility for any trouble or failure caused by the errors in the information provided, nor any damage associated with the usage of the information.

16.2 Preparation information

Version: 2
Revised: 04-04-2017