1. Identification

Product identifier **Acetic acid**

Other means of identification

CAS number 64-19-7

Synonyms Acetic acid 99.8%

Recommended use of the chemical and restrictions on use

Recommended use Chemical intermediate. Cleaning Agent. Process chemical.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer/Supplier CMC Materials; 870 North Commons Drive; Aurora, IL 60504; United States

Telephone +1.630.375.6631

Manufacturer/Supplier CMC Materials; Amber Business Centre; Riddings Alfreton Derbyshire DE55 4DA; United Kingdom

Telephone +44 (0) 1773 844200

E-mail steve.grundy@cmcmaterials.com

Manufacturer/Supplier CMC Materials; 300 Throckmorton, Suite 1900; Fort Worth, Texas 76102; United States

Telephone +1.817.761.6100

Manufacturer/Supplier CMC Materials; Les Vieilles Hayes; 50620 Saint Fromond; France

Telephone +33 (0) 2 33 75 64 00

E-mail francesds@cmcmaterials.com

Manufacturer/Supplier CMC Materials; 9 Tuas View Lane; Singapore 638826

Telephone 65.3163.6666

Manufacturer/Supplier CMC Materials; Via Umbria 4; 20098 San Giuliano Milanese (MI); Italy

Telephone +39 02 988381 / +44 (0) 1773 844200

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Emergency phone number

3E Global Incident Response Hotline

Singapore +65 3158 6734

Asia-Pacific +1.760.476.3960

International +1.760.476.3962

Access code 333035

CHEMTREC For Dangerous Goods Incidents ONLY (spill, leak, fire, exposure or accident), call CHEMTREC 24/7 at:

Singapore 800.101.2201

International +1.703.741.5970

2. Hazards identification

GHS classification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, dermal	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
Environmental hazards	Not classified.	

GHS label elements, including precautionary statements

Pictograms

Signal word Danger

Hazard statements Flammable liquid and vapour. Harmful in contact with skin. Causes severe skin burns and eye damage. Harmful if inhaled.

Precautionary statement

Prevention Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe mist/vapours. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. 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 CENTRE/doctor.

Storage Not assigned.

Disposal Not assigned.

Other hazards which do not result in classification None known.

Supplemental information None.

3. Composition/information on ingredients

Substance or mixture Substance

Chemical name	Common name and synonyms	CAS Number	Concentration (%)
Acetic acid	Acetic acid 99.8%	64-19-7	100

Composition comments All concentrations are in percent by weight unless otherwise indicated.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Immediately call a poison control center or doctor for treatment advice.

Skin contact Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician or poison control centre immediately. Chemical burns must be treated by a physician.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control centre immediately.

Ingestion Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

Most important symptoms/effects, acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Inhalation of mist or vapour may cause respiratory tract irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Alcohol resistant foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. During fire, gases hazardous to health may be formed. Combustion products may include: carbon oxides. May react with some metals to form hydrogen gas.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. Dike fire control water for later disposal. Avoid discharge into drains, water courses or onto the ground.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards Flammable liquid and vapour.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapours. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

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

Methods and materials for containment and cleaning up Use water spray to reduce vapours or divert vapour cloud drift. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Retain and dispose of contaminated wash water.

Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

7. Handling and storage

Precautions for safe handling Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. 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/vapours. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Keep away from heat, sparks and open flame. Keep at temperature not exceeding 40 °C. May crystallize at temperatures 18°C. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

Singapore. PELs. (Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order)

Material	Type	Value
Acetic acid (CAS 64-19-7)	STEL	37 mg/m3
		15 ppm
	TWA	25 mg/m3
		10 ppm

Control parameters/Occupational exposure limits

US. ACGIH Threshold Limit Values

Material	Type	Value
Acetic acid (CAS 64-19-7)	STEL	15 ppm
	TWA	10 ppm

Appropriate engineering control measures Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection When working with liquids wear splash-proof chemical goggles and face shield unless full facepiece respiratory protection is worn.

Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier. Recommended use: Glove material: Butyl rubber. Use gloves with breakthrough time of >480 minutes. Minimum glove thickness 0.51 mm. Glove material: Neoprene rubber. Use gloves with breakthrough time of >390 minutes. Minimum glove thickness 0.46 mm. Glove material: Viton/Butyl. Use gloves with breakthrough time of >480 minutes. Minimum glove thickness 0.3 mm.
Other	Wear appropriate chemical resistant clothing. Wear chemical protective equipment that is specifically recommended by the Personal Protective Equipment manufacturer.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Appropriate respirator selection should be made by a qualified professional. Recommended use: Chemical respirator with acid gas cartridge.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Colour	Colourless.
Odour	Vinegar-like.
Odour threshold	Not available.
pH	2.4
Melting point/freezing point	16.6 °C (61.88 °F)
Initial boiling point and boiling range	117.9 °C (244.22 °F)
Flash point	39 °C (102.2 °F) Closed cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Explosive limit - lower (%)	4 % v/v
Explosive limit – upper (%)	19.9 % v/v
Vapour pressure	2.093 kPa (25 °C (77 °F))
Vapour density	2.1
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Miscible in water.
Partition coefficient (n-octanol/water)	-0.17
Auto-ignition temperature	426 °C (798.8 °F)
Decomposition temperature	Not available.
Viscosity	Not available.
Other data	
Density	1.07 g/cm³
Dynamic viscosity	1.22 mPa.s (20 °C (68 °F))
Explosive properties	Not explosive.
Molecular formula	C2-H4-O2
Molecular weight	60.05 g/mol
Oxidising properties	Not oxidising.

10. Stability and reactivity

Reactivity	May attack some plastics, rubber and coatings. Reacts with alkalies, metals.
Chemical stability	Material is stable under normal conditions.

Possibility of hazardous reactions	May react with some metals to form hydrogen gas.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidising agents. Strong alkalis. Amines. Cyanides. Sulfides. Metals.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled. May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns. Harmful in contact with skin.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.

Acute toxicity Harmful if inhaled. Harmful in contact with skin.

Product	Species	Test Results
Acetic acid (CAS 64-19-7)		
Acute		
Dermal		
LD50	Rabbit	1060 mg/kg
Inhalation		
Vapour		
LC50	Rat	11.4 mg/l, 4 Hours

Symptoms	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Inhalation of mist or vapour may cause respiratory tract irritation.
Skin corrosion/irritation	Causes severe skin burns.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitisation	
Respiratory sensitisation	Not a respiratory sensitiser.
Skin sensitisation	This product is not expected to cause skin sensitisation.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged exposure may cause chronic effects. Erosion of exposed teeth.

12. Ecological information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this substance.

Bioaccumulative potential

Octanol/water partition coefficient log Kow
-0.17

Mobility in soil	The product is completely soluble in water. Expected to be mobile in soil.
Other adverse effects	The product contains volatile organic compounds which have a photochemical ozone creation potential. The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

13. Disposal considerations

Disposal methods/information	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.

Special precautions	Dispose in accordance with all applicable regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

14. Transport information

ADR

UN number	UN2789
UN proper shipping name	ACETIC ACID, GLACIAL
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Label(s)	8 +3
Hazard No. (ADR)	83
Tunnel restriction code	D/E
Packing group	II
Environmental hazards	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

UN number	UN2789
UN proper shipping name	ACETIC ACID, GLACIAL
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Label(s)	8+3
Packing group	II
Environmental hazards	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

UN number	UN2789
UN proper shipping name	ACETIC ACID, GLACIAL
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Label(s)	8+3
Packing group	II
Environmental hazards	No
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN2789
UN proper shipping name	Acetic acid, glacial
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Packing group	II
Environmental hazards	No
ERG Code	8F
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN2789
UN proper shipping name	ACETIC ACID, GLACIAL
Transport hazard class(es)	
Class	8
Subsidiary risk	3
Packing group	II
Environmental hazards	
Marine pollutant	No
EmS	F-E, S-C
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	This substance/mixture is not intended to be transported in bulk.

15. Regulatory information

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

This safety data sheet was prepared in accordance with Singapore Standard Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods Part 3: Preparation of Safety Data Sheets (SDS) (SS 586: Part 3: 2014) as amended.

Prior Informed Consent (PIC) Substances (Environment Protection and Management Act, 2nd Schedule, Part 1, Jul. 1, 2013)

Not regulated.

Chemical Weapons Prohibition (Act)

Not applicable.

Environmental Protection and Management (Hazardous Substances) Regulations

Acetic acid (CAS 64-19-7)	1000 kg

Environmental Public Health Act

Not applicable.

Misuse of Drugs Act

Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III, as amended)

Not regulated.

Drug Precursors (Misuse of Drugs Act, Third Schedule, Parts I & II, as amended)

Not regulated.

Controlled Specified Drugs (Misuse of Drugs Act, Fourth Schedule, as amended)

Not regulated.

Temporarily Listed Drugs (Misuse of Drugs Act, Fifth Schedule, as amended)

Not regulated.

International regulations

Montreal Protocol

Not applicable.

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

References

ECHA registered substances database
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity

Issued by

Not available.

Prepared by	
Title	Sharlene Parry, Product Stewardship Manager
Disclaimer	CMC Materials cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.
Issue date	21-December-2020
Revision date	29-July-2021
Key/legend	ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways. ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road. CAS: Chemical Abstract Service. ECHA: European Chemical Agency. IARC: International Agency for Research on Cancer. IATA: International Air Transport Association. IBC: Intermediate Bulk Container. IMDG: International Maritime Dangerous Goods. MARPOL: International Convention for the Prevention of Pollution From Ships. RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.