

1. IDENTIFICATION

Product Name	Acetic Acid, Glacial
Other Names	Ethanoic Acid; Glacial acetic acid
Uses	In manufacturing of other chemicals; research; photographic chemicals; latex coagulant; oil-well acidifier; textile printing; solvent for gums, resins and volatile oils; dyes; antimicrobial agent; pharmaceuticals and cosmetic use; as a preservative in foods.
Chemical Family	No Data Available
Chemical Formula	C ₂ H ₄ O ₂
Chemical Name	Acetic acid
Product Description	No Data Available
Company	Arman sina.co
Contact Information	info@armansina.com www.armansina.com

2. HAZARD IDENTIFICATION

Hazard Categories		Flammable Liquids - Category 3 Corrosive to Metals - Category 1 Skin Corrosion/Irritation - Category 1B Serious Eye Damage/Irritation - Category 1
Signal Word		Danger
Hazard Statements	H226	Flammable liquid and vapour.
	H290	May be corrosive to metals.
	H314	Causes severe skin burns and eye damage.
Precautionary Statements	Prevention	P210 Keep away from flames and hot surfaces. No smoking.
		P260 Do not breathe mist/vapours.
		P280 Wear protective gloves/protective clothing/eye protection/face protection.
		P233 Keep container tightly closed.
		P240 Ground and bond container and receiving equipment.
		P241 Use explosion-proof electrical/ventilating/lighting and all other equipment.
		P242 Use non-sparking tools.
		P243 Take action to prevent static discharges.
	Response	P370 + P378 In case of fire: Alcohol resistant foam is the preferred fire-fighting medium. However, if it is not available, fine water spray or water fog can be used to extinguish.
		P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
		P310 Immediately call a POISON CENTER or doctor.
		P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

	P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P363	Wash contaminated clothing before reuse.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
Storage	P403 + P235	Store in a well-ventilated place. Keep cool.
	P406	Store in corrosive resistant container with a resistant inner liner.
	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

symbol



3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Acetic acid	C ₂ H ₄ O ₂	64-19-7	>=99 %
Water	H ₂ O	7732-18-5	<=1 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth with water, then provide liquid (water or milk) slowly and as much as casualty can comfortably drink (limit fluids to one or two glasses). Do NOT induce vomiting. Immediately call a Poison Centre or doctor/physician for advice. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Be careful to avoid further vomit since re-exposure of the mucosa to the acid is harmful. Never give anything by mouth to an unconscious person, person showing signs of being sleepy or with reduced awareness. Do NOT attempt to neutralise the acid since exothermic reaction may extend the corrosive injury.
Eye	IF IN EYES: Immediately flush eyes (continuously) with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue flushing until advised to stop by a Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay. *Removal of contact lenses after an eye injury should only be undertaken by skilled personnel. Do NOT use neutralising agents or any other additives.
Skin	IF ON SKIN (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. For gross contamination, drench contaminated clothing and skin with plenty of water before removing clothes. Immediately call a Poison Centre or doctor/physician for advice. Treat chemical burns as thermal burns with non-adherent gauze and wrapping. Transport to hospital or doctor. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. Apply resuscitation if victim is not breathing - Do not use direct mouth-to-mouth method if victim ingested or inhaled the substance; use alternative respiratory method or proper respiratory device; Administer oxygen if breathing is difficult. Transport to hospital, or doctor, without delay. - Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
Advice to Doctor	Observe the patient carefully; Treat symptomatically. Keep victim calm and warm - Obtain immediate medical care. Ensure that attending medical personnel are aware of identity and nature of product(s) involved, and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

General Measures	Alert Fire Brigade and tell them location and nature of hazard. Consider evacuation. If safe to do so, move undamaged containers from fire area. Do NOT approach containers suspected to be hot. Cool container with water spray until well after fire is out. Avoid getting water inside containers.
Flammability Conditions	FLAMMABLE LIQUID & VAPOUR: May be ignited by heat, sparks or flame.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), alcohol-resistant foam or water spray for extinction - Do not use water jets. Alcohol resistant foam is the preferred firefighting medium but, if it is not available, fine water spray can be used.
Fire and Explosion Hazard	Risk of violent reaction or explosion! Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Most vapours are heavier than air and will collect in low or confined areas. Containers may explode when heated. Vapours from runoff may create an explosion hazard.
Hazardous Products of Combustion	Fire will produce irritating, toxic and/or corrosive gases, including carbon dioxide (CO ₂), other pyrolysis products typical of burning organic material.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways; Vapours from runoff may create an explosion hazard.
Personal Protective Equipment	Liquid-tight chemical protective clothing in combination with positive pressure self-contained breathing apparatus (SCBA) should be used.
Flash Point	39 - 43 ° C [Closed cup]
Lower Explosion Limit	4.0 %
Upper Explosion Limit	19 %
Auto Ignition Temperature	426 - 485 ° C
Hazchem Code	•2P

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. ELIMINATE all ignition sources. Clean up all spills immediately. All equipment used when handling the product must be earthed. Do not touch or walk through spilled material. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Collect recoverable product into labelled containers for recycling. Absorb residues with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material and place it in suitable, properly labelled containers for disposal (see SECTION 13).
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours; Water spray may be used to knock down or divert vapour clouds.
Decontamination	Neutralise residues with lime or soda ash. Wash area and prevent runoff into drains.
Environmental Precautionary Measures	Prevent, by any means available, spillage from entering drains or waterways. If contamination of drains or waterways occurs, advise emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. Major spills: Alert Fire Brigade and tell them location and nature of hazard; Consider evacuation of downwind areas.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (see SECTION 8). Major spill: Wear self-contained breathing apparatus (SCBA).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Do not breathe mist/vapours and prevent contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection (see SECTION 8). FLAMMABLE LIQUID & VAPOUR: Keep away from heat and all sources of ignition - 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. To avoid violent reaction, ALWAYS add material to water and NEVER water to material. Avoid
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contact with incompatible materials. Absorb spillage to prevent material damage (see SECTION 6).

Storage	<p>Store in approved flammable liquid storage area (cool, dry and well-ventilated), without drain or sewer access. Have appropriate extinguishing capability in storage area and flammable gas detectors. Keep container tightly closed when not in use. Protect containers against physical damage and check regularly for leaks. Keep adsorbents for leaks and spills readily available. Keep away from heat and all sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10).</p> <p>*Store according to applicable regulations for flammable materials for storage tanks, containers, piping, buildings, rooms, cabinets, allowable quantities and minimum storage distances.</p>
Container	<p>Keep only in the original container or packaging as supplied and/or recommended by the manufacturer, i.e. Lined metal can/Lined metal drum/Lined metal safety cans. Do NOT use aluminium or galvanised containers. Plastic lining or containers may only be used if approved for flammable liquid (non-polar type).</p>

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	<p>For Acetic acid (CAS No. 64-19-7):</p> <ul style="list-style-type: none">- Safe Work Australia Exposure Standard: TWA = 10 ppm (25 mg/m³); STEL 15 ppm (37 mg/m³).- New Zealand Workplace Exposure Standard: TWA = 10 ppm (25 mg/m³); STEL 15 ppm (37 mg/m³).- NIOSH REL: TWA = 10 ppm (25 mg/m³); STEL 15 ppm (37 mg/m³).- OSHA PEL: TWA = 10 ppm (25 mg/m³).- Immediately dangerous to life or health (IDLH) concentration: 50 ppm.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	<p>Ensure ventilation is adequate to maintain air concentrations below workplace exposure standards. General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems.</p> <p>*Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</p>
Personal Protection Equipment	<ul style="list-style-type: none">- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if risk of overexposure exists. Recommended: Type ABE-P Filter of sufficient capacity (refer to AS/NZS 1715 & 1716).- Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles; Full face-shield may be required for supplementary protection of eyes, such as when handling bulk-quantities, where there is a danger of splashing, or if the material may be under pressure.- Hand protection: Wear protective gloves. Recommended: Elbow-length, impervious gloves, e.g. PVC.- Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Overalls; PVC apron; PVC protective suit may be required if exposure severe; Rubber boots. When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.
Special Hazards Precautions	Vapour heavier than air - prevent concentration in hollows or sumps. Do NOT enter confined spaces where vapour may have collected.
Work Hygienic Practices	When handling, do NOT eat, drink or smoke. Always wash hands with soap and water after handling. Do NOT allow clothing wet with material to stay in contact with skin. Work clothes should be laundered separately. Launder contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	Pungent, vinegar-like
Colour	Colourless
pH	2.4 (1 M solution)
Vapour Pressure	1.5 kPa (@ 20 ° C)
Relative Vapour Density	2.1 Air = 1
Boiling Point	118 ° C

Melting Point	16.7 ° C
Freezing Point	16.7 ° C
Solubility	Miscible with water
Specific Gravity	1.05 (Water = 1)
Flash Point	39 - 43 ° C [Closed cup]
Auto Ignition Temp	426 - 485 ° C
Evaporation Rate	0.97 - 0.99 (n-Butyl acetate = 1)
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	60.05
Net Propellant Weight	No Data Available
Octanol Water Coefficient	-0.17 (log Pow)
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	Risk of violent reaction or explosion on contact with incompatible materials.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	FLAMMABLE LIQUID & VAPOUR: May be ignited by heat, sparks or flame.
Reactions That Release Gases or Vapours	Fire will produce irritating, toxic and/or corrosive gases, including carbon dioxide (CO ₂), other pyrolysis products typical of burning organic material.
Release of Invisible Flammable Vapours and Gases	Above 39 ° C, explosive vapour/air mixtures may be formed. Reacts with some metals producing hydrogen gas, which may form an explosive mixture with air.

10. STABILITY AND REACTIVITY

General Information	The substance is a weak acid. Contact with alkaline material liberates heat. Reacts violently with strong oxidants; this generates fire and explosion hazard. Reacts with mild steel, galvanised steel/zinc producing hydrogen gas, which may form an explosive mixture with air.
Chemical Stability	Product is considered stable; Unstable in the presence of incompatible materials.
Conditions to Avoid	Keep away from heat and all sources of ignition. Avoid contact with incompatible materials.
Materials to Avoid	Incompatible/reactive with strong bases/alkalies, oxidising agents and chemicals readily decomposed by acids, i.e. cyanides, sulfides, carbonates.
Hazardous Decomposition Products	Fire will produce irritating, toxic and/or corrosive gases, including carbon dioxide (CO ₂), other pyrolysis products typical of burning organic material.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Corrosive on ingestion; may cause severe corrosion of the mouth, perforation of the oesophagus, severe corrosion of the gastrointestinal tract, bloody vomiting, diarrhoea, shock, haemolysis, haemoglobinuria and death. Bronchopneumonia and pulmonary oedema have been reported following acute overexposure. Harmful in contact with skin; however, effects are more likely due to shock from corrosive effects rather than systemic toxicity.
- Skin corrosion/irritation: Causes severe skin burns, with redness, pain, blisters.
- Eye damage/irritation: Causes serious eye damage; may produce redness, pain, tears, sensitivity to light, loss of vision and severe burns.
- Respiratory/skin sensitisation: Repeated or prolonged contact of the chemical with the skin may cause dermatitis.
- Germ cell mutagenicity: Not considered to be genotoxic (mutations observe at low pH levels are likely to be due to the acidic nature of the chemical).
- Carcinogenicity: The chemical is not likely to be a carcinogen.
- Reproductive toxicity: The chemical does not show specific reproductive or developmental toxicity.
- STOT (single exposure): Can cause irritation of the respiratory tract, with coughing, choking and mucous membrane damage; dizziness, headache, nausea and weakness. Severe acute mist/vapour exposure may cause fluid accumulation in the lungs, spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary oedema.
- STOT (repeated exposure): Not considered to cause serious damage to health from repeated exposure (observed effects not associated with systemic toxicity). Corrosive effects on the gastrointestinal tract, digestive disorders including heartburn and constipation, chronic inflammation of the respiratory tract, pharyngitis, catarrhal bronchitis, darkening of skin, skin dermatitis, and erosion of the exposed front teeth enamel.
- Aspiration toxicity: No information available.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: >2,000 mg/kg bw.
Other	Acute toxicity (Dermal): - LD50, Rabbits: 1,060 mg/kg bw.
Inhalation	Acute toxicity (Inhalation): - LC50, Rats: 11.4 mg/L (4 h).
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish: 31.3- 67.6 mg/L (96 h). - EC50, Crustacea: 18.9 mg/L (48 h). - NOEC, Crustacea: 21.5 mg/L (48 h). - EC50, Algae/other aquatic plants: 29.23 mg/L (72 h).
Persistence/Degradability	Readily biodegradable; Low persistence in water/soil; Low persistence in air.
Mobility	High mobility in soil (KOC = 1).
Environmental Fate	Avoid release to the environment.
Bioaccumulation Potential	Low bioaccumulative potential (Log Kow = -0.17).
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Recycle wherever possible or treat and neutralise at an approved treatment plant and in accordance with local/regional/national regulations. Treatment should involve neutralisation with soda-ash or soda-lime, followed by burial
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in a land-fill specifically licensed to accept chemical and/or pharmaceutical wastes, or incineration in a licensed apparatus.

Special Precautions for Land Fill

Contaminated packaging: Decontaminate empty containers with 5% aqueous sodium hydroxide or soda ash, followed by water. Observe all label safeguards until containers are cleaned and destroyed. Containers may still present a chemical hazard/danger when empty. If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill. Where possible retain label warnings and SDS and observe all notices pertaining to the product.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	ACETIC ACID, GLACIAL
Class	8 Corrosive Substances
Subsidiary Risk(s)	3 Flammable Liquids
EPG	19 Liquids - Flammable , Toxic And/Or Corrosive
UN Number	2789
Hazchem	•2P
Pack Group	II
Special Provision	No Data Available

Sea Transport

Proper Shipping Name	ACETIC ACID, GLACIAL
Class	8 Corrosive Substances
Subsidiary Risk(s)	3 Flammable Liquids
UN Number	2789
Hazchem	2P
Pack Group	II
Special Provision	No Data Available
EMS	F-E, S-C
Marine Pollutant	No

Air Transport

Proper Shipping Name	ACETIC ACID, GLACIAL
Class	8 Corrosive Substances
Subsidiary Risk(s)	3 Flammable Liquids
UN Number	2789
Hazchem	2P
Pack Group	II
Special Provision	No Data Available

15. OTHER INFORMATION

Revision	3
Key/Legend	<p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (° C) Degrees Celcius</p> <p>deg F (° F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours. LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals. ltr or L Litre m³ Cubic Metre mbar Millibar mg Milligram mg/24H Milligrams per 24 Hours mg/kg Milligrams per Kilogram mg/m³ Milligrams per Cubic Metre Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present. mm Millimetre mmH₂O Millimetres of Water mPa.s Millipascals per Second N/A Not Applicable NIOSH National Institute for Occupational Safety and Health NOHSC National Occupational Heath and Safety Commission OECD Organisation for Economic Co-operation and Development Oz Ounce PEL Permissible Exposure Limit Pa Pascal ppb Parts per Billion ppm Parts per Million ppm/2h Parts per Million per 2 Hours ppm/6h Parts per Million per 6 Hours psi Pounds per Square Inch R Rankine RCP Reciprocal Calculation Procedure STEL Short Term Exposure Limit TLV Threshold Limit Value tne Tonne TWA Time Weighted Average ug/24H Micrograms per 24 Hours UN United Nations wt Weight</p>