Product Stewardship Summary

Acetic Acid Glacial

General Statement

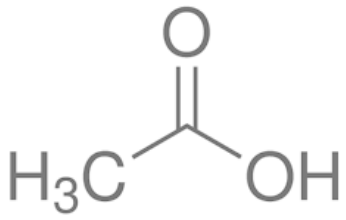
Acetic acid is a colorless liquid with a strong vinegar-like odor. It can also be an ice-like solid below 17°C. Glacial acetic acid (non-IUPAC) indicates a relatively pure form of acetic acid, usually less than 1% water. Acetic acid is a starting material in the manufacture of many organic compounds that are produced by methanol carbonylation. This chemical has multiple industrial and consumer uses. It is used in making drugs, dyes, plastics, food additives and insecticides.

Acetic acid glacial is a low to moderate hazard material and the risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be low. Exposure controls in the workplace serve to prevent adverse health effects to workers. Exposure to consumers can be controlled by providing proper labelling and warnings on consumer products.

Ashland produces, purchases and sells acetic acid. AshAshland uses acetic acid to manufacture multiple products in its Aroset™, Aquarius™ and other product lines.

Chemical Identity

Name: Acetic acid glacial
Brand Names: Multiple products in the Aroset™, Aquarius™, and other lines
Chemical name (IUPAC): Ethanoic acid
CAS number(s): 64-19-7
EC number: 200.-580-7
Molecular formula: C2H4O2
Structure:



Uses and Applications

Glacial acetic acid has multiple industry uses: it plays a role in the manufacture of adhesives and sealant chemicals, adsorbents and absorbents, serves as an intermediate, serves as a solvent (for cleaning, degreasing, and to become a part of a later product), and is used in the production of plasticizers.

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Acetic acid glacial is used as an intermediate in the manufacture of many base chemicals and monomers, primarily vinyl acetate to produce vinyl acetate-based polymers. It is used as a cleaning agent, solvent, process chemical, water treatment chemical, laboratory chemical, for the manufacture of agrochemicals, and as a food additive. Acetic acid can be found in consumer products such as water treatment and paper products.

Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	Colorless liquid
Physical state	Liquid
Color	Colorless
Odor	Pungent, vinegar like
Density	1.054 g/cm^3@ 20°C
Melting / boiling point	16.6°C / 117.9°C
Flammability	Flammable liquid
Explosive properties	No data available
Self-ignition temperature	426°C
Vapor pressure	20.79 hPa @ 25°C
Mol weight	60.05 g/mol
Water solubility	Soluble
Flash point	39°C
Octanol-water partition coefficient (Logk_{ow})	-0.17

Exposure, Hazard and Safety Assessment

The following section describes possible exposures scenarios and hazards associated with acetic acid. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Consumers are not likely to come in contact with the concentrated substance. Acetic acid in consumer products (like cleaning agents) is generally low. Therefore, consumer exposures will be limited to diluted concentrations during consumer use of products containing acetic acid.

Worker: In industrial settings, acetic acid is manufactured and handled in closed processes as much as possible, which ensures that worker exposure to acetic acid is minimized. The proper use of personal protective equipment, such as during loading, unloading, sampling or maintenance operations, will further minimize potential exposures to acetic acid.

Human Hazard Assessment

Acetic acid has low acute toxicity by the oral route and no acute toxicity via the inhalation and dermal routes of exposure. Acetic acid [glacial?] is corrosive to skin and eyes, and can cause severe skin burns and eye damage. Concentrated vapors of acetic acid may cause severe irritation of the eyes, nose and respiratory tract. Ingestion may cause severe corrosive injury. Acetic acid does not cause allergic reactions upon contact with skin. Acetic acid [glacial?] is neither mutagenic or genotoxic, is not classifiable as a human carcinogen and is not associated with adverse effects on fertility and development.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Low acute toxicity via oral route. No acute toxicity if applied on skin or inhaled.
Irritation / corrosion Skin / eye / respiratory test	Causes severe skin burns and eye damage. Inhalation of concentrated vapors may cause respiratory irritation.
Sensitization	Does not cause allergic reactions upon contact with skin
Toxicity after repeated exposure Oral / inhalation / dermal	Prolonged or repeated exposure does not cause any harmful effects
Genotoxicity / Mutagenicity	Does not affect genetic system
Carcinogenicity	Not considered as a carcinogen
Reproductive / Developmental Toxicity	Not toxic to reproduction or to unborn children
Aspiration hazard	Not applicable

Human Health Safety Assessment

Consumer: Acetic acid concentrations in consumer products are generally low. Based on the dilute form of acetic acid present in consumer products and the low hazard associated with the material, risk to the consumer is unlikely. When working with formulations that contain appreciable concentrations of acetic acid, safety glasses should be worn and repeat or prolonged skin contact should be avoided. The use of appropriate handling and disposal methods will ensure that consumer exposure and subsequent risk associated with the use of products containing acetic acid is unlikely.

Worker: In industrial settings, acetic acid is manufactured and handled primarily in closed processes which limit exposure. Based on the implementation of good manufacturing processes and industrial hygiene practices, the occupational health risk associated with acetic acid is anticipated to be low.

Environmental Effects

Environmental Exposures

Environmental exposure to acetic acid will be minimal, as acetic acid quickly reacts or degrades. Minimal environmental exposure may occur as a result of occasional releases from industrial processes or disposal of consumer products containing trace amounts of acetic acid.

Environmental Hazard Assessment:

Acetic acid is readily biodegradable and has low potential for bioaccumulation. Acetic acid is mobile in the aquatic environment and, if released into water, is not expected to adsorb to suspended solids and sediment. It is very soluble in water and, if accidentally released to soil or water, some volatilization to the atmosphere can be anticipated.

Effect Assessment	Result
Aquatic toxicity	Not toxic to aquatic organisms

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Substance does not bioaccumulate (log Kow = -0.17)
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB)

Environmental Safety Assessment

Acetic acid is not toxic to aquatic life. Acetic acid does not persist in the environment. Further, acetic acid is not expected to accumulate in aquatic species. Overall, acetic acid is not considered to be persistent, bioaccumulative or toxic in the environment.

Risk Management Recommendations

Exposure to acetic acid [glacial?] is controlled by sufficient ventilation and proper handling and storage techniques. Examples include: ventilation system, proper protective equipment such as eye protection (i.e., splash proof goggles), normal work clothing which covers arms and legs, resistant gloves, and NIOSH-approved respirators in situations where the level of exposure exceeds allowable exposure limits and/or ventilation alone is not sufficient, as recommended in the SDS.

Consumer products are not anticipated to contain significant levels of acetic acid. However, consumers should always follow all handling instructions and warning labels provided by the manufacturer.

National and local governments regulate acetic acid emissions from facilities. The regulatory emission limits for each facility are established to protect the health and environment of the community surrounding the facility and are written into the facility's operating permit.

Exposure to acetic acid in the workplace is covered by established exposure limits. A partial list of references follows:

- ACGIH TLV (TWA): 10ppm (25 mg/m^3)
- ACGIH TLV (STEL): 15ppm (37 mg/m^3)
- NIOSH REL (TWA): 10ppm (25 mg/m^3)
- NIOSH REL (STEL: 15ppm (37 mg/m^3)
- OSHA PEL (TWA): 10ppm (25 mg/m^3)

Regulatory Agency Review

Acetic acid [glacial?] is listed in:

- Taiwan Chemical Substance Inventory (TCSI)
- Australia Inventory of Chemical Substances (AICS)

- Canadian Domestic Substances List (DSL)
- China. Inventory of Existing Chemical Substances in China (IECSC)
- ECHA List of Publishable Substances Registered
- European Inventory of Existing Commercial Chemical Substances (EINECS)
- Japan. ENCS - Existing and New Chemical Substances Inventory
- Korea. Korean Existing Chemicals Inventory (KECI)
- Philippines Inventory of Chemicals and Chemical Substances (PICCS)
- Switzerland. New notified substances and declared preparations
- United States TSCA Inventory
- New Zealand. Inventory of Chemical Substances

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

GHS Classification:

Flammable liquids - Category 3
Acute toxicity (Oral) - Category 5
Skin corrosion/irritation - Sub-category 1A
Serious eye damage/eye irritation - Category 1

Hazard Statements:

H226: Flammable liquid and vapor.
H303: May be harmful if swallowed.
H314: Causes severe skin burns and eye damage.

Signal Word:

Danger

Precautionary Statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P240: Ground and bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting equipment.
P242: Use non-sparking tools.
P243: Take action to prevent static discharges.
P264: Wash skin thoroughly after handling.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Hazard Pictograms:

Conclusion

Acetic acid [glacial?] is used in numerous manufacturing processes and final product formulations. When handled responsibly, the potential for corrosive or irritant effects can be minimized, allowing consumers and workers to use materials containing acetic acid [glacial?] safely.

Contact Information with Company

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Additional Information

For more information on GHS, visit http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.
Ashland product stewardship summaries are located at http://www.ashland.com/sustainability/product/product-stewardship

Disclaimer

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.