

Product Stewardship Summary

Ethanol

General Statement

Ethanol is a clear, volatile liquid used in industrial, scientific, and culinary applications. Ethanol, also known as drinking alcohol, is the alcohol present in alcoholic beverages. It is also useful as an organic solvent.

Chemical Identity

Name: Ethanol

Brand Names: Ashland uses ethanol in the production of several products, including in the Arofene, Neulon, and Aropol lines.

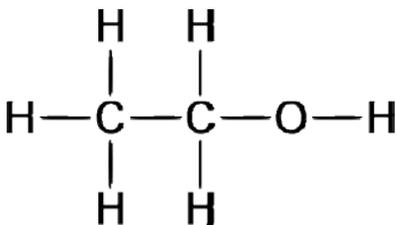
Chemical name (IUPAC): Ethanol

CAS number(s): 64-17-5

ES number: 200-578-6

Molecular formula: C₂H₆O

Structure:



Uses and Applications

Ashland uses ethanol in the production of adhesives, resins, and as a solvent in various manufacturing processes. In addition, Ashland, as a manufacturer/importer/exporter, is required to implement measures which ensure that Ethyl Alcohol (tax-free ethyl alcohol, tax-paid ethyl alcohol, specially denatured alcohol, proprietary solvents, special industrial solvents and completely denatured alcohol) is tracked and controlled to prevent tax-free industrial alcohol from finding its way into consumer beverages.



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Physical/Chemical Properties

Phys/Chem Safety Assessment

Ethanol is a volatile, highly flammable liquid. It dissolves readily in water, and ethanol-water solutions may also be flammable, depending on ethanol proportion.

Property	Value
Form	Clear liquid
Physical state	Liquid
Color	Clear
Odor	Alcoholic
Density	.7844
Melting / boiling point	-114°C / 78.5 °C @ 1 atmosphere
Flammability	H225: Highly flammable liquid and vapor
Explosive properties	Not classified
Self-ignition temperature	> 363 < 425 °C
Vapor pressure	57.26 hPa @ 19.6 °C
Mol weight	46.0684
Water solubility	789 g/L @ 20 °C
Flash point	12-13°C @ 1 atmosphere
Octanol-water partition coefficient (Log _{k_{ow}})	-0.35

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 and Worker: The primary human exposure to ethanol is in the form of consumption of ethanol containing beverages. Chronic consumption of these beverages presents unique risks which are not observed in other settings. Ethanol readily passes through the lungs and other mucous membranes. Ethanol exposures through routes other than ingestion are unlikely to occur at levels sufficient to cause adverse effects.

Human Hazard Assessment

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Not classified
Irritation / corrosion Skin / eye / respiratory test	H319: Causes serious eye irritation (>50% concentration)
Sensitization	Not classified
Toxicity after repeated exposure Oral / inhalation / dermal	Not classified
Genotoxicity / Mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive / Developmental Toxicity	Not classified
Aspiration hazard	Not applicable

Human Health Safety Assessment

Consumer: Exposure to high concentrations of ethanol will lead to reversible neurological impairment. Chronic over consumption of ethanol containing beverages can lead to liver damage and cancer. Consumption of ethanol containing beverages during pregnancy has been linked to birth defects. The GHS classification of ethanol is based on industrial uses, and does not account for effects linked to overconsumption of ethanol containing beverages.

Worker: Exposure to high concentrations of ethanol will lead to reversible neurological impairment. This impairment can increase the risks associated with industrial activities.

Environmental Effects

Environmental Exposures

Industrial ethanol production results in minimal exposure to the environment. Ethanol rapidly evaporates and biodegrades.

Environmental Hazard Assessment:

Effect Assessment	Result
Aquatic toxicity	Not classified

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not bioaccumulative
PBT / vPvB conclusion	Not PBT or vPvB

Environmental Safety Assessment

Low concentrations of ethanol are unlikely to be hazardous. Ethanol is naturally produced as a result of bacterial fermentation. High concentrations of ethanol are toxic to microbial life, but rapid evaporation and biodegradation limit the potential for disruption of soil or aquatic microorganisms.

Risk Management Recommendations

Workplace exposure to ethanol vapor can be controlled by sufficient ventilation and proper handling and storage techniques. Additionally, consumption of ethanol-containing beverages must be controlled to prevent worker impairment.

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

- US OSHA PEL: 1000 ppm (8h TWA)
- ACGIH TLV: 1000 ppm (15m STEL)
- EU and member states: <http://osha.europa.eu/en/topics/ds/oel/index.stm/members.stm>

Regulatory Agency Review

Ethanol is listed in:

- the list of REACH Registered substances ((EC) 1907/2006)
- the US TSCA inventory
- Canada's DSL list
- the Canadian Ingredient Disclosure List
- OECD HPV chemical
- reviewed by the OECD SIDS program
- the ICCA HPV list
- the Australia Inventory of Chemical Substances
- the China Inventory of Existing Chemical Substances
- the Japan Inventory of New and Existing Chemical Substances
- the Korea Existing Chemicals Inventory
- the New Zealand Inventory of Chemicals
- the Philippines Inventory of Chemicals and Chemical Substances
- alcoholic beverages is classified as a Group 1 carcinogen by IARC
- alcoholic beverages is classified as a known human carcinogen by the US NTP

Regulatory Information / Classification and Labeling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the extSDS. 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 2

Serious eye damage/eye irritation: Category 2

Hazard Statements:

H225: Highly flammable liquid and vapor

H316: Causes severe eye irritation

Signal Word:

Danger

Precautionary Statements:

P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking. P233: Keep container tightly closed.

P243: Take precautionary measures against static discharge.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313: If eye irritation persists: Get medical advice/attention. P403+P235: Store in a well-ventilated place. Keep cool.

Hazard Pictograms:**Conclusion**

While industrial exposure to ethanol is not linked to cancer or reproductive toxicity, a clear link has been established between these endpoints and consumption of alcoholic beverages. If exposures are maintained below regulatory exposure limits, ethanol exposure is not anticipated to lead to hazardous effects.

Contact Information with Company

Ashland LLC

5200 Blazer Parkway

Dublin, Ohio 43017

<http://www.ashland.com/contact>

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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>

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REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

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.