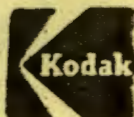


CAT 177 8745
146 2837

146 2852
146 2845



MATERIAL SAFETY DATA SHEET

EASTMAN KODAK COMPANY
343 State Street
Rochester, New York 14650

For Emergency Health, Safety, and Environmental Information, call (716) 722-5151
For all other purposes, call the Marketing and Distribution Center in your area.

Date of Preparation: 11/3/83

Approved by U.S. Department of Labor

SECTION I. IDENTIFICATION

- Product Name: **KODAK Glacial Acetic Acid**
- Synonym(s): Ethanoic Acid
- Formula: CH_3COOH
- Kodak Photographic Chemicals Catalog Number(s): CAT 177 8745 - 55 Gallons; CAT 146 2837 - 16 Fluid Ounces; CAT 146 2852 - 6 Gallons; CAT 146 2845 - 1 Gallon
- Component Number: 10001
- Kodak Accession Number: 900763

SECTION II. PRODUCT AND COMPONENT HAZARD DATA

A. COMPONENT(S):	Percent	TLV*	Kodak Accession No.	CAS Reg. No.
Glacial acetic acid	~ 100	10 ppm	900763	64-19-7

B. PRECAUTIONARY LABEL STATEMENT(S):

Household Label

Contains acetic acid

X POISON X

DANGER:

CAUSES SEVERE BURNS.

DO NOT GET LIQUID OR VAPOR IN EYES, ON SKIN, ON CLOTHING.

COMBUSTIBLE

Keep away from heat and flame.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes and get prompt medical attention.

Harmful if swallowed.

If swallowed, do NOT induce vomiting.

Give milk or water.

Call a physician at once.

KEEP OUT OF THE REACH OF CHILDREN

F-0086.000C
82-1296

Commercial Label

Contains acetic acid

DANGER!

COMBUSTIBLE

Causes severe burns.

Do not get liquid or vapor in eyes, on skin, on clothing.

Keep away from heat and flame.

Use with adequate ventilation.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; for eyes, get medical attention.

SECTION III. PHYSICAL DATA

- Appearance and Odor: Clear liquid; strong pungent, vinegar-like odor
- Melting Point: 16.6 °C (61.9 °F)
- Boiling Point: 118 °C (245 °F) @ 760 mmHg
- Vapor Pressure: 11.4 mmHg @ 20 °C
- Evaporation Rate (n-butyl acetate = 1): 0.97
- Vapor Density (Air = 1): 2.07
- Volatile Fraction by Weight: ~ 100 %
- Specific Gravity (H₂O = 1): 1.049
- pH: < 1.5
- Solubility in Water (by Weight): Complete
- Heat of Combustion: -3.48 kcal/g (*)

* Calculated by ASTM Program CHETAH.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

- Flash Point: 39 °C (103 °F) Tag closed cup
- Flash Point: 43 °C (109 °F) Tag open cup
- Autoignition Temperature: 516 °C (960 °F)
- Cool Flame: 288 °C (550 °F)
- Flammable Limits in Air (mg/L): Lower: 143 at 60 °C (140 °F)
Upper: 378 at 93 °C (199 °F)
- Extinguishing Media:
Water spray; Dry chemical; CO₂; Alcohol foam; Foam
- Special Fire Fighting Procedures: None
- Unusual Fire and Explosion Hazards: None

SECTION V. REACTIVITY DATA

- Stability: Stable
 - Incompatibility: Alkali, amines, alcohols
 - Hazardous Decomposition Products:
As with any other organic material, combustion will produce carbon dioxide and probably carbon monoxide.
 - Hazardous Polymerization: Will not occur.
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SECTION VI. TOXICITY AND HEALTH HAZARD DATA

A. EXPOSURE LIMITS: 10 ppm, ACGIH, 1982

B. EXPOSURE EFFECTS:

Inhalation: Acetic acid vapor is irritating to the upper respiratory tract. Unacclimatized humans experience extreme eye and nasal irritation at concentrations in excess of 25 ppm. Fifty ppm is intolerable; however, acclimatized workers may tolerate concentrations up to 30 ppm. Exposures to such vapor concentrations have produced neither severe systemic injury nor death. This is most probably due to the fact that acetic acid is readily metabolized within the body. Repeated exposures to high vapor concentrations may produce respiratory tract irritation with pharyngeal edema, chronic bronchitis, discoloration of the teeth, and thickening of the skin.¹

Eyes: Severe eye burns can result from direct contact with the concentrated liquid. Vapors are very irritating to the eyes.

Skin: Direct skin contact with the concentrated acid is the most frequent occupational accident with this compound. The concentrated acid produces severe skin burns. These are deep burns and usually slough in a day or two. Concentrations below approximately 50 % acid are moderately irritating to the skin and usually cause minimal injury if promptly removed from the skin. Sensitivity dermatitis has been reported.¹

Ingestion: The ingestion of concentrated acetic acid produces burns of the upper digestive tract. This is characterized by severe pain in the mouth, pharynx, esophagus, and stomach. There may be immediate vomiting with diarrhea and possible bloody stools. The ingestion of as little as 1.0 mL of 100 % (glacial) acetic acid has resulted in perforation of the esophagus. Severe intestinal irritation with gross bleeding, collapse, and death has been reported. Vinegar, a dilute impure solution containing acetic acid at approximately 4 % to 7 % concentration, is a common item of the human diet.¹

C. FIRST AID:

Inhalation: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen.

CALL A PHYSICIAN

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get prompt medical attention.

Skin: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if symptoms persist. Wash contaminated clothing before reuse.

Ingestion: Do not induce vomiting. If conscious give one glass of milk or water. Never give anything by mouth to an unconscious person.

CALL A PHYSICIAN AT ONCE.

D. TOXICITY DATA

<u>Test</u>	<u>Species</u>	<u>Result</u>	<u>Classification</u> (4)
Acute Oral LD ₅₀	Rat	3.3 g/kg(2)	Slightly toxic
Acute Oral LD ₅₀	Mouse	4.9 g/kg(2)	
Inhalation LCLo (4 h)	Rat	16,000 ppm(2)	
Inhalation LC ₅₀ (1 h)	Mouse	5620 ppm(2)	
Skin Absorption LD ₅₀	Rabbit	1.06 g/kg(2)	Slightly toxic
Skin Irritation	Guinea Pig	Severe burns(3)	
Eye Irritation	Rabbit	Complete destruction(3)	

SECTION VII. PERSONAL PROTECTION AND CONTROLS

A. RESPIRATORY PROTECTION:

An appropriate NIOSH-approved respirator for organic vapor should be worn if needed.

B. VENTILATION:

Local Exhaust: Recommended

Mechanical (General): Recommend at least ten air changes per hour for good general room ventilation.

C. SKIN AND EYE PROTECTION:

Wear goggles or face shield, rubber gloves and protective clothing.

SECTION VIII. SPECIAL STORAGE AND HANDLING PRECAUTIONS

Material is classified as a combustible liquid. Keep away from heat and flame.

Keep from contact with oxidizing materials, alkali, amines, and alcohols.

SECTION IX. SPILL, LEAK, AND DISPOSAL PROCEDURES

For large spills use a NIOSH-approved self-contained breathing apparatus.

Remove all sources of ignition.

Neutralize with baking soda (sodium bicarbonate).

Small Amount - flush material to sewer with large amounts of water.

Large Amount - absorb material in vermiculite or other suitable absorbent and place in impervious container.

Dispose in an approved incinerator or contract with licensed chemical waste disposal service.

Discharge, treatment, or disposal may be subject to federal, state, or local laws.

SECTION X. ENVIRONMENTAL EFFECTS DATA

A. SUMMARY:

This chemical has been tested for environmental effects. Some laboratory test data and published data are available for this chemical and these data have been used to provide the following estimate of environmental impact:^{3,5,6}

This chemical forms a moderately acidic aqueous solution, and this property is the only one expected to cause adverse environmental effects. It has a high biological oxygen demand, and it is expected to cause significant oxygen depletion in aquatic systems. This chemical has a low potential to affect aquatic organisms, secondary waste treatment microorganisms, and growth of some plants. It has a moderate to high potential to affect the germination of some plants. This chemical is readily biodegradable and is not likely to bioconcentrate. If diluted with water, this chemical released into the environment is not expected to have a significant impact.

B. OXYGEN DEMAND DATA:

COD: 1.03 g/g⁽³⁾

BOD₅: 0.74 g/g

C. ACUTE AQUATIC EFFECTS:

96-hour LC₅₀; Fathead minnow: 333 µL/L⁽³⁾

96-hour LC₅₀; Water flea: > 100 mg/L⁽³⁾

96-hour LC₅₀; Mosquito fish: 251 mg/L⁽⁶⁾

D. SECONDARY WASTE TREATMENT COMPATIBILITY:

5-hour IC₅₀: > 5000 mg/L(3)

E. PLANT GERMINATION EFFECTS

No Adverse Effects at:

Ryegrass 1 µL/L(3)

Radish 10 µL/L

Lettuce 10 µL/L

PLANT SEEDLING EFFECTS

No Adverse Effects at:

Marigold 100 µL/L(3)

Radish 100 µL/L

Corn 100 µL/L

Lettuce 100 µL/L

SECTION XI. TRANSPORTATION

Transportation information may be obtained by requesting an EXTERNAL TRANSPORTATION ADDENDUM sheet by catalog number(s) from Kodak Publications Data Services, Eastman Kodak Company, 343 State Street, Rochester, New York 14650.

SECTION XII. REFERENCES

1. American National Standard Z37.39, 1974, Acceptable Concentration of Acetic Acid.
 2. Registry of Toxic Effects of Chemical Substances, U.S. Department of Health, Education, and Welfare, 1979.
 3. Toxicity results are from unpublished data, Health, Safety, and Human Factors Laboratory, Eastman Kodak Company, Rochester, New York.
 4. Hodge, H.C., and Sterner, J.H., American Industrial Hygiene Association Quarterly. 10,93, 1949.
 5. Battelle's Columbus Laboratories, Water Quality Critical Data Book - Vol. 3 - Effects of Chemicals on Aquatic Life - Selected Data from the Literature Through 1968, for the U.S. Environmental Protection Agency, Project No. 18050 GWV, Contract No. 68-01-007, May 1971.
 6. Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand Reinhold Company, New York, N.Y., 1977.
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