T & S Educational/Kemtec Science

MATERIAL SAFETY DATA SHEET

(513) 860-4949

MSDS No.: AA0009
Effective Date: January 1, 2007

SECTION I NAME

Product	Acetic Acid, 5% Solution
Chemical Synonyms	Ethanoic Acid, Water Solution
Formula	Mixture.
Unit Size	up to 2.5 Lt.
C.A.S. No.	Mixture.

24 HOUR EMERGENCY ASSISTANCE

CHEMTREC
800-424-9300
Day 585-226-6177

NFPA

Health	1
Fire	0
Reactivity	1

HMIS *

HAZARD RATING

MINIMAL	SLIGHT	MODERATE	SERIOUS	SEVERE
0	1	2	3	4

SECTION II INGREDIENTS OF MIXTURES

Principal Component(s)	%	TLV Units
Acetic acid, glacial: (CAS No. 64-19-7)	5%	TWA: 10 ppm STEL: 15 ppm
Water: (CAS No. 7732-18-5)	95%	None established.
CAUTION!		
MAY CAUSE IRRITATION TO SKIN AND EYES.		

SECTION III PHYSICAL DATA

Melting Point (°F)	Freezes @ approx. 0°C (32°F)	Specific Gravity (H_2O = 1)	Approx. 1.0
Boiling Point (°F)	Approx. 100°C (212°F)	Percent Volatile by Volume (%)	100%
Vapor Pressure (mm Hg)	11.7 (Acetic acid, glacial)	Evaporation Rate (Water =1)	> 1
Vapor Density (Air=1)	2.07 (Acetic acid, glacial)		
Solubility in Water	Complete.		
Appearance & Odor	Clear, colorless liquid; vinegar-like odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	Non-flammable.	Flammable Limits in Air % by Volume N/A	Lower	Upper
Extinguisher Media	Use carbon dioxide, dry chemical, alcohol foam.			

SPECIAL FIREFIGHTING PROCEDURES

In fire conditions, wear a NIOSH/MSHA-approved self-contained breathing apparatus and full protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Acid reacts with most metals to release hydrogen gas which can form explosive mixtures with air. Slight fire hazard when exposed to heat or flame. Fire or excessive heat may produce hazardous decomposition products.

D.O.T. NON-REGULATED.

Approved by U.S. Department of Labor "essentially similar" to form OSHA-20

SECTION V HEALTH HAZARD DATA

Threshold Limited Value

None established for this mixture. (ACGIH 2001)
Toxicity data: orl-rat LD50: 3.3 g/kg. (Acetic acid, glacial).

Effects of Overexposure

May be harmful if swallowed. May cause irritation to mucous membranes. Contact may cause irritation to skin and eyes. Exercise appropriate procedures to minimize potential hazards. Target organs: None known.

Emergency and First Aid Procedures

INGESTION: Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person. **EYES:** Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention. **SKIN:** Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention. **INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

SECTION VI REACTIVITY DATA

Stability			Conditions to Avoid
	Unstable		Avoid excessive temperature and heat.
	Stable	X	

Incompatibility (Materials to Avoid) Oxidizing agents, for example, hydrogen peroxide, nitric acid, perchloric acid or chromium trioxide; strong alkalies such as sodium hydroxide.

Hazardous Decomposition Products Dangerous; when heated to decomposition, emits toxic and corrosive fumes of carbon monoxide and/or carbon dioxide.

Hazardous Polymerization		Conditions to Avoid
May Occur	Will Not Occur	Not applicable.
	X	

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled

Neutralize acid spill using soda ash or sodium bicarbonate. Absorb with an inert dry material, sweep up and place in a suitable container for disposal. Wash spill area with soap and water.

Waste Disposal Method

Discharge, treatment, or disposal may be subject to Federal, State or Local laws. These disposal guidelines are intended for the disposal of catalog-size quantities only.

Dispose of in an approved chemical landfill or contract with a licensed chemical waste disposal agency.

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiration Protection (Specify Type) None needed in normal laboratory handling. If misty conditions prevail, work in a ventilation hood or wear a NIOSH/MSHA-approved respirator.

Ventilation				
	Local Exhaust	Recommended.	Special	No.
	Mechanical (General)	Recommended.	Other	No.

Protective Gloves		Eye Protection	
	Rubber.		Chemical safety goggles.

Other Protective Equipment Faceshield, lab coat, apron, vented hood, proper gloves, fire extinguisher, eye wash station.

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling & Storing

Keep container tightly closed when not in use.

Store in a well-ventilated area. Wash thoroughly after handling.

Other Precautions Read label on container before using. Do not wear contact lenses when working with chemicals. For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

Avoid contact with eyes, skin and clothing. Remove and wash contaminated clothing.

Revision No. 2	Date 01/01/07	Approved James A. Bertsch	Chemical Safety Coordinator JAB

The information contained herein is furnished without warranty of any kind. Employers should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees. * Hazardous Materials Industrial Standards. Printed on recycled paper.

T & S Educational/Kemtec Science

MATERIAL SAFETY DATA SHEET

(513) 860-4949

MSDS No.: UU0010
Effective Date: January 1, 2007

SECTION I NAME

Product	Universal pH Indicator
Chemical Synonyms	Indicator, pH, Universal
Formula	Mixture.
Unit Size	up to 3.785 Lt.
C.A.S. No.	Mixture.

24 HOUR EMERGENCY ASSISTANCE

CHEMTREC
800-424-9300
Day 585-226-6177

NFPA

Health	1
Fire	3
Reactivity	0

HMIS *

HAZARD RATING

MINIMAL	SLIGHT	MODERATE	SERIOUS	SEVERE
0	1	2	3	4

SECTION II INGREDIENTS OF MIXTURES

Principal Component(s)	%	TLV Units
Ethyl alcohol, denatured*: (CAS No. 64-17-5)	69.5%	TWA: 1000 ppm
Water: (CAS No.7732-18-5)	30.5%	None established.
DANGER! FLAMMABLE! HARMFUL IF SWALLOWED.		

SECTION III PHYSICAL DATA

Melting Point (°F)	-114°C (-173°F) †	Specific Gravity (H_2O = 1)	0.7919 - 0.7955 @ 60/60°F †
Boiling Point (°F)	74-80°C (165.2-176°F) †	Percent Volatile by Volume (%)	100%
Vapor Pressure (mm Hg)	Ca 50 @ 20°C †	Evaporation Rate (n-Butyl Acetate =1)	Ca. 2 †
Vapor Density (Air=1)	Ca 1.5 †	† For Ethyl Alcohol, 200 Proof	
Solubility in Water	Complete.		
Appearance & Odor	Green liquid; mild characteristic odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	(21°C) 70°F	Flammable Limits in Air % by Volume Pure Ethyl alcohol	Lower 4.0% (V)	Upper 20.0% (V)
Extinguisher Media	Water spray, carbon dioxide; dry chemical; alcohol-type, or universal-type foams.			

SPECIAL FIREFIGHTING PROCEDURES

Wear a NIOSH/MSHA-approved self-contained breathing apparatus and protective clothing. Water spray may be used to keep fire exposed containers cool.

Autoignition Temperature: 400°C (752°F) (Pure Ethyl alcohol)

(2004 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.9, GUIDE PAGE NO. 127)

UNUSUAL FIRE AND EXPLOSION HAZARDS

Vapors formed from this product may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at location distant from handling point. **CAUTION:** Flame may not be visible in daylight. Fire or excessive heat may produce hazardous decomposition products; can react vigorously with oxidizing materials.

* Denaturants:
Methyl alcohol: (CAS No. 67-56-1)...TWA: 200 ppm; STEL: 250 ppm, Methyl isobutyl ketone: (CAS No. 108-10-1)...TWA: 50 ppm; 75 ppm, Isopropyl alcohol: (CAS No. 67-63-0)...TWA: (400 ppm); STEL: (500 ppm)

D.O.T. Ethanol, 3, UN1170, PG II, Ltd Qty ≤ 1 Lt.

Approved by U.S. Department of Labor "essentially similar" to form OSHA-20

SECTION V HEALTH HAZARD DATA UU0010

Threshold Limited Value

None established for this mixture by ACGIH 2001. See Section II. *

Effects of Overexposure

Ingestion causes dizziness, drowsiness, decreased reaction, euphoria, nausea, vomiting, staggering gait, and coma. Inhalation may cause dizziness, drowsiness, nausea and vomiting, inability to concentrate and irritation of the throat. Contact with skin causes irritation and defatting on prolonged contact. Contact with eyes may cause blindness. Target organs: Eyes, central nervous system, liver, kidneys.

Emergency and First Aid Procedures

INGESTION: Call physician or Poison Control Center immediately. Induce vomiting only if advised by appropriate medical personnel. Never give anything by mouth to an unconscious person. **EYES:** Check for and remove contact lenses. Flush thoroughly with water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get immediate medical attention. **SKIN:** Remove contaminated clothing. Flush thoroughly with mild soap and water. If irritation occurs, get medical attention. **INHALATION:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

SECTION VI REACTIVITY DATA

Stability	Unstable		**Conditions to Avoid**	Heat, fire, ignition source.
	Stable	X		

Incompatibility (Materials to Avoid) Can react with strong oxidizers, inorganic acids and halogens.

Hazardous Decomposition Products Thermal decomposition or burning can produce carbon monoxide and/or carbon dioxide.

Hazardous Polymerization		Conditions to Avoid
May Occur	Will Not Occur	Not applicable.
	X	

SECTION VII SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled

Remove all sources of ignition, provide adequate ventilation. For small spills, dilute with water and flush to sewer with copious amounts of water or absorb on vermiculite, paper, earth or other absorbent. Burn in an approved incinerator or open pit away from buildings and people.

Waste Disposal Method

Discharge, treatment, or disposal may be subject to Federal, State or Local laws. These disposal guidelines are intended for the disposal of catalog-size quantities only.

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

SECTION VIII SPECIAL PROTECTION INFORMATION

Respiration Protection (Specify Type) For normal laboratory use at room temperatures none should be needed with adequate room ventilation. If required work in fume hood. Do not use in confined area.

Ventilation				
	Local Exhaust	Recommended.	Special	No.
	Mechanical (General)	Recommended.	Other	Adequate to maintain below exposure limits.

Protective Gloves	Rubber.	Eye Protection	Chemical safety glasses.

Other Protective Equipment Smock, apron, eye wash station, goggles, fire extinguisher, proper gloves.

SECTION IX SPECIAL PRECAUTIONS

Precautions to be Taken in Handling & Storing

Keep container tightly closed when not in use.

Store in a cool, dry, well-ventilated area, away from any fire hazard. Use with adequate ventilation. Do not take internally.

Other Precautions

Read label on container before using. Do not wear contact lenses when working with chemicals. For laboratory use only. Not for drug, food or household use. Keep out of reach of children.

Wash thoroughly after handling.
Remove and wash contaminated clothing.

Revision No. 10	Date 01/01/07	Approved James A. Bertsch	Chemical Safety Coordinator JAB

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