



Material Safety Data Sheet

MSDS/SDS Number: M118077
Issue Date: May 10, 2008
Latest Revision Date: --
Revision: --

SECTION 1 PRODUCT AND COMPANY INFORMATION

Trade Name: 10X ARS Dilution Buffer
Catalogue Number(s): 2004810, a component of catalogue number ECM810.
Chemical Name: An aqueous solution of 40 volume percent acetic acid, ammonium acetate and thimerosal.
Product use: Biological research reagent.
Other trade names and synonyms: 10X Alizarin Red Stain dilution buffer
Manufacturer/Distributor: Millipore Corporation (Corporate Headquarters) Millipore S.A.S. (European Headquarters)
Postal Address: 290 Concord Road, Billerica MA, USA Boite Postale 116, 67124 Molsheim Cedex, France
Telephone Number: +1-978-715-1335 +33(0)3 90 46 90 00
Email: msds@millipore.com
CHEMTREC Emergency Telephone Number: International +1-703-527-3887 (collect)
North America 1-800-424-9300 (toll free)

SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Component	EINECS or ELINCS No.	CAS No.	Content (weight percent)	Symbol letters*	R Phrases**
Acetic acid	200-580-7	64-19-7	40-44%	C	R35
Thimerosal (Ethylmercurithiosalicylic acid, sodium salt)	200-210-4	54-64-8	0.05%	T+ N	R 26/27/28 R 33. R50/53

* Symbol letters and categories of danger: **T+** = Very toxic, **T** = Toxic, **C** = Corrosive, **Xn** = Harmful, **Xi** = Irritant, **E** = Explosive, **F+** = Extremely flammable, **F** = Very flammable, **N** = Dangerous for the environment, **O** = Oxidising.

** The full text of each phrase is listed in Section 16.

This product also contains ammonium acetate and water that are not dangerous substances or hazardous chemicals as defined in European Community Directives 67/548/EEC or 1999/45/EC, and Hazard Communication Standard (29 CFR 1910.1200).

SECTION 3 HAZARD IDENTIFICATION / EMERGENCY OVERVIEW

Appearance: Colorless liquid

Classification: This product is classified as Corrosive, C, according to Directive 1999/45/EC.

Adverse human health effects:

Contact with Eyes: Severe eye irritant. Severe burns and irreversible eye damage may be caused by contact with liquid or vapor. A lachrymator causing tearing.

Ingestion: Gastrointestinal tract corrosive. . May cause permanent and irreversible damage to the digestive track with symptoms including Causes severe pain, nausea, vomiting, diarrhea, and shock. Urine production may be impaired or completely impaired.

Inhalation (Short Term): Respiratory tract corrosive. Will causes chemical burns to the respiratory tract. May cause bronchitis, inflammation of the throat, and dental erosion. May be absorbed through the lungs. These effects may be delayed.

Inhalation (Long Term): May cause chronic bronchitis, inflammation of the throat, and severe dental erosion.

Skin Contact: Skin corrosive. Causes skin burns. May cause skin sensitization, and blackening and thickening of the skin. Acetic acid may be harmful if adsorbed through the skin.

Target Organs: Acetic Acid: Eyes, skin, mucous membranes, teeth, kidneys.
Thimerosal Central nervous system, kidneys, spleen, and bone.

Medical conditions aggravated by exposure: Exposure may exacerbate existing skin disorders.

Adverse environmental effects: This product is expected to be moderately toxic to aquatic species due to the combined effects of the acetic acid and thimerosal. See Section 12.

Adverse physiochemical effects: This product will be moderately corrosive to reactive metals such as aluminum and plain carbon steels.

SECTION 4 FIRST AID MEASURES

Contact with Eyes: Seek immediate medical attention. Flush with copious amounts of water for at least 30 minutes. Assure adequate flushing by separating the eyelids with fingers. Prevent victim from rubbing eyes.

Ingestion: If swallowed, immediately summon medical assistance. Do not induce vomiting. If victim is conscious and alert, give 3 to 4 cups of water or milk. Do not employ mouth to mouth resuscitation – use suitable mechanical means to resuscitate.

Inhalation: If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not employ mouth to mouth resuscitation – use suitable mechanical means to resuscitate.

Skin Contact: Remove contaminated clothing immediately, summon medical attention and flush skin with copious amounts of water for 15 minutes.

SECTION 5 FIRE FIGHTING MEASURES

Flash Ignition Temperature:	Acetic Acid (40%) – 100 to 110°C
Autoignition Temperature (ASTM D1929):	Acetic Acid (100%) – 427°C
Flammability Limits:	Acetic Acid (100%) Lower flammability limit: 4% Upper flammability limit: 17%
Suitable extinguishing media:	Dry chemical, carbon dioxide, water spray or alcohol-resistant foam
Unsuitable extinguishing media:	Straight streams of water.
Special protective equipment for firefighters:	In a fire, large quantities of this product may generate significant quantities of hazardous aerosols containing mercury. Self contained breathing apparatus is required.
Special exposure hazards:	Approach first from upwind direction to avoid acetic acid and mercury aerosols.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions:	Large spills may require area evacuation. Wear face shield, chemically resistant boots, clothing and gloves (nitrile, neoprene) to prevent skin contact, since acetic acid may be absorbed through the skin.
Small spills:	Area evacuation is not required. Eliminate unnecessary traffic in area of the spill. Clean up spills immediately. Wear appropriate protective clothing and if necessary breathing apparatus. Contain spill and absorb with sand, earth, inert material or vermiculite. Collect residues and place in labeled plastic containers. Avoid breathing vapors and aerosols and contact with skin and eyes.
Large spills:	In addition to Small Spill precautions, clear area of all unnecessary personnel and move upwind, if aerosol formation is possible..
Environmental precautions:	Spilled acetic acid/thimerosal solutions may not be washed to sewer, or industrial waste water systems. Collect and dispose according to federal, state and local regulations.
Clean up measures:	Small spills may be adsorbed on paper towels, and stored in closed containers pending final disposition. Larger spill may be absorbed in sand, sawdust or vermiculite, and stored in closed containers pending final disposition (See section 13). Wash spill area with detergent and water to remove residual contamination. This water may be disposed to the sanitary sewer.

SECTION 7 HANDLING AND STORAGE

Handling: Avoid contact with eyes and skin. Wear gloves. Do not inhale aerosols or vapors. May be harmful if swallowed, inhaled and in contact with skin.. Use personal protective equipment outlined in section 8. Wash thoroughly after handling. Use with adequate ventilation

Storage: Store at room temperature, unless directed otherwise by the product data sheet.

SECTION 8 EXPOSURE CONTROL AND PERSONAL PROTECTION

	Normal Handling Conditions	Emergency Response Conditions
Respiratory protection:	Not normally required for normal use.	If aerosols are present - air purifying respirator with organic cartridges
Ventilation:	General room ventilation	If aerosols are present, provide exhaust ventilation
Eye protection:	Safety glasses with side shields	Face shield
Skin protection:	Nitrile gloves and laboratory coat.	Chemically resistant jacket, pants, gloves, boots and head covering

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless liquid

Odor: Vinegar like odor.

Odor Threshold: 0.48 to 1.0 ppm

pH: 2.1 – 2.5

Melting Point: 15-20 °C

Boiling Point: 115 to 120°C

Flash Ignition Point: Acetic Acid (40%) 100-110°C

Explosive Properties: Acetic acid solutions can form explosive mixtures with air when heated above its flash point.

Oxidizing Properties: Not considered to have oxidising properties.

Vapor pressure, 20 °C: Approximately 12 mm Hg

Specific Gravity (Water = 1.0): Approximately 1.05

Solubility: Miscible with water

Vapor Density, 20 °C: Acetic Acid: 2.1

Viscosity, centipoise: 1.2 – 1.3

Partition coefficient (n-octanol/water): Acetic acid: 0.68

SECTION 10 STABILITY AND REACTIVITY

- Chemical Stability:** Stable under normal temperatures and pressures.
- Conditions to Avoid:** Elevated temperature, heating to dryness.
- Incompatible With:** Strong oxidizing agents, strong bases, reactive metals.
- Hazardous Decomposition Products:** Acetic anhydride, oxides of carbon, mercury
- Hazardous Polymerization:** Will not occur

SECTION 11 TOXICOLOGICAL INFORMATION

- Inhalation:** Will be corrosive to the respiratory tract, causing chemical burns, bronchitis, inflammation of the throat, and dental erosion. May be absorbed through the lungs. These effects may be delayed.
- Ingestion:** Will be corrosive to the gastrointestinal tract; may cause permanent and irreversible damage to the digestive track with symptoms including Causes severe pain, nausea, vomiting, diarrhea, and shock. Urine production may be impaired or completely impaired.
- Skin Contact:** Will be corrosive to skin corrosive, causing skin burns. May cause skin sensitization, and blackening and thickening of the skin. Acetic acid may be harmful if adsorbed through the skin.
- Eye Contact:** Will be severely irritating to the eyes, causing tearing.. May cause severe burns and irreversible eye damage through contact with liquid or vapor.
- Carcinogenicity:** None of the components of these products are listed as carcinogenic by ACGIH, IARC, NTP, OSHA or California proposition 65.
- Chronic Toxicity:** This product may cause reproductive and fetal effects; laboratory experiments have shown mutagenic effects. Prolonged or repeated exposure may cause corneal erosion, conjunctivitis, and possible blindness. Prolonged or repeated skin contact may cause dermatitis.
- Toxicology Data:** Toxicological information for this product as a whole does not exist;
Selected data for the individual components:
- | | |
|---------------------------------------|-------------------|
| Acetic acid (100%) | RTECS#: AF1225000 |
| LD ₅₀ , oral, rat: | 3,310 mg/kg |
| LC ₅₀ , inhalation, mouse: | 5,620 ppm/1H |
| LD ₅₀ , skin, rabbit: | 1,060 µL/kg |
| Draize test, rabbit, skin 50 mg/24H: | Mild |

Section 11 Toxicological Data (continued)

Thimerosal 100%	RTECS # OV8400000
LD ₅₀ , oral, rat	75 mg/kg
LD ₅₀ , oral, mouse	91 mg/kg
LC ₅₀ , inhalation, rat	37 mg/m ³
LC ₅₀ , inhalation, mouse	32.4 mg/m ³
Draize test, eyes, rabbit, 8 µg	mild

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity: Calculated for a 40 volume % acetic acid solution:

LC ₅₀ - <i>Leuciscus idus</i> (Golden orfe):	1,000 mg/l - 48 H
LC ₅₀ - <i>Cyprinus carpio</i> (Carp)	125 mg/l - 48 H
LC ₅₀ - <i>Pimephales promelas</i> (fathead minnow)	200 - 220 mg/l - 96 H
EC ₅₀ - <i>Daphnia magna</i> (Water flea)	160 mg/l - 48 H

Thimerosal has antifungal and antibacterial properties and will have adverse impacts on soils and natural waters.

Environmental Fate: Acetic acid solutions will decrease the pH of poorly buffered soils and water.

SECTION 13 DISPOSAL INFORMATION

This product should not be disposed to an industrial sewer system. It must be disposed in a manner consistent with national, state, and local regulations.

European Community: When disposal is required, this product be considered according to the European Waste catalogue (European commission decision of 03/05/01 modifying directives 94/3/CE and 75/442/CE) as part of the following category:

16 10 01* aqueous liquid wastes containing dangerous substances

United States: Spent product should be tested to determine if it meets the definition of a US Environmental Protection Agency RCRA D002 corrosive hazardous waste. Unused product should be disposed of in a manner consistent with federal, state and local regulations.

SECTION 14 TRANSPORTATION INFORMATION

The transportation of acetic acid solutions containing more than 10%, acetic acid by weight is regulated by IMDG (sea), ADR (road), RID (rail), ICAO/IATA (air), or USDOT as a dangerous goods or hazardous material. For this product:

Proper shipping name:	Acetic Acid Solution
UN Identification Number	UN2790
Hazard Class:	8
Packing Group:	III

SECTION 15 REGULATORY INFORMATION

Australia:	Hazchem Code:	Thimerosal: 2X
	Poisons Schedule Number:	S7
California:	No Significant Risk Level:	Mercury and mercury compounds are listed as known to the State of California to cause reproductive toxicity.
Canada:	WHMIS:	These products have WHMIS classifications of D2B, E
European Community:	Symbols:	C
	Category of danger:	Corrosive
	Risk phrases:	R34 Causes burns
		S 23 Do not inhale gas/fumes/vapors/spray
		S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
		S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
	OECD/High Production Volume (HPV) chemicals:	Acetic acid is listed as a High Volume Production chemical.
	WEEE and RoHS:	The WEEE and RoHS Directives are not applicable to these products.
Japan:	Poisonous and Deleterious Substances Control Law:	Thimerosal is listed as a Poisonous Substance by the Poisonous and Deleterious Substances Control Law
United States:	Toxic Substances Control Act:	All of the components of this product are listed on the EPA Toxic Substances Control Act (TSCA) Inventory.

Section 15 (continued)

Occupational Exposure Limits

Component	Occupational Exposure Limits, ppm	
Acetic Acid	ACGIH: TLV	10 ppm TWA; 15 ppm STEL
	NIOSH REL:	10 ppm TWA; 50 ppm IDLH
	US OSHA PEL	10 ppm TWA
Ethylmercurithiosalicylic acid, sodium salt	ACGIH TLV (listed under Mercury, aryl and inorganic compounds).Skin - potential significant contribution to overall exposure by the cutaneous route (listed under Mercury, aryl and inorganic compounds).	0.1 TWA mg/m ³ (as Hg)
	NIOSH (REL)	0.05 mg/m ³ TWA
	OSHA PEL, European Community WEL	None Established

SECTION 16 ADDITIONAL INFORMATION

Risk phrases referred to under Section 2:	R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
	R 33	Danger of cumulative effects
	R35	Causes severe burns
	R 50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Abbreviations Used		
ACGIH	American Conference of Government Industrial Hygienists	
ADR	European agreement on the international carriage of dangerous goods on road	
CAS	Chemical Abstract Service	
EINECS	European Inventory of Existing Commercial Chemical Substances	
ELINCS	European List of Notified Chemical Substances	
EPA	United States Environmental Protection Agency	
IARC	International Agency for Research in Cancer.	
IATA	International Air Transport Association	
ICAO	International Civil Aviation Organization	
IMDG	Regulations regarding the transportation of dangerous goods on ocean-going vessels issued by the International Maritime Organization.	
IUCLID	International Uniform Chemical Information Database	
LC ₅₀	Lethal Concentration 50% is the concentration of a chemical which kills 50% of a sample population	

Section 16 – Abbreviations (continued)

LD ₅₀	Lethal Dose 50% is the dose of a chemical which kills 50% of a sample population.
LDLo	Lowest observed lethal dose
MSFU	Manufacture, Formulation, Supply and Use (Section 13)
NIOSH	National Institute of Occupational Safety and Health (US)
NTP	National Toxicology Program (US)
OSHA	United States Occupational Safety and Health Administration
RID	International regulations concerning the international carriage of dangerous goods by rail.
RTECS	Registry of Toxic Effects of Chemical Substances (US)
skin	potential significant contribution to overall exposure by the cutaneous route
VLE	15 minute short term exposure limit (France)
WHMIS	Workplace Hazardous Materials Information System (Canada)

This safety data sheet has been prepared to comply with the requirements of European Community Directive 2001/58/EC and ANSI Z400.1-1998.

Millipore is a registered trademark of Millipore Corporation.

© 2008 Millipore Corporation. All rights reserved. The above information is believed to be current and accurate; however, Millipore makes no warranty with respect to such information and assumes no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.