




## Material Safety Data Sheet

**MSDS/SDS Number:** 00000330MSDS  
**Latest Revision Date:** September 1, 2009  
**Revision:** A

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND OF THE COMPANY/UNDERTAKING

**Product Name:** Neutralization Buffer  
**Catalogue Number(s):** 90449; Component of S7150  
**Chemical Name:** Aqueous Solution of Trometamol and Glycerol.  
**Synonyms:** None  
**Intended Product Use:** Reagent in immunoblot detection of carbonyl groups in oxidized protein.  
**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  
**Hours of Operation:** 9:00 am to 4:00 pm ET (GMT -4)      9:00 am to 4:00 pm EU CT (GMT +1)  
**Email:** msds@millipore.com  
**CHEMTREC Emergency Telephone Number:** International +1-703-527-3887 (collect)  
North America 1-800-424-9300 (toll free)

### SECTION 2 HAZARDS IDENTIFICATION

**GHS Hazard Class:** Skin Corrosion/ Irritation: Category 3  
Serious Eye Damage/Irritation: Category 2B  
**Signal Word and Hazard Statement:** Warning: May cause mild skin irritation (H316)  
Warning: Causes eye irritation (H320)  
**EU Hazard Symbol Pictogram:**  Xi (R36/38)

### SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

**Identification of Dangerous Components:** This product contains the substances listed below, which are defined as 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.

| Dangerous Component | EINECS or ELINCS No. | CAS No. | Content (weight percent) | EU Hazard Symbol Letters*† | R Phrases**† |
|---------------------|----------------------|---------|--------------------------|----------------------------|--------------|
| Trometamol:         | 201-064-4            | 77-86-1 | 17.5 %                   | N/A                        | N/A          |
| Glycerol:           | 200-289-5            | 56-81-5 | 32 %                     | N/A                        | N/A          |

**Identification of Components Not Classified as Dangerous:** This product contains the substances listed below, which are not defined as 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.

| Non-Dangerous Component | EINECS or ELINCS No. | CAS No.   | Content (weight percent) | EU Hazard Symbol Letters * | R Phrases** |
|-------------------------|----------------------|-----------|--------------------------|----------------------------|-------------|
| Water:                  | 231-791-2            | 7732-18-5 | 50.5 %                   | N/A                        | N/A         |

\* 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 R phrase is listed in Section 15.

† Symbols letters and R Phrases are assigned to each dangerous component for the highest concentration range as defined in 67/548/EEC and 1999/45/EC.

### SECTION 4 FIRST AID MEASURES

|                           | Treatment Measures:   | Symptoms of Exposure:   |
|---------------------------|---|---|
| <b>Contact with Eyes:</b> | If the product contacts the eyes, promptly wash (irrigate) the eyes with large amounts of tepid water for at least 15 minutes, occasionally lifting the lower and upper lids. Seek medical attention immediately.                           | Possible eye irritation   |
| <b>Ingestion:</b>         | Seek medical attention immediately. Never give an unconscious person anything by mouth.   | Possible gastrointestinal irritation causing nausea and vomiting. |
| <b>Inhalation:</b>        | If a person inhales large amounts of the product move the exposed person to fresh air at once. If breathing is difficult or stops seek immediate medical attention.   | Possible respiratory tract and mucous membrane irritation.        |
| <b>Skin Contact:</b>      | If the product contacts the skin, immediately flush the contaminated skin with mild soap and water. If this chemical penetrates clothing immediately remove the clothing and flush the skin with water. Seek medical attention immediately. | Possible skin irritation.   |

## SECTION 5 FIRE FIGHTING MEASURES

**Suitable Extinguishing Media:** Use extinguishing media appropriate for the surrounding fire. This product is compatible with commercially available extinguishing media.

**Special Protective Equipment for Firefighters:** This product does not require the use of any additional fire fighting equipment beyond what is appropriate to the surrounding fire.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Wear chemical resistant boots, clothing, eye protection, and gloves to prevent skin contact (See Section 8).

**Small Spills:** Identify the spilled material(s). Barricade the spill area and notify others in the surrounding areas. Control all sources of ignition if the substance is flammable. Don the appropriate personal protective equipment (See section 8). Control the movement of the spilled product (into drains, soil, across floors etc.) with absorbent spill materials. Collect contaminated spill material and place in container meeting appropriate U.N. packaging requirements. Decontaminate used equipment and affected spill area appropriately.

**Large Spills:** In addition to small spill precautions, determine personnel evacuation distances. Notify appropriate authorities if necessary.

**Environmental Precautions:** Collect and dispose of contaminated materials according to international, federal, state and local regulations. Keep away from surface and ground water, drains, and soil.

## SECTION 7 HANDLING AND STORAGE

**Handling:** Seek appropriate training to safely handle this product under normal conditions. Use the recommended personal protective equipment (See Section 8) to prevent chemical exposures. Wash hands with soap and water before eating, drinking, or touching common items (phone, computer, etc.) to prevent cross contamination. Use this product with adequate ventilation. See product technical data sheet for details.

**Storage:** See product technical data sheet for details.

**Specific use:** See product technical data sheet for details.

## SECTION 8 EXPOSURE CONTROL AND PERSONAL PROTECTION

| <b>Exposure Limit Values:</b> | OSHA PEL   | NIOSH REL  | ACGIH TLV                | Other      |
|-------------------------------|--|------------|--------------------------|------------|
| Trometamol:                   | Not Listed   | Not Listed | Not Listed               | See Below: |
| Russia:                       | OEL - STEL 5 mg/m <sup>3</sup> , JUN2003                                   |            |                          |            |
| Glycerol:                     | TWA 15 mg/m <sup>3</sup> (Dust), 5 mg/m <sup>3</sup> (Respirable Fraction) | Not Listed | TWA 10 mg/m <sup>3</sup> | See Below  |
| Belgium:                      | TWA 10 mg/m <sup>3</sup> , MAR2002   |            |                          |            |
| Finland:                      | TWA 20 mg/m <sup>3</sup> , JAN1999   |            |                          |            |
| France:                       | VME 10 mg/m <sup>3</sup> , FEB2006   |            |                          |            |

|                  |   |
|------------------|---|
| Korea:           | TWA 10 mg/m <sup>3</sup> (mist), 2006                                     |
| Mexico:          | TWA 10 mg/m <sup>3</sup> (inhalable), 2004                                |
| The Netherlands: | MAC-TGG 10 mg/m <sup>3</sup> , 2003                                       |
| New Zealand:     | TWA 10 mg/m <sup>3</sup> (mist), JAN2002                                  |
| Switzerland:     | MAK- week 50 mg/m <sup>3</sup> ,KZG- week 100 mg/m <sup>3</sup> , DEC2006 |
| United Kingdom:  | TWA 10 mg/m <sup>3</sup> , 2005   |

|   | <b>Normal Handling Conditions</b>   | <b>Emergency Response Conditions</b>  |
|---|---|---|
| <b>Engineering Controls:</b>            | General room ventilation is adequate for the use of this product.   | Provide negative pressure ventilation.                                      |
| <b>Respiratory Protection</b>           | Use appropriate respiratory protection.   | Use appropriate respiratory protection.                                     |
| <b>Eye Protection:</b>                  | Safety glasses with side shields.   | Chemical splash goggles or other face protection as appropriate.            |
| <b>Skin Protection:</b>                 | Laboratory coat, adequate chemical-resistant gloves.  | Chemically resistant boots, clothes, and impermeable gloves as appropriate. |
| <b>Environmental Exposure Controls:</b> | Not available.  | Not available.  |
| <b>Other Equipment:</b>                 | Safety shower, eyewash stations, and hand washing equipment should be available close to the work area as needed. |   |

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

|   |                                |                    |
|---|--------------------------------|--------------------|
| <b>Appearance:</b>                              | Clear Colorless Liquid         |                    |
| <b>Odor:</b>                                    | Faint Sweet Odor               |                    |
| <b>Odor Threshold:</b>                          | Not Available                  |                    |
| <b>pH:</b>                                      | 7.0-8.0                        |                    |
| <b>Melting Point/Freezing point:</b>            | -5 to -10°C                    |                    |
| <b>Initial boiling point and boiling range:</b> | 110 to 115°C                   |                    |
| <b>Flash Point:</b>                             | Not Available                  |                    |
| <b>Evaporation Rate, 20 °C:</b>                 | Not Available                  |                    |
| <b>Flammability (Solid/Gas):</b>                | Not Available                  |                    |
| <b>Explosive Limits:</b>                        | LEL: Not Available             | UEL: Not Available |
| <b>Vapor Pressure:</b>                          | 107 mm Hg                      |                    |
| <b>Vapor Density, 20 °C:</b>                    | Not Available                  |                    |
| <b>Relative Density (Water = 1.0):</b>          | 1.2 – 1.4                      |                    |
| <b>Solubility:</b>                              | Completely Miscible with Water |                    |
| <b>Partition coefficient (n-octanol/water):</b> | Not Available                  |                    |

|  |               |
|--|---------------|
| <b>Auto Ignition Temperature (ASTM D1929):</b> | Not Available |
| <b>Decomposition temperature:</b>              | Not Available |
| <b>Oxidizing Properties:</b>                   | None          |
| <b>Viscosity, centipoise:</b>                  | Not Available |

## SECTION 10 STABILITY AND REACTIVITY

|  |   |
|--|---|
| <b>Chemical Stability:</b>               | Product is stable under normal operating conditions and use as described in the product technical data sheet. |
| <b>Conditions to Avoid:</b>              | See product technical data sheet for details.   |
| <b>Incompatible Materials to Avoid:</b>  | Strong acids or bases, strong oxidizers, and extreme temperatures.  |
| <b>Hazardous Decomposition Products:</b> | Heating to decomposition temperature may produce carbon monoxide, carbon dioxide, nitrogen oxides.            |

## SECTION 11 TOXICOLOGICAL INFORMATION

**Toxicology Data:** Toxicological information for this product as a whole does not exist, below is data for the individual components.

Glycerol: RTECS #MA8050000

Trometamol: RTECS#: TY2900000

|   | <b>Toxicity Test</b>                | <b>Exposure Route</b> | <b>Dose</b>     | <b>Observed Effect</b>   |
|---|-------------------------------------|-----------------------|-----------------|--|
| <b>Acute Toxicity:</b>                    |                                     |                       |                 |  |
| Glycerol:                                 | Lowest Published Toxic Dose (Human) | Oral                  | 1,428 mg/kg     | Behavioral: Headache.<br>Gastrointestinal: Nausea and Vomiting. <sup>1</sup>                       |
|   | LD <sub>50</sub> (Guinea Pig)       | Oral                  | 7,750 mg/kg     | N/A <sup>1</sup>   |
|   | LD <sub>50</sub> (Rat)              | Oral                  | 12,600 mg/kg    | Behavioral: General Anesthetic<br>Behavioral: Muscle Weakness<br>Liver: Other Changes <sup>1</sup> |
| Trometamol:                               | LD <sub>50</sub> (Rat)              | Oral                  | 5,900 mg/kg     | N/A <sup>2</sup>   |
| <b>Skin Corrosion/Irritation:</b>         | Skin Irritation (Rabbit)            | Skin                  | 500 mg/24 Hours | Mild <sup>1</sup>  |
| <b>Serious Eye Damage/Eye Irritation:</b> | Eye Irritation (Rabbit)             | Eye                   | 500 mg/24 Hours | Mild <sup>1</sup>  |
| <b>Respiratory or Skin Sensitization:</b> | Not Available                       |                       |                 |  |
| <b>Germ Cell Mutagenicity:</b>            | Not Available                       |                       |                 |  |
| <b>Reproductive Toxicity:</b>             | Not Available                       |                       |                 |  |

**STOST-Single Exposure:** Not Available

**STOST-Repeated Exposure:** Not Available

**Aspiration Hazard:** Not Available

**Carcinogenicity:** Carcinogenetic information for this product as a whole does not exist, below is data for the individual components.

|                         |            |            |            |
|-------------------------|------------|------------|------------|
| <b>Research Agency:</b> | OSHA:      | NTP:       | IARC:      |
| Trometamol:             | Not Listed | Not Listed | Not Listed |
| Glycerol:               | Not Listed | Not Listed | Not Listed |

## SECTION 12 ECOLOGICAL INFORMATION

**Ecotoxicity:** Ecotoxicity information for this product as a whole does not exist, below is data for the individual components.

Trometamol: N/R Selenastrum Capricornutum 72 Hours 200,000 ug/L<sup>3</sup>  
N/R Selenastrum Capricornutum 72 Hours 300,000 ug/L<sup>3</sup>

LD<sub>50</sub> Carassius Auratus 24 Hours 5,000,000 ug/L<sup>4</sup>

Glycerol: LD<sub>50</sub> Leuciscus Idus Melanotus 48 Hours 10,000,000 ug/L<sup>5</sup>  
LD<sub>50</sub> Oncorhynchus Mykiss 96 Hours 54.0 ml/L<sup>6</sup>

### Mobility:

Glycerol: Terrestrial Fate: If released to soil, glycerin is expected to undergo rapid biodegradation under aerobic conditions. Biodegradation under anaerobic conditions is also expected to occur. Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/l at 5 deg C, soil adsorption coefficients for glycerin can be estimated at 3 and 2(SRC), respectively, using regression-derived equations. The magnitude of these values indicate that glycerin will display very high mobility in soil. Based on an estimated Henry's Law constant of 1.75X10+11 atm cu-m/mol and vapor pressure, 1.58X10-4 mm Hg at 25 deg C glycerin is not expected to significantly volatilize from wither moist or dry soil to the atmosphere(SRC).<sup>7</sup>

Aquatic Fate: If released to water, glycerin is expected to rapidly degrade under aerobic conditions. Degradation is also likely in seawater and under anaerobic conditions. Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/l at 5 deg C, bioconcentration factors for glycerin can be estimated at 3 and 0.2(SRC), respectively, using regression-derived equations. The magnitude of these values indicate that bioconcentration in fish and aquatic organisms is not likely to occur to a significant extent. Estimated soil adsorption coefficients of 2 and 3 indicated that adsorption to sediment and suspended organic matter will not be important. Based on an estimated Henry's Law constant of 1.75X10+11 atm cu-m/mol, volatilization of glycerin from water will be slower than for water itself.<sup>7</sup>

Atmospheric Fate: If released to the atmosphere, glycerin may undergo a gas-phase oxidation with photochemically produced hydroxyl radicals. An estimated rate constant for this reaction of 1.7X10-11 cu- cm/molec-sec at 25deg C translates to an atmospheric half-life of 33 hrs(SRC) using an average atmospheric hydroxyl radical concn of 5X10+5 molec/cu-cm. The water solubility of glycerin, 1,220,000 mg/l at 5 deg C, indicates that it may also undergo atmospheric removal by wet deposition processes(SRC).<sup>7</sup>

**Persistence and Degradation:** Glycerin underwent 90% degradation after an 8 day lag period when incubated with enriched methane cultures under anaerobic conditions. Pure cultures of Aerobacter and lactobacillus were found to degrade glycerin under anaerobic conditions. An estimated rate constant for the vapor-phase reaction of glycerin with photochemically produced hydroxyl radicals of  $1.7 \times 10^{-11}$  cu cm/molec-sec at 25 deg C translates to an atmospheric half-life of 33 hr(SRC) using an average atmospheric hydroxyl radical concn of  $5 \times 10^{-5}$  molec/cu cm.<sup>7</sup>

**Bio Accumulative Potential:** Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/l at 5 deg C, bioconcentration factors for glycerin can be estimated at 3 and 0.2(SRC), respectively, using regression-derived equations. The magnitude of these values indicate that bioconcentration of glycerin in fish and aquatic organisms will not be significant(SRC).<sup>7</sup>

**Results of PBT Assessment:** Not Available

**Other adverse effects:** None Known

### SECTION 13 DISPOSAL INFORMATION

**Substance:** Dispose of unused contents in accordance with international, federal, state, and local regulations.

**Contaminated Packaging:** Dispose of container in accordance with international, federal, state and local requirements.

### SECTION 14 TRANSPORTATION INFORMATION

**UN Number:** Not Listed

**Class:** Not Listed

**Proper Shipping Name:** Not Listed

**Packing Group:** Not Listed

**Marine Pollutant:** Not Listed

**Other Applicable Information:** None

### SECTION 15 REGULATORY INFORMATION

**Australia:** Hazchem Code: Not Listed

Poisons Schedule Number: Not Listed

**California:** Proposition 65 Listed: Not Listed

**Canada:** WHMIS: D2B

**European Union:** REACH: Chemical Safety Assessment for the substance or substances in the preparation not required.

Substances of Very High Concern (SVHC) - October 28<sup>th</sup>, 2008: This product does not contain SVHC's in concentrations above 0.1% weight/weight.

Category of Danger: Xi: Irritant

Risk Phrases: R36/38: Irritating to eyes and skin.

Safety Phrases: S7/9: Keep container tightly closed and in a well-ventilated place.  
 S20/21: When using do not eat, drink or smoke.  
 S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
 S27/28: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and tepid water.  
 S29/35: Do not empty into drains; dispose of this material and its container in a safe way.  
 S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.  
 S45: In case of accident or if you feel unwell, seek medical advice immediately

OECD/High Production Volume (HPV) Chemicals: Glycerol

RoHS: This product does not contain RoHS listed substances in concentrations above the established thresholds.

Japan: Poisonous and Deleterious Substances Control Law: Not Listed

## SECTION 16 ADDITIONAL INFORMATION

**Training Advice:** Seek effective chemical handling training to reduce the hazards associated with this product prior to use.

**Technical Contact:** <http://www.millipore.com/support>

### 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. |
| LC <sub>50</sub> | Lethal Concentration 50% is the concentration of a chemical which kills 50% of a sample population                                    |
| LD <sub>50</sub> | Lethal Dose 50% is the dose of a chemical which kills 50% of a sample population.   |
| LDLo             | Lowest observed lethal dose   |
| LEL              | Lower Explosive Limit   |

|       |   |
|-------|---|
| 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)                                       |
| STOST | Specific Target Organ Systemic Toxicity   |
| UEL   | Upper Explosive Limit   |
| WHMIS | Workplace Hazardous Materials Information System (Canada)                                   |

This safety data sheet has been prepared to comply with the requirements of the European Union regulation on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) 1906/2006 and ANSI standard Z400.1-1998.

Millipore, the M Mark [and name of product] are registered trademarks of Millipore Corporation.

© 2009 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.

<sup>1</sup> Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, USA, National Institute for Occupational Health and Safety (NIOSH), Registry of Toxic Effects of Chemical Substances (RTECS) File #MA8050000, 2009.

<sup>2</sup> Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, USA, National Institute for Occupational Health and Safety (NIOSH), Registry of Toxic Effects of Chemical Substances (RTECS) File #TY2900000, 2009.

<sup>3</sup> Adams, N., K.H. Goulding, and A.J. Dobbs, Toxicity of Eight Water-Soluble Organic Chemicals to *Selenastrum capricornutum*: A Study of Methods for Calculating Toxic Values Using Different Growth Parameters, *Arch. Environ. Contam. Toxicol.* 14(3):333-345, 1985.

<sup>4</sup> Bridie, A.L., C.J.M. Wolff, and M. Winter, The Acute Toxicity of Some Petrochemicals to Goldfish, *Water Res.* 13(7):623-626 (OECDG Data File), 1979.

<sup>5</sup> Juhnke, I., and D. Luedemann, Results of the Investigation of 200 Chemical Compounds for Acute Fish Toxicity with the Golden Orfe Test (Ergebnisse der Untersuchung von 200 Chemischen Verbindungen auf Akute Fischtoxizität mit dem Goldorfenfest), *Z. Wasser-Abwasser-Forsch.* 11(5):161-164 (GER) (ENG TRANSL) (OECDG Data File), 1978.

<sup>6</sup> Mayer, F.L.Jr., and M.R. Ellersieck, Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals, Resour. Publ. No. 160, U.S. Dep. Interior, Fish Wildl. Serv., Washington, DC :505 p. (USGS Data File), 1986.

<sup>7</sup> <http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+@rel+56-81-5>, U.S. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894, 2009.