Material Safety Data Sheet

MSDS/SDS Number: 00000032MSDS

Latest Revision Date: June 4, 2010

Revision: A

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

Product Name: Goat Anti-Rabbit IgG, HRP-conjugate.

Catalogue Number(s): 12-348MN; Component of 17-347.

Chemical Name: Aqueous solution of Dipotassium Hydrogenorthophosphate, Sodium Chloride, Bovine Serum Albumin, Gentamicin Sulfate and Glycerol.

Synonyms: None.

Intended Product Use: Intended for research use only.

Manufacturer/Distributor:	Millipore Corporation (Corporate Headquarters)	Millipore S.A.S. (European Headquarters)
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CHEMTREC Emergency Telephone Number: International +1-703-527-3887 (collect)
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SECTION 2 HAZARDS IDENTIFICATION

Globally Harmonized System of Classification and Labeling of Chemicals (GHS):

Symbol:

Hazard Category: 2A: Serious Eye Damage/Irritation
2: Skin Corrosion/Irritation

Signal Word: Warning

Hazard Statement: H315+320: Causes skin and eye irritation.

GHS Precautionary Statements:

Prevention: P281: Use personal protective equipment as required.
P264: Wash hands thoroughly after handling.

Response: P308+P313: If exposed or concerned: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lens, if present and easy to do. Continue

rinsing.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P362: Take off contaminated clothing and wash before reuse.

Storage: P403+P233: Store in a well ventilated place. Keep container tightly closed.

Disposal: P501: Dispose of content/container in accordance with local regulations.

Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH):

Symbol:

Symbol Letter: Xi

Hazard: Irritant

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

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** †
Glycerol:	200-289-5	56-81-5	50 %	N/A	N/A
Gentamicin Sulfate:	215-778-9	1405-41-0	< 0.1 %	N/A	N/A
Dipotassium Hydrogenorthophosphate:	231-834-5	7758-11-4	< 0.1 %	N/A	N/A
Sodium Chloride:	231-598-3	7647-14-5	< 0.1 %	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**
Albumins, Blood Serum:	232-936-2	9048-46-8	Proprietary	N/A	N/A
Water:	231-791-2	7732-18-5	< 50 %	N/A	N/A

* Symbol letters and categories of danger: **T+** = Very toxic, **T** = Toxic, **C** = Corrosive, **Xn** = Harmful, **X**i = Irritant, **E** = Explosive, **F+** = Extremely flammable, **F** = Highly 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:**
Contact with Eyes:	If the product contacts the eyes, promptly wash (irrigate) the eyes with large amounts of tepid water for at least 15 minutes,	Possible eye irritation.

	occasionally lifting the lower and upper lids. Seek medical attention immediately.	
Ingestion:	Seek medical attention immediately. Never give an unconscious person anything by mouth.	Possible gastrointestinal irritation causing nausea and vomiting.
Inhalation:	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.
Skin Contact:	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

Exposure Limit Values:	OSHA PEL	NIOSH REL	ACGIH TLV	Other
Glycerol:	TWA 15 mg/m^3 [Total Dust]; TWA 5 mg/m^3 [Respirable Fraction]	Not Listed	TWA 10 mg/m^3 [Mist]	See Below
Belgium:	TWA 10 mg/m^3, JAN1993			
Finland:	TWA 20 mg/m^3, JAN1999			
France:	VME 10 mg/m^3, FEB2006			
Korea:	TWA 10 mg/m^3 (mist), 2006			
Mexico:	TWA 10 mg/m^3 (inhalable), 2004			
The Netherlands:	MAC-TGG 10 mg/m^3, 2003			
New Zealand:	TWA 10 mg/m^3 (mist), JAN2002			
Switzerland:	MAK- week 50 mg/m^3,KZG- week 100 mg/m^3, DEC2006			
United Kingdom:	TWA 10 mg/m^3, 2005			
Gentamicin Sulfate:	Not Listed	Not Listed	Not Listed	None
Dipotassium Hydrogenorthophosphate:	Not Listed	Not Listed	Not Listed	See Below
Russia:	OEL- STEL 10 mg/m^3, JUN2003			
Sodium Chloride:	Not Listed	Not Listed	Not Listed	See Below
Russia:	OEL - STEL 5 mg/m^3, JUN2003			

	Normal Handling Conditions	**Emergency Response Conditions**
Engineering Controls:	General room ventilation is adequate for the use of this product.	Provide negative pressure ventilation.
Respiratory Protection	Use appropriate respiratory protection.	Use appropriate respiratory protection.
Eye Protection:	Safety glasses with side shields.	Chemical splash goggles or other face protection as appropriate.
Skin Protection:	Laboratory coat, adequate chemical-resistant gloves.	Chemically resistant boots, clothes, and impermeable gloves as appropriate.
Environmental Exposure Controls:	Not available.	Not available.

Other Equipment: Safety shower, eyewash stations, and hand washing equipment should be available close to the work area as needed.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Colorless Liquid	
Odor:	None	
Odor Threshold:	Not Available	
pH:	Not Available	
Melting Point/Freezing Point:	Not Available	
Initial Boiling Point and Boiling Range:	Not Available	
Flash Point:	Not Available	
Evaporation Rate, 20 ºC:	Not Available	
Flammability (Solid/Gas):	Not Available	
Explosive Limits:	UEL: Not Available	LEL: Not Available
Vapor Pressure:	Not Available	
Vapor Density, 20 ºC:	Not Available	
Relative Density (Water = 1.0):	Not Available	
Solubility:	Not Available	
Partition Coefficient (n-octanol/water):	Not Available	
Auto Ignition Temperature (ASTM D1929):	Not Available	
Decomposition Temperature:	Not Available	
Oxidizing Properties:	None	
Viscosity, Centipoise:	Not Available	

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability:	Product is stable under normal operating conditions and use as described in the product technical data sheet.
Conditions to Avoid:	See product technical data sheet for details.
Incompatible Materials to Avoid:	Strong acids or bases, strong oxidizers, extreme temperatures, acetic anhydride, alliphatic amines, potassium chlorates, isocyanates, hydrogen peroxides, potassium permanganate benzoyl chloride plus potassium hydroxide, bromine, carbon disulfide, chromyl chloride, copper, dibromalononitrile, dimethyl sulfate, lead, barium carbonate, sulfuric acid, water, and nitric acid.
Hazardous Decomposition Products:	Toxic gases and vapors may be released if involved in a fire. Glycerin decomposes upon heating above 290C, forming corrosive gas (acrolein).

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
Gentamicin Sulfate: RTECS #LY2625000
Dipotassium Hydrogenorthophosphate: RTECS #TC5580000
Sodium Chloride: RTECS #VZ4725000

	Toxicity Test	Exposure Route	Dose	Observed Effect
Acute Toxicity:				
Glycerol:	Lowest Published Toxic Dose (Human)	Oral	1,428 mg/kg	Behavioral: Headache Gastrointestinal: Nausea or vomiting[1]
	LD_{50} (Rat)	Oral	12,600 mg/kg	Behavioral: General anesthetic Behavioral: Muscle weakness Liver: Other changes[1]
Gentamicin Sulfate:	LD_{50} (Rat)	Oral	5,000 mg/kg	Behavioral: Somnolence (General Depressed Activity) Skin and Appendages (Skin): Hair: Other[2]
	LD_{50} (Rat)	Oral	>11,269 mg/kg	N/A[2]
Dipotassium Hydrogenorthophosphate:	LD_{50} (Rat)	Skin	> 4640 mg/kg	N/A[3]
Sodium Chloride:	LD_{50} (Rat)	Oral	3,000 mg/kg	N/A[4]
Skin Corrosion/Irritation:				
Glycerol:	Skin Irritation (Rabbit)	Skin	500 mg/24 hour	Mild[1]
Sodium Chloride:	Skin Irritation (Rabbit)	Skin	500 mg/24H	Mild[4]
Serious Eye Damage/Eye Irritation:				
Glycerol:	Eye Irritation (Rabbit)	Eye	500 mg/24 hour	Mild[1]
Sodium Chloride:	Eye Irritation (Rabbit)	Eye	10 mg	Moderate[4]
Respiratory or Skin Sensitization:	Not Available			
Germ Cell Mutagenicity:	Not Available			
Reproductive Toxicity:	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.

Research Agency:	OSHA:	NTP:	IARC:
Glycerol:	Not Listed	Not Listed	Not Listed
Gentamicin Sulfate:	Not Listed	Not Listed	Not Listed
Dipotassium Hydrogenorthophosphate:	Not Listed	Not Listed	Not Listed
Sodium Chloride:	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.

Glycerol: LC_{50} Carassius Auratus 24 Hours 5,000,000 ug/L[5]

LC_{50} Leuciscus Idus Melanotus 48 Hours 10,000,000 ug/L[6]

LC_{50} Oncorhynchus Mykiss 96 Hours 54.0 ml/L[7]

Gentamicin Sulfate: Not Available.

Dipotassium Hydrogenorthophosphate: Toxic Dose Anabaena Sp. 20 Days 310,000 ug/L[8]

Toxic Dose Anacystis Nidulans 10 Days 25,000 ug/L[9]

Toxic Dose Amphora Coffeaeformis 10 Days 10,000 ug/L[10]

Sodium Chloride: Not Available.

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℃, soil adsorption coefficients for glycerin can be estimated at 3 and 2, 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℃ glycerin is not expected to significantly volatilize from wither moist or dry soil to the atmosphere.[11]

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℃, bioconcentration factors for glycerin can be estimated at 3 and 0.2, 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 then for water itself.[11]

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 25℃ translates to an atmospheric half-life of 33 hrs using an average atmospheric hydroxyl radical concentration of 5X10+5 molec/cu-cm. The

water solubility of glycerin, 1,220,000 mg/l at 5℃, indicates that it may also undergo atmospheric removal by wet deposition processes.[11]

Persistence and Degradation:

Glycerol: When incubated with a filtered effluent from a sanitary waste treatment plant, glycerin displayed a 5 day BOD of 82%. Inoculation of glycerin with activated sewage sludge resulted in 43.5-52.9% 5 day BOD. Glycerin underwent 94-97% removal after 24 hrs when incubated with activated sludge from a waste water treatment plant. A 98.7% COD was observed in 120 hrs after inoculation with a adapted activated sludge seed. Incubation with an activated sludge seed gave a 5 day BOD of 68%. Inscreening studies, 5 day BODs for glycerin of 31%, 52% using activated sludge, 78.3 using domestic sludge, and 24.4% using seawater were observed. Glycerin is listed as a substance easily degraded in a sewage treatment plant.[11]

An estimated rate constant for the vapor-phase reactio of glycerin with photochemically produced hydroxyl radicals of 1.7X10-11 cu cm/molec-sec at 25℃ translates to an atmospheric half-life of 33 hr using an average atmospheric hydroxyl radical concentration of 5X10-5 molec/cu cm.[11]

Bio Accumulative Potential:

Glycerol: Based on an experimental log octanol/water partition coefficient of -1.76 and its water solubility, 1,220,000 mg/l at 5℃, bioconcentration factors for glycerin can be estimated at 3 and 0.2, respectively, using regression-derived equations. The magnitude of these values indicate that bioconcentration of glycerin in fish and aquatic organisms will not be significant.[11]

Results of PBT Assessment: Not Available.

Other adverse effects: Not Available.

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) – January 13, 2010:	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, Dipotassium Hydrogenorthophosphate, Sodium Chloride and Water.
	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_{50}	Lethal Concentration 50% is the concentration of a chemical which kills 50% of a sample population
LD_{50}	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.

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[1] 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.

[2] 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 #LY2625000, 2009.

[3] Sigma-Aldrich Address 3050 Spruce Street SAINT LOUIS MO 63103 US, MSDS Document # P2222, 11/30/2008.

[4] 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 #VZ4725000, 2009.

[5] 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.

[6] 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 Fischtoxizitat mit dem Goldorfentest), Z.Wasser-Abwasser-Forsch. 11(5):161-164 (GER) (ENG TRANSL) (OECDG Data File), 1978.

[7] 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.

[8] Kanta, S., and T.A. Sarma, Biochemical Studies on Sporulation in Blue-Green Algae II. Factors Affecting Glycogen Accumulation, Z.Allg.Mikrobiol. 20(7):459-463, 1980.

[9] Rana, B.C., and H.D. Kumar, Eco-Physiological Studies on the Uptake of the Pollutants, Copper, Zinc and Phosphate, by Certain Algae, Indian J.Ecol. 1(1):1-11, 1974,

[10] Rao, V.N.R., and G. Ragothaman, Studies on Amphora coffeaeformis II. Inorganic and Organic Nitrogen and Phosphorus Sources for Growth, Rao, V.N.R., and G. Ragothaman, Acta Bot.Indica 6(Supp l):146-154, 1978.

[11] 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.