



Material Safety Data Sheet

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SECTION 1 IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND OF THE COMPANY / UNDERTAKING – CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Trade Name: Anti-Calmodulin

Catalogue Number(s): 05-173

Chemical Name: An aqueous solution containing antibodies, sodium azide, tris (hydroxymethyl) aminomethane, glycerol, glycine and sodium chloride.

Product use: Biological research reagent.

Other trade names and synonyms: Protein G Purified immunoglobulin in Protein G Purified immunoglobulin in 30% glycerol, 0.07M Tris-glycine, pH 7.4, 0.105 M NaCl, 0.035% sodium azide as a preservative.

Manufacturer/Distributor: Millipore Corporation (Corporate Headquarters) Millipore S.A.S. (European Headquarters)

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SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

Component	EINECS or ELINCS No.	CAS No.	Content (weight percent)	Symbol letters*	R Phrases**
Sodium Azide	247-852-1	26628-22-8	0.035%	T+	R28, R32
				N	R50/53
Tris (hydroxymethyl) aminomethane	214-684-5	1185-53-1	0.5-1.0%	Xi	R36/37/38
Glycerol	200-289-5	56-81-5	30%	None	None

These products also contain antibodies, water, glycine and sodium chloride 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).

* 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.

SECTION 3 HAZARD IDENTIFICATION / EMERGENCY OVERVIEW

Appearance: Colorless liquid

Classification: These products are not classified according to Directive 1999/45/EC.

Adverse human health effects:

Contact with Eyes: Mild eye irritant

Ingestion: Neurological toxin with hypotensive, visual, and acute cerebral effects.

Inhalation (Short Term): Possible respiratory tract and mucous membrane irritant, with symptoms similar to those by ingestion.

Inhalation (Long Term): Prolonged or repeated exposure to sodium azide solution aerosols may result in permanent neurological damage, collapse, or death.

Skin Contact: Possible skin irritant. Sodium azide may be absorbed through the skin with systemic toxicity. Sensitive individuals may experience an allergic reaction to the polypeptide component of this product.

Target Organs: Central nervous system, lungs, cardiovascular system, eyes, skin.

Medical conditions aggravated by exposure: Exposure to sodium azide will exacerbate existing hypotensive conditions. Anaphylactic allergic reactions in sensitized individuals.

Adverse environmental effects: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Adverse physiochemical effects: Sodium azide may react with lead and copper plumbing to form highly explosive metal azides.

SECTION 4 FIRST AID MEASURES

- Contact with Eyes:** In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. If irritation persists, seek immediate medical attention.
- Ingestion:** If swallowed, summon medical assistance, and then wash out mouth with water provided person is conscious. Do not induce vomiting unless directed to do so by a health care provider.
- Inhalation:** Sodium azide solution aerosols are poisonous. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- Skin Contact:** In case of contact, immediately wash skin with soap and copious amounts of water. If irritation or redness occurs, seek medical attention

SECTION 5 FIRE FIGHTING MEASURES

- Flash Ignition Temperature:** None; Not considered to be a fire hazard.
- Autoignition Temperature (ASTM D1929):** 572°F (solid sodium azide)
- Flammability Limits:** Not applicable
- Suitable extinguishing media:** Water spray, carbon dioxide, dry chemical powder or foam.
- Unsuitable extinguishing media:** None reported.
- Special protective equipment for firefighters:** In a fire, large quantities of sodium azide solution may generate significant quantities of hazardous aerosols. Self contained breath apparatus is required.
- Special exposure hazards:** Approach first from upwind direction to avoid sodium azide aerosols.

SECTION 6 ACCIDENTAL RELEASE MEASURES

- Personal precautions:** Area evacuation is not required. Eliminate unnecessary traffic in area of the spill. Wear chemically resistant boots, clothing and gloves (nitrile, neoprene) to prevent skin contact, since sodium azide may be absorbed through the skin.
- Small spills:** Clean up spills immediately. Wear appropriate protective clothing and if necessary breathing apparatus. Contain spill and absorb with sand, earth, or vermiculite. Collect residues and place in labeled plastic containers. Avoid breathing vapors 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:** May be discharged into sewer, or industrial waste water systems if allowed by local regulations. Otherwise, collect and dispose according to federal, state and local regulations. Sodium azide is considered to have adverse effects on aquatic life.
- 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. Use personal protective equipment outlined in section 8. Wash thoroughly after handling Use with adequate ventilation
Storage:	Store frozen at -20°C, unless directed otherwise by the product data sheet. Avoid repeated freeze/thaw cycles.

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	Chemical splash goggles.
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:	None
Odor Threshold:	No data have been found
pH:	7.4
Melting Point:	-20 to -30°C
Boiling Point:	110 to 115°C
Flash Ignition Point:	>200°C Not considered to be a fire hazard.
Explosive Properties:	Not considered to be an explosion hazard.
Oxidizing Properties:	Not considered to have oxidising properties.
Vapor pressure, 20 °C:	<1 mm Hg
Specific Gravity (Water = 1.0):	1.2 – 1.4
Solubility	Miscible with water
Vapor Density, 20 °C:	Essentially that of water
Viscosity, centipoise:	Not available
Partition coefficient (n-octanol/water):	Not available

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal temperatures and pressures. If boiled to dryness, the remaining sodium azide residue may rapidly decompose.
Conditions to Avoid:	Elevated temperature, heating to dryness.
Incompatible With:	Strong oxidizing agents, copper, lead, mercury
Hazardous Decomposition Products:	Nitrogen gas, sodium oxide fumes, oxides of carbon and nitrogen.
Hazardous Polymerization:	Will not occur

SECTION 11 TOXICOLOGICAL INFORMATION

Inhalation:	May cause respiratory tract and mucous membrane irritation, with symptoms similar to those by ingestion.
Ingestion:	May cause toxic neurological effects including hypotension, visual, and acute cerebral effects.
Skin Contact:	May cause skin irritation or chronic dermatitis. Sodium azide may be absorbed through the skin with systemic toxicity. May cause anaphylactic allergic reactions in sensitized individuals.
Eye Contact:	May cause mild eye irritation.
Carcinogenicity:	None of the components of these products are listed as carcinogenic by ACGIH, IARC, NTP, OSHA or California proposition 65..
Chronic Toxicity:	Chronic exposure to sodium azide may result in symptoms similar to acute ingestion.
Toxicology Data:	Toxicological information for this product as a whole does not exist; Selected data for the individual components:

Compound: Sodium Azide (100%)	RTECS#: VY8050000
LD ₅₀ , oral, rat:	27 mg/kg
LD ₅₀ , oral, mouse:	27 mg/kg
LC ₅₀ , inhalation, rat:	37 mg/m ³
LC ₅₀ , inhalation, mouse:	32.4 mg/m ³
LD ₅₀ , skin, rat:	50 mg/kg
LD ₅₀ , skin, rabbit:	20 mg/kg
Sodium azide has been investigated as a Mutagen and Tumorigen	
Compound: Tris (hydroxymethyl) aminomethane (100%)	RTECS#: TY2900000
LD50, oral, rat:	5,900 mg/kg
Compound: Glycerol (100%)	RTECS#: MA8050000
LD50, oral, rat:	12,600 mg/kg

SECTION 12 ECOLOGICAL INFORMATION

Ecotoxicity: - calculated for a 0.05% by weight aqueous sodium azide solution

LC₅₀ Rainbow Trout 1.6 – 3.2 ml product/l test water (96 H, 13°C)

LC₅₀, Bluegill/Sunfish 1.4 – 1.6 ml product/l test water (96 H, 18°C),

Environmental Fate: Aquatic fate: Initially, photolysis of sodium azide will result in the formation of metallic nitrides with metals found in natural waters. These nitrides will decompose over time into nitrogen gas and free metals.

SECTION 13 DISPOSAL INFORMATION

This product, containing sodium azide, may be disposed to an industrial sewer system if permitted by local regulation, and 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: Dilute aqueous solutions of sodium azide may meet the definition of a US Environmental Protection Agency RCRA D003 (Reactive) 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 these products is not regulated by IMDG (sea), ADR (road), RID (rail), ICAO/IATA (air), or USDOT as a dangerous goods or hazardous material.

SECTION 15 REGULATORY INFORMATION

Australia: Hazchem Code: Sodium Azide: 2X
Poisons Schedule Number: None Allocated

California: No Significant Risk Level: None of the chemicals in these products are known to Millipore Corporation to be listed.

Canada: WHMIS: These products have WHMIS classifications of **D1A, D2B,**

Section 15 – Regulatory Information (continued)

European Community:	Symbols:	None
	Category of danger:	None
	Risk phrases:	None
	Safety phrases:	S1/2 Keep locked up and out of the reach of children.
		S28 After contact with skin, wash immediately with plenty of water
		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:	Sodium azide is listed as a Low Volume Production chemical.
	WEEE and RoHS:	The WEEE and RoHS Directives are not applicable to these products.
Japan:	Poisonous and Deleterious Substances Control Law:	Sodium azide is listed as a Poisonous Substance under the Poisonous and Deleterious Substances Control Law
United States	Toxic Substances Control Act:	One or more of the components of these products are not listed on the EPA Toxic Substances Control Act (TSCA) Inventory. In the United States, their use is restricted to research and development or FDA regulated activities

Occupational Exposure Limits

Component	Occupational Exposure Limits, mg/m³	
Sodium Azide	The Netherlands MAC-TGG	0.1
	Austria, MAK, Germany MAK, Switzerland MAK	0.2
	ACGIH: TLV	C0.29
	NIOSH REL:	0.30[skin]
	Belgium STEL, United Kingdom STEL	0.3 TWA
	Australia, Denmark, Finland, France VLE,	0.3 TWA
	Finland STEL	0.9 TWA
Hydrazoic acid	NIOSH REL	0.1 ppm (as HN ₃) [skin]

Occupational Exposure Limits (continued)

Component	Occupational Exposure Limits, mg/m ³	
Glycerol	European Community Workplace Exposure Limits	None established
	ACGIH TLV, Australia OEL, Belgium OEL, France OEL, The Netherlands OEL, United Kingdom OEL	10 mg/m ³ TWA
	United States OSHA PEL:	15 mg/m ³ TWA Total
		5 mg/m ³ TWA Respirable fraction
	Finland OEL	20 mg/m ³ TWA
Tris (hydroxymethyl) aminomethane	ACGIH TLV, European Community Workplace Exposure Limits, NIOSH REL, United States OSHA PEL:	None established

SECTION 16 ADDITIONAL INFORMATION

Risk phrases referred to under Section 2:

R28	Very toxic if swallowed
R32	Contact with acids liberates very toxic gas.
R36/37/38	Irritating to eyes, respiratory system and skin
R50/53	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
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)

Section 16 Abbreviations (continued)

OSHA	United States Occupational Safety and Health Administration
REL	Recommended Exposure Limit
RID	International regulations concerning the international carriage of dangerous goods by rail.
RTECS	Registry of Toxic Effects of Chemical Substances (US)
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.

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