



ZYMO RESEARCH
The Beauty of Science is to Make Things Simple

Material Safety Data Sheet

Zymo Research advises each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

Section 1 – Product and Company Information

Reagent/Buffer Name: Solution 1-Digestion Buffer
Catalog Number: D2001-1-15, D2004-1-10

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	EINEC No.	Formula	Percent
Tris(hydroxymethyl)aminomethane / Hydrochloric Acid	1185-53-1	214-684-5	C ₄ H ₁₁ NO ₃ .HCL	≤ 1%
Ethylenediaminetetraacetic Acid, pH 8.0	6381-92-6	205-358-3	C ₁₀ H ₁₄ N ₂ Na ₂ O ₈ •2H ₂ O	≤ 1%

According to the OSHR 29 CFR§1910_1200, a mixture that contains less than one percent by weight or volume of a non-carcinogenic hazardous component is not considered hazardous, unless there is evidence to the contrary. We do not consider this product to be hazardous; however we recommend the use of gloves, lab coats and eye protection when working with these or any chemical reagents.

Section 3 – Hazard Identification

NFPA Ratings (scale 0 - 4) :
Health = 0
Fire = 0
Reactivity = 0

HMIS Ratings (scale 0 – 4) :
Health = 0
Fire = 0
Reactivity = 0

OSHA Hazard: No known OSHA hazards

Potential Acute Health Effects:
Eyes: May cause eye irritation.
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. May cause skin irritation.

Section 4 – First Aid Measures

In Case of	
Eye Contact:	Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention if eye(s) remain irritated.
Skin Contact:	Wash contaminated areas with large volumes of soap and water.
Ingestion:	Wash out mouth with water provided person is conscious.
Inhalation:	Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop, give artificial respiration.

Section 5 – Fire Fighting Measures

Extinguishing Media:	Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and protective garments to prevent contact with skin and eyes.

Section 6 – Accidental Release Measures

General Information:	Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and heavy rubber gloves. Avoid breathing vapors, mist or gas.
Spills / Leaks:	Keep in suitable, closed containers for disposal.

Section 7 – Handling and Storage

Storage:	Store tightly closed in a dry and well-ventilated place.
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Section 8 – Exposure Controls / Personal Protection

Whenever workplace conditions warrant a respirator use, wear tested and approved NIOSH (US) or CEN (EU) respirators and components. Wear protective gloves and safety goggles. Provide safety shower and eyewash station. Keep tightly closed. Wash thoroughly after handling.

Section 9 – Physical and Chemical Properties

Physical States / Form:	Liquid
Color:	Colorless
pH-Factor:	(20°C) 8.0
Specific Gravity:	(20°C) 0.990 g/cm ²
Solubility In Water:	(20°C) Soluble

Section 10 – Stability and Reactivity

Substances To Be Avoided:	Strong oxidizing agents.
Hazardous, Combustion, Or Decomposition Products:	Hazardous decomposition products formed under fire conditions. Nature of decomposition products not known.

Section 11 – Toxicological Information

Acute Effects	
Inhalation:	May be harmful by inhalation. May cause respiratory tract irritation.
Eye Contact:	May cause eye irritation.
Skin Contact:	May cause skin irritation. May cause skin irritation.
Ingestion:	May be harmful if swallowed.
Signs and Symptoms of Exposure:	Caution! The toxicological properties of this mixture have not been fully investigated. Follow good laboratory practices when handling.
RTECS Number:	Mixture not listed.
Additional Information:	The product should be handled with the normal caution accorded to chemical handling. Additional harmful properties cannot be ruled out.

Section 12 – Ecological Information

No information available.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations.

Section 14 – Transport Considerations

DOT Regulations:	Not dangerous goods. Not regulated.
IMDG:	Not dangerous goods. Not regulated.
IATA:	Not dangerous goods. Not regulated.

Section 15 – Regulatory Information

SARA:	
Section 302	No products were found.
Section 313	No products were found.
SARA 311/312 Hazards	No SARA Hazards.
California Prop. 65 Components:	This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.
OSHA Hazards:	No known OSHA hazards.
DSL Status:	All components of this product are on the Canadian DSL list.

Section 16 – Other Information

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Section 1 – Product and Company Information

Reagent/Buffer Name: Solution 2 - Lysis Buffer (Component A)
Catalog Number: D2001-2-15, D2004-2-10

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	Formula	Percent
Sodium Dodecyl Sulfate	151-21-3	C ₁₂ H ₂₅ O ₄ SNa	≥ 1%

Section 3 – Hazard Identification

NFPA Ratings (scale 0 - 4) :
Health = 2
Fire = 1
Reactivity = 0

HMIS Ratings (scale 0 – 4) :
Health = 2
Fire = 1
Reactivity = 0
Personal Protection = E

OSHA Hazard: Irritant

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (sensitizer), of ingestion. Severe over-exposure can result in death.

Potential Chronic Health Effects: Slightly hazardous in case of skin contact (sensitizer).
Carcinogenic Effects: Not available.
Mutagenic Effects: Mutagenic for bacteria and/or yeast.
Teratogenic Effects: Not available.
Developmental Toxicity: Not available. The substance may be toxic to upper respiratory tract, skin, and eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4 – First Aid Measures

In case of Eye Contact:	Rinse eyes with plenty of water for at least 15 minutes and consult a physician.
Skin Contact:	Wash off with soap and plenty of water. Remove contaminated clothing and shoes. Consult a physician.
Serious Skin Contact:	Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.
Inhalation:	Provide fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a doctor.
Ingestion:	Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Rinse mouth with water. Consult a physician

Section 5 – Fire Fighting Measures

Flammability Of The Product:	May be combustible at high temperature.
Products Of Combustion:	These products are carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃ ...).
Fire Hazards In Presence Of Various Substances:	Slightly flammable to flammable in presence of heat.
Explosion Hazards In Presence Of Various Substances:	Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks.
Fire Fighting Media And Instructions:	Small Fire: Use dry chemical powder. Large Fire: Use water spray, fog or foam. Do not use water jet.
Special Remarks On Fire Hazards:	When heated to decomposition it emits toxic fumes of sulfur oxides, and sodium oxide.

Section 6 – Accidental Release Measures

Procedure(s) Of Personal Precaution(s) :	Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.
Methods For Cleaning Up:	Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7 – Handling and Storage

Handling:	Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
Storage:	Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8 – Exposure Controls / Personal Protection

Personal Protection Equipment:	Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.
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Engineering Controls:	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Components With Limit Values That Require Monitoring At The Workplace:	Not available

Section 9 – Physical and Chemical Properties

Physical State And Appearance:	Solid
Color:	White to yellowish
Boiling Point:	Not available.
Melting Point:	204°C (399.2°F) - 207 C
Flash Point:	Not available
pH (1% soln/water) :	9.5
Auto Igniting:	Not available
Solubility In Water	Soluble in cold water, hot water. Solubility in water: 1g/10 ml water

Section 10 – Stability and Reactivity

Conditions Of Instability:	Excess heat, dust generation, incompatible materials.
Incompatibility With Various Substances:	Reactive with oxidizing agents.
Stability:	The product is stable.
Polymerization:	Will not occur

Section 11 – Toxicological Information

Toxicological Data on Ingredients:	ORAL Rat (LD50): Acute: 1288 mg/kg DUST Rat (LC50): Acute: >3900 mg/m ³ 1 hour
Chronic Effects on Humans:	Mutagenic Effects: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: upper respiratory tract, skin, eyes.
Other Toxic Effects on Humans:	Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (sensitizer), of ingestion.
Special Remarks on Toxicity to Animals:	Lowest Published Lethal Dose: LDL [Rabbit] - Route: Skin; Dose: 10000 mg/kg
Special Remarks on Chronic Effects on Humans:	May cause adverse reproductive effects based on animal test data. No human data found.
Special Remarks on other Toxic Effects on Humans:	Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. May produce a drying effect on the skin. May cause defatting of the skin. May cause allergic reaction (dermatitis). Eyes: Causes moderate eye irritation. Inhalation: Material is irritating to mucous membranes and upper respiratory tract. Symptoms may include sore throat, coughing, shortness of breath and delayed lung edema. May cause allergic respiratory reaction. Ingestion: May be harmful if swallowed. Causes gastrointestinal tract irritation with nausea, vomiting, intestinal bloating, hypermotility, diarrhea. May also affect behavior (ataxia, somnolence), and cardiovascular system.

Chronic Potential Health Effects:
Skin: Prolonged or repeated skin contact may cause allergic dermatitis and defatting of the skin.
Ingestion: Prolonged or repeated ingestion may affect the liver.
Inhalation: Prolonged or repeated inhalation may cause allergic respiratory reaction (asthma) and may lead to decreased pulmonary function.

Section 12 – Ecological Information

No data available.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Do not dispose with household garbage.

Section 14 – Transport Considerations

DOT Regulations: Not a DOT controlled material (United States).

Section 15 – Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Sodium lauryl sulfate

California Proposition 65 Warnings: California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: No products were found.

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: No products were found.

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 910.1200).
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

WHMIS (Canada): CLASS D2B: Material causing other toxic effects (TOXIC).

DSCL (EEC): R22- Harmful if swallowed.
R36/38- Irritating to eyes and skin.
R43- May cause sensitization by skin contact.
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37- Wear suitable protective clothing and gloves.

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Section 1 – Product and Company Information

Reagent/Buffer Name: Solution 2- Lysis Buffer (Component B)
Catalog Number: D2001-2-15, D2004-2-10

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	EINEC No.	Formula	Concentration
Sodium Hydroxide	1310-73-2	215-185-5	NaOH	200mM to 2M
Water	7732-18-5	231-791-2	H ₂ O	

Section 3 – Hazard Identification

Emergency Overview: OSHA Hazards: Corrosive

HMIS Classification: Health hazard: 3
Flammability: 0
Physical hazards: 1

NFPA Ratings (scale 0 - 4) : Health = 3
Fire = 0
Reactivity = 1

Section 4 – First Aid Measures

In Case of

Eye Contact: Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention.

Skin Contact: Wash contaminated areas with soap and large volumes of water as contaminated clothing is removed. Do not wear contaminated clothing until after it has been properly cleaned. Get medical attention.

Ingestion: If swallowed, do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical aid.

Inhalation: Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop-give artificial respiration. Get medical attention.

Section 5 – Fire Fighting Measures

Extinguishing Media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective garments to prevent contact with skin and eyes.

Section 6 – Accidental Release Measures

General Information: Provide adequate ventilation. Use personal protective equipment. Avoid breathing vapors, mist or gas. Evacuate personnel to safe areas.

Spills / Leaks: Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Section 7 – Handling and Storage

Handling: Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Provide adequate ventilation.

Storage: Keep container tightly closed in a cool, well-ventilated area. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Section 8 – Exposure Controls / Personal Protection

Provide appropriate ventilation or local exhaust. Wear protective gloves, safety glasses, lab coat. Provide safety showers and eye stations proximal to the work-station location. Be sure to use an approved/certified respirator or equivalent. Do not breathe vapor. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Keep tightly closed. Wash thoroughly after handling.

Exposure Limits:	ACGIH: C 2 mg/m ³ OSHA Final-PELs: TWA 2 mg/m ³ Consult local authorities for acceptable exposure limits.
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Section 9 – Physical and Chemical Properties

Physical States / Form: Liquid

Color: Colorless

pH-Factor: 12-13

Boiling Point: N/A

Melting Point: N/A

Flash Point: N/A

Ignition Temperature: N/A

Solubility In Water: Soluble

Section 10 – Stability and Reactivity

Substances To Be Avoided:	Acids; organic materials; metals-corrosive to metals.
Hazardous, Combustion, Or Decomposition Products:	Hazardous decomposition products formed under fire conditions. - Sodium oxides

Section 11 – Toxicological Information

Acute Effects	
Inhalation:	May be harmful by inhalation. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Eye Contact:	Causes eye irritation.
Skin Contact:	Causes skin irritation. May be harmful by skin adsorption.
Ingestion:	May be harmful if swallowed. Causes burns.
Prolonged Exposure:	N/A
Chronic Effects:	N/A
Acute Toxicity Data:	N/A
Irritation and Corrosion:	N/A
Additional Information:	The product should be handled with the normal caution accorded to chemical handling. Additional harmful properties cannot be ruled out.

Section 12 – Ecological Information

No information available.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Do not dispose with household garbage. Do not allow product to reach sewage system.

Section 14 – Transport Considerations

DOT:	Shipping Name: Sodium Hydroxide, Solution Hazard Class: 8 UN/NA: UN1824 Packing Group: III Marine pollutant: No Poison Inhalation Hazard: No
IATA:	Shipping Name: Sodium Hydroxide, Solution Hazard Class: 8 UN/NA: UN1824 Packing Group: III
Canada TDG:	Shipping Name: Sodium Hydroxide, Solution Hazard Class: 8 UN/NA: UN1824 Packing Group: III

Section 15 – Regulatory Information

OSHA Hazards:	Corrosive
SARA: Section 313:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
Section 302:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 311/312 Hazards:	Acute Health Hazard
STATE:	Present on state lists from CA, PA, MA, NJ.
California Prop. 65 Components	This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.
European Labeling Hazard Symbols:	C
Risk Phrases:	R 35 Causes severe burns.
Safety Phrases:	S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S 37/39 Wear suitable gloves and eye/face protection. S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
WGK (Water Danger / Protection):	CAS No.: 1310-73-2: 1
Canada:	Listed on Canada's DSL/NDSL List. This product has a WHMIS Classification of E. Listed on Canada's Ingredient Disclosure List.

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Section 1 – Product and Company Information

Reagent/Buffer Name: Solution 3- Neutralizing Buffer
Catalog Number: D2004-3-20

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	EC No.	Formula	Concentration
Guanidine Hydrochloride	50-01-1	200-002-3	CH ₆ N ₃ Cl	≥ 3M

Section 3 – Hazard Identification

Emergency Overview: OSHA Hazards: Target Organ Effect, Toxic by ingestion, Irritant

Target Organs: Bone marrow, Nerves.

NFPA Ratings (scale 0 - 4) :
Health = 2
Fire = 0
Reactivity = 0

HMIS Ratings (scale 0 – 4) :
Health = 2
Fire = 0
Physical Hazard = 0

Potential Health Effects: Harmful if inhaled or absorbed through skin. Toxic if swallowed. Causes eye irritation.

Section 4 – First Aid Measures

In Case of
Eye Contact: Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention if eye(s) remain irritated.

Skin Contact:	Wash contaminated areas with soap and water for at least 15 minutes as contaminated clothing is removed. Get medical attention if area remains irritated. Do not wear contaminated clothing until after it has been properly cleaned.
Ingestion:	Never give anything by mouth to an unconscious person. Rinse mouth with water. Get immediate medical attention.
Inhalation:	Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop, give artificial respiration.

Section 5 – Fire Fighting Measures

Extinguishing Media:	Water spray. Carbon dioxide, dry chemical powder, or alcohol-resistant foam.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and protective garments.

Section 6 – Accidental Release Measures

General Information:	Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and heavy rubber gloves.
Spills / Leaks:	Avoid dust formation. Avoid breathing dust. Do not let product enter drains. Ventilate area and wash spill site after material pickup is complete.

Section 7 – Handling and Storage

Handling:	Avoid formation of dust and aerosols. Avoid contact with skin and eyes. Provide appropriate exhaust ventilation.
Storage:	Store tightly closed in a dry and well-ventilated place.

Section 8 – Exposure Controls / Personal Protection

Wear appropriate NIOSH (US) or CEN (EU)-Approved respirator, protective gloves, safety goggles. Safety shower and eye both. Mechanical exhaust required. Keep tightly closed. Wash thoroughly after handling. Do not get in contact with eyes, skin or on clothing. Do not inhale vapor. Severe eye irritant.

Section 9 – Physical and Chemical Properties

Physical States / Form:	Liquid
Color:	Colorless
pH-Factor:	4.5 - 6 at 573 g/l at 25 °C (77 °F)
Flashpoint:	N/A
Melting Point:	180 - 185 °C (356 - 365 °F)
Solubility In Water:	573 g/l at 20 °C (68 °F)

Section 10 – Stability and Reactivity

Substances To Be Avoided:	Strong oxidizing agents.
Hazardous, Combustion, Or Decomposition Products:	Carbon oxides, nitrogen oxides, and hydrogen chloride gas.

Section 11 – Toxicological Information

Acute Effects	
Inhalation:	May be harmful by inhalation. Causes respiratory tract irritation.
Eye Contact:	Causes severe eye irritation.
Skin Contact:	Causes skin irritation, harmful by skin absorption.
Ingestion:	Toxic if swallowed.
Target Organ Data:	Bone marrow, nerves.
Chronic Effects:	IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
RTECS Number:	MF4300000
Toxicity Data:	Oral Rat LD50: 475 mg/kg Only selected registry of toxic effects of chemical substances (RTECS) data is presented here. See actual entry in RTECS for complete information.
Additional Information:	The product should be handled with the normal caution accorded to chemical handling. Additional harmful properties cannot be ruled out.

Section 12 – Ecological Information

No information available.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Do not dispose with household garbage. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Section 14 – Transport Considerations

DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

Section 15 – Regulatory Information

OSHA Hazards:	Irritant, Target Organ Effect, Toxic by ingestion
DSL Status:	All components of this product are on the Canadian DSL list.
SARA 302 Components SARA 302:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards: Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components: No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components: Guanidinium chloride CAS-No. 50-01-1

New Jersey Right To Know Components: Guanidinium chloride CAS-No. 50-01-1

California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

Section 16 – Other Information

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To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

Section 1 – Product and Company Information

Reagent/Buffer Name: DNA Wash Buffer
Catalog Number: D4003-2-6, D4003-2-24, D4003-2-48, D4004-W-L

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	EINEC No.	Formula	Percent
Tris(hydroxymethyl)aminomethane / Hydrochloric Acid	1185-53-1	214-684-5	C ₄ H ₁₁ NO ₃ .HCL	≤ 1%
Ethylenediaminetetraacetic Acid, pH 8.0	6381-92-6	205-358-3	C ₁₀ H ₁₄ N ₂ Na ₂ O ₈ •2H ₂ O	≤ 1%

According to the OSHR 29 CFR§1910_1200, a mixture that contains less than one percent by weight or volume of a non-carcinogenic hazardous component is not considered hazardous, unless there is evidence to the contrary. We do not consider this product to be hazardous; however we recommend the use of gloves, lab coats and eye protection when working with these or any chemical reagents.

Section 3 – Hazard Identification

NFPA Ratings (scale 0 - 4) : Health = 0
Fire = 0
Reactivity = 0

HMIS Ratings (scale 0 – 4) : Health = 0
Fire = 0
Reactivity = 0

OSHA Hazard: No known OSHA hazards

Potential Acute Health Effects: Eyes: May cause eye irritation.
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. May cause skin irritation.

Section 4 – First Aid Measures

In Case of	
Eye Contact:	Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention if eye(s) remain irritated.
Skin Contact:	Wash contaminated areas with large volumes of soap and water.
Ingestion:	Wash out mouth with water provided person is conscious.
Inhalation:	Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop, give artificial respiration.

Section 5 – Fire Fighting Measures

Extinguishing Media:	Noncombustible. Use extinguishing media appropriate to surrounding fire conditions.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and protective garments to prevent contact with skin and eyes.

Section 6 – Accidental Release Measures

General Information:	Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and heavy rubber gloves. Avoid breathing vapors, mist or gas.
Spills / Leaks:	Keep in suitable, closed containers for disposal.

Section 7 – Handling and Storage

Storage:	Store tightly closed in a dry and well-ventilated place.
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Section 8 – Exposure Controls / Personal Protection

Whenever workplace conditions warrant a respirator use, wear tested and approved NIOSH (US) or CEN (EU) respirators and components. Wear protective gloves and safety goggles. Provide safety shower and eyewash station. Keep tightly closed. Wash thoroughly after handling.

Section 9 – Physical and Chemical Properties

Physical States / Form:	Liquid
Color:	Colorless
pH-Factor:	(20°C) 8.0
Specific Gravity:	(20°C) 0.990 g/cm ²
Solubility In Water:	(20°C) Soluble

Section 10 – Stability and Reactivity

Substances To Be Avoided:	Strong oxidizing agents.
Hazardous, Combustion, Or Decomposition Products:	Hazardous decomposition products formed under fire conditions. Nature of decomposition products not known.

Section 11 – Toxicological Information

Acute Effects	
Inhalation:	May be harmful by inhalation. May cause respiratory tract irritation.
Eye Contact:	May cause eye irritation.
Skin Contact:	May cause skin irritation. May cause skin irritation.
Ingestion:	May be harmful if swallowed.
Signs and Symptoms of Exposure:	Caution! The toxicological properties of this mixture have not been fully investigated. Follow good laboratory practices when handling.
RTECS Number:	Mixture not listed.
Additional Information:	The product should be handled with the normal caution accorded to chemical handling. Additional harmful properties cannot be ruled out.

Section 12 – Ecological Information

No information available.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations.

Section 14 – Transport Considerations

DOT Regulations:	Not dangerous goods. Not regulated.
IMDG:	Not dangerous goods. Not regulated.
IATA:	Not dangerous goods. Not regulated.

Section 15 – Regulatory Information

SARA:	
Section 302	No products were found.
Section 313	No products were found.
SARA 311/312 Hazards	No SARA Hazards.
California Prop. 65 Components:	This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.
OSHA Hazards:	No known OSHA hazards.
DSL Status:	All components of this product are on the Canadian DSL list.

Section 16 – Other Information

The above information is believed to be correct, but does not purport to be all-inclusive and should be used only as a guide. Zymo Research shall not be held liable for any damage or other consequences resulting from handling or from contact with the above product. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall Zymo Research be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Zymo Research has been advised or the possibility of such damages. All materials supplied by Zymo Research Corp are intended to be used by trained professionals and are for research use only.



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Section 1 – Product and Company Information

Reagent/Buffer Name: Zymolyase Storage Buffer
Catalog Number: E1004, E1005, E1006

Company: Zymo Research Corp.
Street Address: 17062 Murphy Ave.
City, State, Zip Code, Country: Irvine, CA 92614 US
Phone: 949-679-1190
Fax: 949-266-9452

Section 2 – Ingredient Information/Composition

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous Components Name	CAS #	EINECS No.	Formula	Percent
Beta-Mercaptoethanol	60-24-2	200-464-6	HOCH ₂ CH ₂ SH	0.1% to 0.9%

Section 3 – Hazard Identification

Emergency Overview: OSHA Hazards:
Highly toxic by skin absorption
Toxic by inhalation and ingestion
Combustible
Corrosive
Environmental hazard

Target Organs: Pulmonary System, Gastrointestinal System

NFPA Ratings (scale 0 - 4) : Health = 3
Fire = 2
Reactivity = 1

HMIS Ratings (scale 0 – 4) : Health = 3
Fire = 2
Physical Hazard = 1

Section 4 – First Aid Measures

In Case of	
Eye Contact:	Flush contaminated eye(s) with large volumes of water for at least 15 minutes. Get medical attention.
Skin Contact:	Flush contaminated areas with large volumes of water for at least 15 minutes as contaminated clothing is removed. Do not wear contaminated clothing until after it has been properly cleaned. Get medical attention.
Ingestion:	Do not induce vomiting. Wash out mouth with water provided person is conscious. Get medical attention.
Inhalation:	Remove victim to fresh air. Give oxygen if breathing becomes difficult. Should breathing stop, give artificial respiration. Get medical attention.

Section 5 – Fire Fighting Measures

Extinguishing Media:	Water spray. Carbon dioxide, dry chemical powder, or alcohol-resistant foam.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and protective garments. If possible, have this product removed from the fire scene.

Section 6 – Accidental Release Measures

General Information:	Evacuate the area. Wear self-contained breathing apparatus, chemical safety goggles, rubber boots, and heavy rubber gloves. Provide appropriate ventilation. Avoid breathing vapors.
Spills / Leaks:	Cover with an inert absorbent material and keep in suitable, closed containers for waste disposal. Do not let product enter drains, sewers, surface or ground water. Avoid discharge into the environment. Ventilate area.

Section 7 – Handling and Storage

Handling:	Avoid contact with skin and eyes. Avoid inhalation of vapors or mist.
Storage:	Store tightly closed in a dry and well-ventilated place.

Section 8 – Exposure Controls / Personal Protection

Provide appropriate ventilation or local exhaust. Under conditions where exposure to the substance is apparent and/or engineering controls are not feasible, wear an appropriate approved/certified air-purifying respirator. Wear, protective gloves, and safety goggles. Provide safety showers and eye stations proximal to the work-station location. Do not breathe vapor. Avoid contact with eyes, skin and clothing. Keep tightly closed. Wash thoroughly after handling.

WEEL:	0.2 ppm , Skin
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Section 9 – Physical and Chemical Properties

Physical States / Form:	Liquid
Color:	Colorless
pH:	4.0 - 6 at 20 °C (68 °F)
Boiling Point:	157 °C (315 °F)
Melting Point:	< -50 °C (< -58 °F)

Flashpoint:	77 °C (171 °F) closed cup
Explosion Level:	Upper: 18% Lower: 2.3%
Vapor Pressure:	0.76 hPa (0.57 mmHg) at 20 °C (68 °F)
Specific Gravity:	1.114 g/cm ³
Solubility In Water:	Soluble

Section 10 – Stability and Reactivity

Stability:	Stable
Substances To Be Avoided:	Oxidizing agents, moisture, contact with metals.
Hazardous, Combustion, Or Decomposition Products:	Sulfur oxides, carbon monoxide, and carbon dioxide.

Section 11 – Toxicological Information

Acute Effects	
Inhalation:	Toxic if inhaled. Extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Eye Contact:	Causes eye burns.
Skin Contact:	Causes skin burns. May be fatal if absorbed through skin.
Ingestion:	Toxic if swallowed. Causes burns.
Symptoms Of Exposure:	May include burning sensation, coughing, wheezing, laryngitis, shortness of breath, weakness, headache, nausea and vomiting.
RTECS Number:	KL5600000

Toxicity Data:																																	
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Eye	Rabbit	2 mg severe	AJOPAA 29, 1363, 1946						

Additional Information: The product should be handled with the normal caution accorded to chemical handling. Additional harmful properties cannot be ruled out.

Section 12 – Ecological Information

Toxic to aquatic organisms. Water hazard class 3 (Assessment by list): extremely hazardous for water. Do not let product enter drains, sewers, surface or ground water. Avoid discharge into the environment.

Section 13 – Disposal Considerations

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Do not dispose with household garbage. Do not allow product to reach sewage system.

Section 14 – Transport Considerations

DOT:	Shipping Name: Thioglycol Hazard Class: 6.1 UN/NA: UN2966 Packing Group: II Label: 6.1
IMDG:	Class: 6.1 UN/NA: UN2966 Packing Group: II EMS Number: F-A, S-A Label: 6.1 Marine Pollutant: No
IATA:	Shipping Name: Thioglycol Hazard Class: 6.1 UN/NA: UN2966 Packing Group: II Label: 6.1

Section 15 – Regulatory Information

Hazard Symbols:

T+: Very toxic
N: Dangerous for the environment

Risk Phrases:

R27: Very toxic in contact with skin
R25: Toxic if swallowed
R34: Causes burns
R51: Toxic to aquatic organisms

Safety Phrases:

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

TSCA Status:	Substance is listed.
SARA 302:	Substance is not listed.
SARA 313:	Substance is not listed.
SARA 311/312 Hazards:	Acute Health Hazard, Fire Hazard
SARA 355:	Substance is not listed.
DSL Status:	All components of this product are on the Canadian DSL list.
California Prop. 65 Components:	This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.
OSHA Hazards:	Corrosive, highly toxic by skin absorption, toxic by inhalation and ingestion, combustible.

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