



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: P1 Buffer
Catalog Number: D4027-1-10, D4027-1-20, D4027-1-80, D4027-1-160, D4027-1-320, D4027-1-500

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.
-----------------	--

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.



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: P2 Buffer
Catalog Number: D4027-2-10, D4027-2-20, D4027-2-80, D4027-2-160, D4027-2-320, D4027-2-500

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.
-------------------------	---

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.

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.



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: P3 Buffer
Catalog Number: D4027-3-12, D4027-3-50, D4027-3-220, D4027-3-440, D4027-3-500

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
guanidinium chloride	50-01-1	CH ₆ N ₃ Cl	20-25%
Trade Secret 001-4036	N/A	N/A	1.0-5.0%
Trade Secret 002-4036	N/A	N/A	1.0-5.0%

Section 3 – Hazard Identification

Hazard Description: Xn Harmful
Harmful if swallowed. Irritating to eyes and skin.
Primary routes of entry: Dermal, Oral
Target organ(s): May affect Nervous system (Neurotoxin)

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

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

OSHA Hazard Overview (Criteria according to 29CFR1910.1200) : Toxic, Irritant

Section 4 – First Aid Measures

General Information:	Poisoning symptoms may occur after several hours; therefore keep patient under medical observation for at least 48 hours after the accident.
Eye Contact:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a doctor if symptoms persist.
Skin Contact:	In case of contact, immediately wash with soap and water and rinse thoroughly.
Inhalation:	If inhaled, remove to fresh air. If person is unconscious, stabilize in side position for transportation. Get medical attention immediately.
Ingestion:	Call a physician immediately.

Section 5 – Fire Fighting Measures

Fire Fighting Media and Instructions:	Use CO ₂ , extinguishing powder or water spray Larger Fire: Use water spray or alcohol resistant foam.
--	--

Section 6 – Accidental Release Measures

Procedure(s) Of Personal Precaution(s) :	No special precautions required.
Environmental Protection:	No special measures required.
Methods For Cleaning Up:	Absorb with sand or liquid-binding material. Ventilate area. See section 13 for disposal recommendations.

Section 7 – Handling and Storage

Handling:	Avoid formation of aerosols. Provide appropriate ventilation/exhaustion at the workplace.
Storage:	Keep container tightly closed.

Section 8 – Exposure Controls / Personal Protection

General Protective Measures:	Avoid contact with eyes and skin. Immediately remove all soiled and contaminated clothing. Wash hands regularly.
Personal Protection Equipment:	Splash goggles. Lab coat. Gloves. Dust respirator. Be sure to use an approved/certified respirator or equivalent.
Components With Limit Values That Require Monitoring At The Workplace:	Not applicable

Section 9 – Physical and Chemical Properties

Physical State And Appearance:	Fluid
Odor:	Characteristic
Color:	Colorless
Boiling Point:	Not available
Melting Point:	Not available

Flash Point:	Not applicable
Auto Igniting:	Product is not selfigniting
Danger of Explosion:	Product does not present an explosion hazard
Density:	Not available
Solubility In Water:	Not miscible or difficult to mix.
Solvent Content:	Organic Solvent: 0.0%; Water: 65.9%

Section 10 – Stability and Reactivity

Thermal Decomposition/ Conditions To Avoid:	No decomposition if used according to specifications.
Hazardous/Dangerous Decomposition Products:	No dangerous decomposition products known.

Section 11 – Toxicological Information

Acute Toxicity: Relevant LD/LC50 Values For Classification:	50-01-1 Guanidinium Chloride		
	Oral Irritation Of Skin	LD50 Acute	475 Mg/Kg (Rat) 500 Mg/24H (Rabbit) Severe Irritation
Primary Irritant Effect On The Skin:	Irritant To Skin And Mucous Membranes.		
Primary Irritant Effect On The Eye:	Irritant To Eyes		
Sensitization:	No Sensitization Effects Known.		
Additional Toxicological Information:	Harmful. Irritant.		

Section 12 – Ecological Information

Water Hazard class I (self-assessment): slightly hazardous for water.
Avoid large quantities or undiluted product to reach ground water, water course or sewage system.

Section 13 – Disposal Considerations

Dispose according to official regulations. Do not dispose with household garbage. Do not allow product to reach sewage system.

Section 14 – Transport Considerations

Maritime transport IMDG: Marine Pollutant	No
--	----

Section 15 – Regulatory Information

SARA: Section 355 (Extremely Hazardous Substances)	Ingredients not listed
Section 313 (Specific Toxic Chemical Listing)	Ingredients not listed

TSCA (Toxic Substances Control Act)	7732-18-5; water, distilled, conductivity or of similar purity 50-01-1; guanidinium chloride 7447-40-7; potassium chloride 34487-61-1; sodium hydrogen 4,4'-(3H-2,1-benzoxathiol-3-ylidene)bisphenolate S,S-dioxide
-------------------------------------	--

Proposition 65:

Chemicals Known To Cause Cancer	Ingredients not listed
---------------------------------	------------------------

Chemicals Known To Cause Reproductive Toxicity For Females	Ingredients not listed
--	------------------------

Chemicals Known To Cause Reproductive Toxicity For Males	Ingredients not listed
--	------------------------

Chemicals Known To Cause Developmental Toxicity	Ingredients not listed
---	------------------------

Carcinogenicity Categories:

EPA (Environmental Protection Agency)	Ingredients not listed
---------------------------------------	------------------------

IARC (International Agency for Research on Cancer)	Ingredients not listed
--	------------------------

NTP (National Toxicology Program)	Ingredients not listed
-----------------------------------	------------------------

TLV (Threshold Limit Value established by ACGIH)	Ingredients not listed
--	------------------------

MAK (German Maximum Workplace Concentration)	Ingredients not listed
--	------------------------

NIOSH-Ca (National Institute for Occupational Safety and Health)	Ingredients not listed
--	------------------------

OSHA-Ca (Occupational Safety and Health Administration)	Ingredients not listed
---	------------------------

Related Hazardous Information: Product classified and marked in accordance with directives on hazardous materials.

Hazard Symbol	Xn Harmful
---------------	------------

Risk Phrases	Harmful if swallowed. Irritating to eyes and skin
--------------	---

Safety Phrases	Wear protective clothing and gloves. This material and its container must be disposed of as hazardous waste. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Do not breathe gas/fumes/vapour/spray (<i>appropriate wording to be specified by the manufacturer</i>).
----------------	---

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.



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: Endo-Wash Buffer
Catalog Number: D4036-3-6, D4036-3-15, D4036-3-30, D4036-3-60, D4036-3-120, D4036-3-240, D4036-3-160

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 #	Percent
Guanidinium Chloride	50-01-1	25-50%
Propan-2-ol	67-63-0	25-50%

Section 3 – Hazard Identification

Hazard Description: Xn Harmful
F Highly flammable

Harmful if swallowed.
Irritating to eyes and skin.
Has narcotizing effect.
Vapors may cause dizziness and drowsiness.

Primary routes of entry: Dermal, Oral, and Inhalation
Target organ(s): May affect Nervous system (Neurotoxin). May affect bones. May cause Kidney damage (Nephrotoxin)

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

HMIS Ratings (scale 0 – 4) : Health = 2
Fire = 3
Reactivity = 0

OSHA Hazard Overview: Toxic, Irritant, Flammable

Section 4 – First Aid Measures

General Information:	Poisoning symptoms may occur after several hours; therefore keep patient under medical observation for at least 48 hours after the accident.
Eye Contact:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Consult a doctor if symptoms persist.
Skin Contact:	In case of contact, immediately wash with soap and water and rinse thoroughly.
Inhalation:	If inhaled, remove to fresh air. If person is unconscious, stabilize in side position for transportation. Get medical attention immediately.
Ingestion:	Call a physician immediately.

Section 5 – Fire Fighting Measures

Fire Fighting Media and Instructions:	Use CO ₂ , extinguishing powder or water spray Larger Fire: Use water spray or alcohol resistant foam.
--	--

Section 6 – Accidental Release Measures

Procedure(s) Of Personal Precaution(s) :	Use protective equipment. Ensure that unprotected persons stay away.
Environmental Protection:	Do not allow product to reach sewers/surface or ground water. Product must be diluted with plenty of water. Prevent leakage into sewage system, workpits and cellars.
Methods For Cleaning Up:	Absorb with sand or liquid-binding material. Ventilate area. See section 13 for contaminated material disposal.

Section 7 – Handling and Storage

Handling:	Avoid formation of aerosols. Provide appropriate ventilation/exhaustion at the workplace.
Storage:	Keep away from ignition sources. Protect against electrostatic charges. Keep container in dry conditions, tightly closed and in a cool location.

Section 8 – Exposure Controls / Personal Protection

General Protective Measures:	Avoid contact with eyes and skin. Immediately remove all soiled and contaminated clothing. Wash hands regularly.
Personal Protection Equipment:	Splash goggles. Lab coat. Protective gloves. Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Components With Limit Values That Require Monitoring At The Workplace:	
67-63-0 propan-2-ol	PEL: 980 mg/m ³ , 400 ppm REL Short-term value: 1225 mg/m ³ , 500 ppm Long-term value: 980 mg/m ³ , 400 ppm TLV Short-term value: 984 mg/m ³ , 400 ppm Long-term value: 492 mg/m ³ , 200 ppm BEI

Section 9 – Physical and Chemical Properties

Physical State And Appearance:	Fluid
Odor:	Characteristic
Color:	Colorless
Boiling Point:	82°C (180°F)
Melting Point:	Not available
Flash Point:	≤ 21°C (≤ 70°F)
Ignition Temperature:	425°C (797°F)
Auto Igniting:	Product is not selfigniting
Danger of Explosion:	Product is not explosive and does not present an explosion hazard. However, formation of explosive air/vapor mixtures is possible.
Explosion Limits:	Lower: 2.0 Vol % Upper: 12.0 Vol %
Density:	At 20°C (68°F): 1.05055 g/cm ³
Vapor Pressure:	At 20°C (68°F): 43 hPa (32 mm Hg)
Solubility In Water:	Fully miscible
Solvent Content:	Organic Solvent: 35.0%; Water: 28.0%; VOC content: 35.0%
Solid Content:	37.0 %

Section 10 – Stability and Reactivity

Thermal Decomposition/ Conditions To Avoid:	No decomposition if used according to specifications.
Hazardous/Dangerous Decomposition Products:	No dangerous decomposition products known.

Section 11 – Toxicological Information

Acute Toxicity Relevant LD/LC50 Values For Classification:

50-01-1 Guanidinium Chloride

Oral	LD50	475 mg/kg (Rat)
Irritation of skin	acute	500 mg/24H (Rabbit) Severe Irritation

Primary Irritant Effect On The Skin:	Irritant to skin and mucous membranes.
Primary Irritant Effect On The Eye:	Irritant to eyes
Sensitization:	No sensitization effects known.
Additional Toxicological Information:	Harmful. Irritant.

Section 12 – Ecological Information

Water Hazard class I (self-assessment): slightly hazardous for water.

Ensure that the product does NOT reach ground water, water course or sewage system in large quantities or undiluted.

Section 13 – Disposal Considerations

Dispose according to official regulations. Do not dispose with household garbage. Do not allow product to reach sewage system.

Section 14 – Transport Considerations

DOT Regulations:

Hazard Class	3
Identification Number	UN1219
Packaging Group	II
Proper Shipping Name	Isopropanol (Isopropyl Alcohol), solution
Label	3

Land transport ADR/RID:

ADR/RID Class	3 (F1) Flammable liquids
UN Number	1219
Danger Code (Kemler)	33
Packaging Group	II
Description of Goods	1219 Isopropanol (Isopropyl Alcohol), solution
Label	3

Maritime transport IMDG:

IMDG class	3
UN Number	1219
EMS Number	F-E,S-E
Packaging Group	II
Marine Pollutant	No
Proper Shipping Name	Isopropanol (Isopropyl Alcohol), solution
Label	3

Air transport ICAO-TI and IATA-

DGR:

ICAO/IATA Class	3
UN/ID Number	1219
Packaging Group	II
Proper Shipping Name	Isopropanol (Isopropyl Alcohol), solution
Label	3

Section 15 – Regulatory Information

SARA:

Section 355 (Extremely Hazardous Substances)	Ingredients not listed
--	------------------------

Section 313 (Specific Toxic Chemical Listing)	67-63-0; propan-2-ol
---	----------------------

TSCA (Toxic Substances Control Act)	Ingredients listed
-------------------------------------	--------------------

Proposition 65:

Chemicals Known To Cause Cancer	Ingredients not listed
---------------------------------	------------------------

Chemicals Known To Cause Reproductive Toxicity For Females	Ingredients not listed
--	------------------------

Chemicals Known To Cause Reproductive Toxicity For Males	Ingredients not listed	
Chemicals Known To Cause Developmental Toxicity	Ingredients not listed	
Cancerogenity Categories: EPA (Environmental Protection Agency)	Ingredients not listed	
IARC (International Agency for Research on Cancer)	67-63-0; propan-2-ol	3
NTP (National Toxicology Program)	Ingredients not listed	
TLV (Threshold Limit Value established by ACGIH)	Ingredients not listed	
MAK (German Maximum Workplace Concentration)	Ingredients not listed	
NIOSH-Ca (National Institute for Occupational Safety and Health)	Ingredients not listed	
OSHA-Ca (Occupational Safety and Health Administration)	Ingredients not listed	
Related Hazardous Information:	Product classified and marked in accordance with directives on hazardous materials.	
Hazard Symbol	Xn Harmful F Highly Flammable	
Hazard-Determining Components Of Labeling	guanidinium chloride	
Risk Phrases	Harmful if swallowed. Irritating to eyes and skin. Highly flammable. Vapours may cause drowsiness and dizziness.	
Safety Phrases	Keep tightly closed in a ventilated area and away from ignition sources. Wear protective clothing and gloves. This material and its container must be disposed of as hazardous waste. Avoid contact with eyes, but in case of contact, rinse immediately with plenty of water and seek medical advice. Do not breathe gas/fumes/vapour/spray (<i>appropriate wording to be specified by the manufacturer</i>).	

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.



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: Plasmid Wash Buffer
Catalog Number: D4027-4-6, D4027-4-12, D4027-4-24, D4027-4-48

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
Tris(hydroxymethyl)aminomethane hydrochloride	1185-53-1	C ₄ H ₁₁ NO ₃ ClH	<2%

Section 3 – Hazard Identification

Hazard Description: Not applicable. This product has been classified as nonhazardous.
Target Organs: Not applicable

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

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

OSHA Hazard Overview (Criteria according to 29CFR1910.1200) : Not applicable

Section 4 – First Aid Measures

General Information: No special measures required.

Eye Contact: Rinse eyes with plenty of water for several minutes.

Skin Contact:	Generally, product does not irritate the skin.
Inhalation:	Provide fresh air. If symptoms persist, consult a doctor.
Ingestion:	If symptoms persist, consult a doctor.

Section 5 – Fire Fighting Measures

Fire Fighting Media and Instructions:	Use CO ₂ , extinguishing powder or water spray Larger Fire: Use water spray or alcohol resistant foam.
--	--

Section 6 – Accidental Release Measures

Procedure(s) Of Personal Precaution(s) :	No special precautions required.
Environmental Protection:	No special measures required.
Methods For Cleaning Up:	Absorb with sand or liquid-binding material.

Section 7 – Handling and Storage

Handling:	No special measures required.
Storage:	No special measures required.

Section 8 – Exposure Controls / Personal Protection

General Protective Measures:	Ensure usual precautionary measures when handling chemicals.
Personal Protection Equipment:	Lab coat. Protective gloves. Splash goggles.
Components With Limit Values That Require Monitoring At The Workplace:	Not applicable

Section 9 – Physical and Chemical Properties

Physical State And Appearance:	Fluid
Odor:	Characteristic
Color:	Colorless
Boiling Point:	Not available
Melting Point:	0°C (32°F)
Flash Point:	Not applicable
Auto Igniting:	Product is not selfigniting
Danger of Explosion:	Product does not present an explosion hazard
Density:	1 g/cm ³ at 20°C (68°F)
Solubility In Water:	Not miscible or difficult to mix.
Solvent Content:	Organic Solvent: 0.0%; Water: 98.5%

Section 10 – Stability and Reactivity

**Thermal Decomposition/
Conditions To Avoid:** No decomposition if used according to specifications.

**Hazardous/Dangerous
Decomposition Products:** No dangerous decomposition products known.

Section 11 – Toxicological Information

**Acute Toxicity
Primary Irritant Effect On The
Skin:** No irritant effect to skin and mucous membranes.

**Primary Irritant Effect On The
Eye:** Irritant effect to eyes

Sensitization: No sensitization effects known.

Section 12 – Ecological Information

No data available.

Section 13 – Disposal Considerations

Dispose according to official regulations. Do not dispose with household garbage. Do not allow product to reach sewage system.

Section 14 – Transport Considerations

DOT Regulations: Not regulated

**Maritime transport IMDG
Marine Pollutant** No

Section 15 – Regulatory Information

SARA:
Section 355 (Extremely Hazardous
Substances) Ingredients not listed

Section 313 (Specific Toxic
Chemical Listing) Ingredients not listed

TSCA (Toxic Substances Control
Act) Ingredients listed

Proposition 65:
Chemicals Known To Cause
Cancer Ingredients not listed

Chemicals Known To Cause
Reproductive Toxicity For Females Ingredients not listed

Chemicals Known To Cause
Reproductive Toxicity For Males
Chemicals Known To Cause
Developmental Toxicity Ingredients not listed

Carcinogenicity Categories:

EPA (Environmental Protection Agency)	Ingredients not listed
IARC (International Agency for Research on Cancer)	Ingredients not listed
NTP (National Toxicology Program)	Ingredients not listed
TLV (Threshold Limit Value established by ACGIH)	Ingredients not listed
MAK (German Maximum Workplace Concentration)	Ingredients not listed
NIOSH-Ca (National Institute for Occupational Safety and Health)	Ingredients not listed
OSHA-Ca (Occupational Safety and Health Administration)	Ingredients not listed

Related Hazardous Information: Ensure general safety regulations when handling chemicals.

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.



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: DNA Elution Buffer
Catalog Number: D3004-4-1, D3004-4-4, D3004-4-10, D3004-4-16, D5101-6-1, D3004-4-50

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.
-----------------	--

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.
Other Classifications:	
DSCL (EEC):	S24/25 Avoid contact with skin and eyes.

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.