

AmpliTaq Gold[®] with GeneAmp[®] 10X Buffer; AmpliTaq Gold[®] with GeneAmp[®] 10X Buffer II and MgCl₂ Solution; AmpliTaq Gold[®]; AmpliTaq Gold[®] HC; AmpliTaq Gold[®] with GeneAmp[®] 10X PCR Gold Buffer and MgCl₂ Solution

MATERIAL SAFETY DATA SHEET



Diagnostics

Prepared to U. S. OSHA, CMA, ANSI, Canadian WHMIS and European Directives

PART I What is the material and what do I need to know in an emergency?

TRADE NAME (AS LABELED):

1. PRODUCT IDENTIFICATION

AmpliTaq Gold[®] with GeneAmp[®] 10X PCR BUFFER

AmpliTaq Gold[®] with GeneAmp[®] 10X PCR BUFFER II and MgCl₂ SOLUTION

AmpliTaq Gold[®]

AmpliTaq Gold[®] HC

AmpliTaq Gold[®] with GeneAmp[®] 10X PCR GOLD BUFFER and MgCl₂ SOLUTION

PRODUCT USE:

Research Use Only

This Material Safety Data Sheet contains the information pertinent to the following products:

<u>Part No:</u>	<u>Product Name</u>
N808-0240	AmpliTaq Gold [®] , 250 U, with GeneAmp [®] 10X PCR Buffer
N808-0241	AmpliTaq Gold [®] , 250 U, with GeneAmp [®] 10X PCR Buffer II and MgCl ₂ Solution
N808-0242	Six Paq, AmpliTaq Gold [®] , 6 x 250 U, with GeneAmp [®] 10X PCR Buffer
N808-0243	Six Paq, AmpliTaq Gold [®] , 6 x 250 U, with GeneAmp [®] 10X PCR Buffer II and MgCl ₂ Solution
N808-0244	Twelve Paq, AmpliTaq Gold [®] , 12 x 250 U, with GeneAmp [®] 10X PCR Buffer
N808-0245	Twelve Paq, AmpliTaq Gold [®] , 12 x 250 U, with GeneAmp [®] 10X PCR Buffer II and MgCl ₂ Solution
N808-0246	AmpliTaq Gold [®] , 1000 U, with GeneAmp [®] 10X PCR Buffer
N808-0247	AmpliTaq Gold [®] , 1000 U, with GeneAmp [®] 10X PCR Buffer II and MgCl ₂ Solution
N808-0248	AmpliTaq Gold [®] , 5 x 1000 U, with GeneAmp [®] 10X PCR Buffer
N808-0249	AmpliTaq Gold [®] , 5 x 1000 U, with GeneAmp [®] 10X PCR Buffer II and MgCl ₂ Solution
N808-0250	AmpliTaq Gold [®] , 25,000 U, 5 mL Bulk
N808-0255	AmpliTaq Gold [®] , 25,000 U, 5 mL Bulk, with 10X GeneAmp [®] Buffer
N808-0256	AmpliTaq Gold [®] , 25,000 U, 5 mL Bulk, with 10X GeneAmp [®] Buffer II and MgCl ₂ Solution
N808-0258	AmpliTaq Gold [®] , 25,000 U, with 10X GeneAmp [®] Buffer
N808-0259	AmpliTaq Gold [®] , 25,000 U, with 10X GeneAmp [®] Buffer II and MgCl ₂ Solution
300651	AmpliTaq Gold [®] , 250 U, (ABD)
300652	AmpliTaq Gold [®] , 25,000 U, 5 mL Bulk, (ABD)
83093	AmpliTaq Gold [®] , Twelve Paq, 12 x 250 U
4309922	AmpliTaq Gold [®] HC
4311806	AmpliTaq Gold [®] , 250 U, with GeneAmp [®] 10X PCR Gold Buffer and MgCl ₂ Solution
4311814	Six Paq AmpliTaq Gold [®] , 6 x 250 U, with GeneAmp [®] 10X PCR Gold Buffer and MgCl ₂ Solution
4311820	Twelve Paq AmpliTaq Gold [®] , 6 x 250 U, with GeneAmp [®] 10X PCR Gold Buffer and MgCl ₂ Solution
4311816	AmpliTaq Gold [®] , 1000 U, with GeneAmp [®] 10X PCR Gold Buffer and MgCl ₂ Solution
4311818	AmpliTaq Gold [®] , 5 x 1000 U, with GeneAmp [®] 10X PCR Gold Buffer and MgCl ₂ Solution

SUPPLIER NAME:

APPLIED BIOSYSTEMS, INC. 7

ADDRESS:

Kingsland Grange, Woolston
Warrington, Cheshire, WA1 4SR

BUSINESS PHONE:

+ 44 1925 82 56 60 (UK)

EMERGENCY PHONE:

1-703-527-3387 CHEMTREC Reverse Charges (International)

MANUFACTURER'S NAME:

ROCHE MOLECULAR SYSTEMS, Inc. Branchburg Township,
1080 US Highway 202

ADDRESS:

Somerville, NJ 08876-3771

EMERGENCY PHONE:

1-800-451-8346 (In United States)

INFORMATION NUMBER:

1-800-526-1247 (In United States)



2. COMPOSITION and INFORMATION ON INGREDIENTS

EU LABELING AND CLASSIFICATION: (See Section 15 for definition of risk phrases, safety phrases and symbols.) According to Article 1 of European Union Council Directive 92/32/EEC, medical products in the finished state for human use (as defined by European Union Council Directives 67/548/EEC and 87/21/EEC) are not subject to the regulations and administrative provisions of European Union Council Directive 92/32/EEC.

COMPONENT 1: AmpliTaq GOLD™ ENZYME SOLUTION:

EU CLASSIFICATION and SYMBOL: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: [Not applicable.]

COMPONENT 2: 10X PCR BUFFER:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

COMPONENT 3: 10X PCR BUFFER II:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

COMPONENT 4: 25mM MAGNESIUM CHLORIDE SOLUTION:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

COMPONENT 5: 10X PCR GOLD BUFFER:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

CHEMICAL NAME	CAS #	EINECS#	% v/v	EU CLASSIFICATION FOR COMPONENTS
COMPONENT 1: AmpliTaq GOLD™ ENZYME SOLUTION				
Ethylenediaminetetraacetic Acid (EDTA)	60-00-4	200-449-4	< 1	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Glycerin	56-81-5	200-289-5	50-60	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.			Balance	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
COMPONENT 2: 10X PCR BUFFER:				
Potassium Chloride	7447-40-7	231-211-8	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	241-648-5	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.			Balance	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
COMPONENT 3: 10X PCR BUFFER II:				
Potassium Chloride	7447-40-7	231-211-8	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	241-648-5	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.			Balance	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
COMPONENT 4: 25mM MAGNESIUM CHLORIDE SOLUTION				
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.			Balance	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
COMPONENT 5: 10X PCR GOLD BUFFER:				
Potassium Chloride	7447-40-7	231-211-8	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	241-648-5	1-5	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.			Balance	HAZARD CLASSIFICATION: Not applicable. RISK PHRASES: Not applicable.

See Section 15 for full EU classification information of product and components.

NOTE: ALL Canadian WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR. The MSDS is also prepared to include all European Union required information under EU Directives.



3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Product Description: This product is a kit comprised of clear, colorless, odorless liquids. **Health Hazards:** The chief health hazard associated with overexposures during normal use and handling is the potential for mild irritation of contaminated tissue. **Flammability Hazards:** The components of this product are not flammable. In the event of a fire, this product will not contribute significant additional hazards. **Reactivity Hazards:** The components of this product are not reactive. **Environmental Hazards:** Although release of this product is not expected to cause significant harm to plants or animals, all contamination to the environment should be avoided. **Emergency Considerations:** Emergency responders should wear appropriate protection for situation to which they respond.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: No adverse health effects should occur from routine, occupational use of this material in the manner specified by the manufacturer's instructions. The only likely symptom of exposure would be reddening or inflammation after accidental injection. The potential health effects of the individual components are as follows:

INHALATION: Inhalation of vapors or mists of components of this product may cause mild irritation. Symptoms are generally alleviated upon breathing fresh air.

CONTACT WITH SKIN or EYES: If components of this product contaminate either the skin or the eyes, mild irritation may occur. This irritation will be alleviated upon rinsing. Chronic skin exposure may cause dermatitis (dry, red skin).

SKIN ABSORPTION: Skin absorption is not a significant route of exposure for any component of this product.

INGESTION: Though not a likely route of occupational exposure, ingestion of this product, especially in large quantities, may cause gastric distress. Symptoms of such over-exposure can include nausea, vomiting, and diarrhea.

INJECTION: Injection of this product's solutions may cause local reddening, tissue swelling, and discomfort.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. This product's solutions are not known to cause significant acute or chronic health effects.

ACUTE: Beyond mild irritation of the skin or eyes, contact with this product does not usually cause acute health effects.

CHRONIC: This product is not known to cause any significant chronic health effects after prolonged exposures.

TARGET ORGANS: **ACUTE:** Eyes, skin. **CHRONIC:** Skin.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD	(BLUE)	1	
FLAMMABILITY HAZARD	(RED)	0	
PHYSICAL HAZARD	(YELLOW)	0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe * = Chronic hazard

PART II What should I do if a hazardous situation occurs? 4.

FIRST-AID MEASURES

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to physician or health professional with victim.

SKIN EXPOSURE: Basic hygiene should prevent any problems. If contact with this product leads to reddening, inflammation, or irritation, flush the exposed area with running water. Remove any contaminated clothing, taking care not to contaminate eyes.

EYE EXPOSURE: If liquid or vapors of this product's components enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes.

INHALATION: If vapors, mists, or sprays of this product's components are inhaled, causing irritation, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.



4. FIRST-AID MEASURES (Continued)

INGESTION: If this product's components are swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING, unless directed by medical personnel. If conscious, have victim rinse mouth with water. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No specific medical conditions are known to be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS: In the event of a fire, use suppression methods for surrounding materials.

Water Spray: YES

Dry Chemical: YES

Other: Any "ABC" Class

Carbon Dioxide: YES

Halon: YES

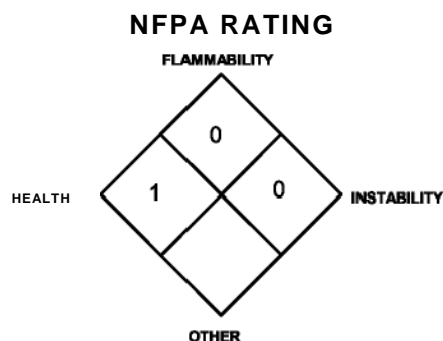
Foam: YES.

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this product's solutions may decompose and produce irritating fumes and toxic gases (including carbon monoxide, carbon dioxide, and oxides of nitrogen).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.



Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: For small releases, treat the product as water, but take basic hygiene precautions. Lightweight gloves, a lab coat, and eye protection should be worn. Absorb spilled liquid with paper towels. Wash contaminated area with soap and water, absorb with paper towels, and rinse with water. Large releases that are not immediately controlled should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people, and respond with trained personnel. In the event of a non-incident release, minimum Personal Protective Equipment should be **Level D: lab-gloves, chemical resistant apron, boots, and splash goggles. Respiratory protection should not be necessary.** Absorb spilled liquid with polypads or other suitable absorbent materials. Decontaminate the area thoroughly. Place all spill residue in a suitable container and seal. Dispose of in accordance with U.S. Federal, State, and local hazardous waste disposal regulations, those of Canada and its Provinces and EU Member States (see Section 13, Disposal Considerations).

PART III How can I prevent hazardous situations from occurring? 7.

HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Avoid splashing or spraying this product. Do not eat or drink while handling this product.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing vapors or mists generated by this product. Ensure containers of this product are properly labeled. Open containers slowly on a stable surface. Wash thoroughly after using this material. Store vials as directed in the product insert. Keep vials tightly closed when not in use. Store away from incompatible materials. Inspect vials containing this product for leaks or damage. Read instructions provided with the product prior to use.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, as applicable. Always use this product in areas where adequate ventilation is provided.



7. HANDLING and STORAGE (Continued)

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT (continued): Decontaminate equipment using soapy water before maintenance begins. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures and those of Canada and its Provinces and EU Member States.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Follow standard medical product handling procedures. During decontamination of work surfaces, workers should wear the same equipment recommended in Section 6 (Accidental Release Measures) of this MSDS. Eye-wash stations/safety showers should be available near locations where this product is used.

EXPOSURE LIMITS/GUIDELINES:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLV		OSHA-PELS		NIOSH			OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	

COMPONENT 1: AmpliQ GOLD™ ENZYME SOLUTION

Ethylenediaminetetraacetic Acid (EDTA)	60-00-4	NE	NE	NE	NE	NE	NE	NE	NE
Glycerin (exposure limits are for glycerin mist)	56-81-5	10	NE	15 (total dust); 5 (respirable fraction) 10 (total dust); 5 (respirable fraction) (Vacated 1989 PEL)	NE	NE	NE	NE	NE
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.		None of the other constituents in this mixture contribute significantly to the hazards associated with this component. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.							

COMPONENT 2: GeneAmp® 10X PCR BUFFER

Potassium Chloride	7447-40-7	NE	NE	NE	NE	NE	NE	NE	NE
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	NE	NE	NE	NE	NE	NE	NE	NE
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.		None of the other constituents in this mixture contribute significantly to the hazards associated with this component. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.							

COMPONENT 3: GeneAmp® 10X PCR BUFFER II

Potassium Chloride	7447-40-7	NE	NE	NE	NE	NE	NE	NE	NE
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	NE	NE	NE	NE	NE	NE	NE	NE
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.		None of the other constituents in this mixture contribute significantly to the hazards associated with this component. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.							

COMPONENT 4: 25 mM MAGNESIUM CHLORIDE SOLUTION

COMPONENT 5: 10X PCR GOLD BUFFER

Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration. Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.		None of the other constituents in this mixture contribute significantly to the hazards associated with this component. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.							
Potassium Chloride	7447-40-7	NE	NE	NE	NE	NE	NE	NE	NE
Tris(hydroxymethyl)aminomethane Hydrochloride (TRIS-HCl)	1185-53-1	NE	NE	NE	NE	NE	NE	NE	NE
Water and other low-hazard constituents. The other low-hazard constituents are each present in less than 1 percent in concentration.		None of the other constituents in this mixture contribute significantly to the hazards associated with this component. All hazard information pertinent to this product has been provided in this Material Safety Data Sheet, per the requirements of the U.S. Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4), and EU Directives.							

NE = Not Established. See Section 15 for Definition of Terms



8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

INTERNATIONAL OCCUPATIONAL EXPOSURE LIMITS: Currently the following international exposure limits are in place for the Glycerin component of this product.

GLYCERIN:

Australia: TWA = 10 mg/m³, JAN 1993
 Belgium: TWA = 10 mg/m³, JAN 1993
 Finland: TWA = 20 mg/m³, JAN 1999

GLYCERIN (continued):

France: VME = 10 mg/m³, JAN 1999
 The Netherlands: MAC-TGG = 10 mg/m³, JAN 1999
 United Kingdom: TWA = 10 mg/m³, mist, SEP 2000

GLYCERIN (continued):

In Argentina, Bulgaria, Colombia, Jordan, Korea, New Zealand, Singapore, Vietnam check ACGIH TLV

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, EN 374 for hand protection, and EN 166 for face/eye protection). Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: A respirator is not required for routine conditions of use of this product. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, and EU member states. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Not normally needed during normal use. If necessary, refer to U.S. OSHA 29 CFR 1910.133, the European Standard EN166 and appropriate Standards of Canada for further information.

HAND PROTECTION: For situations in which prolonged skin contact is anticipated, double glove, using latex, nitrile, or rubber gloves. Check gloves for leaks. Wash hands before putting on gloves and after removing gloves. If necessary, refer to U.S. OSHA 29 CFR 1910.138, the European Standard DIN EN 374 and the appropriate Standards of Canada.

BODY PROTECTION: During patient administration, use of light-weight cotton gown or other medical attire is recommended. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136. If necessary, refer to appropriate Standards of Canada or the European DIN EN 465 for other requirements.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): ~ 17 g/m³

SPECIFIC GRAVITY @ 4°C: Approximately 1

SOLUBILITY IN WATER: Completely soluble.

ODOR THRESHOLD: Not available.

VAPOR PRESSURE @ 20°C: ~ 18 mmHg

COEFFICIENT WATER/OIL DISTRIBUTION: Not applicable.

APPEARANCE AND COLOR: This product is a kit consisting of clear, colorless, odorless solutions.

HOW TO DETECT THIS SUBSTANCE: There are no unusual warning properties are associated with these solutions.

EVAPORATION RATE (nBuAc = 1): 1

FREEZING/MELTING POINT: ~ 0°C (32°F)

BOILING POINT: ~ 100°C (212°F)

pH: 6-8

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Carbon dioxide, carbon monoxide, and oxides of nitrogen.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids, strong bases, strong oxidizers, water-reactive materials.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Any conditions which are incompatible with water, incompatible chemicals.

PART IV Is there any other useful information about this material?

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: The specific toxicology data available for components greater than 1% in concentration are as follows:

GLYCERIN:

Skin Irritancy (rabbit) = 500 mg/24 hours; mild
 Eye Irritancy (rabbit) = 126 mg; mild
 Eye Irritancy (rabbit) = 500 mg/24 hours; mild
 LD₅₀ (oral, rat) = 12600 mg/kg; general anesthetic, muscle weakness, Liver: other changes

GLYCERIN (continued):

LC₅₀ (inhalation, rat) > 570 mg/m³/1 hour
 LD₅₀ (intraperitoneal, rat) = 4420 mg/kg; toxic psychosis;
 Cardiac; other changes; Kidney, Urethra, Bladder:
 other changes

GLYCERIN (continued):

LD₅₀ (subcutaneous, rat) = 100 mg/kg
 LD₅₀ (intravenous, rat) = 5566 mg/kg
 LD₅₀ (oral, mouse) = 4090 mg/kg
 LD₅₀ (intraperitoneal, mouse) = 8700



11. TOXICOLOGICAL INFORMATION (Continued)

TOXICITY DATA (continued):

GLYCERIN (continued):

LD₅₀ (subcutaneous, mouse) = 91 mg/kg
 LD₅₀ (intravenous, mouse) = 4250 mg/kg
 LD₅₀ (oral, rabbit) = 27 g/kg
 LD₅₀ (skin, rabbit) > 10 g/kg
 LD₅₀ (intravenous, rabbit) = 53 g/kg
 LD₅₀ (oral, guinea pig) = 7750 mg/kg
 TDLo (oral, rat) = 16800 mg/kg/28 days/continuous; Endocrine: changes in adrenal weight
 TDLo (oral, rat) = 96 g/kg/30 days/intermittent; Blood: changes in leukocyte (WBC) count, changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: true cholinesterase
 TDLo (oral, rat) = 100 mg/kg/male 1 day pre-mating; Reproductive: Fertility: post-implantation mortality
 TDLo (intratesticular, rat) = 280 mg/kg/male 2 days pre-mating; Reproductive: Effects: spermatogenesis, testes, epididymis, sperm duct
 TDLo (intratesticular, rat) = 1600 mg/kg/male 1 day pre-mating; Reproductive: Fertility: male fertility index
 TDLo (intratesticular, rat) = 862 mg/kg/male 1 day pre-mating; Reproductive: Effects: spermatogenesis
 TDLo (intratesticular, monkey) = 119 mg/kg/male 1 day pre-mating; Reproductive: Paternal Effects: spermatogenesis, testes, epididymis, sperm duct

GLYCERIN (continued):

TDLo (oral, mouse) = 560 g/kg/8 weeks/continuous; Lungs, Thorax, or Respiration: structural or functional change in trachea or bronchi
 DNA Inhibition (human, lymphocyte) = 200 mmol/L
 Cytogenetic Analysis (oral, rat) = 1 g/kg

POTASSIUM CHLORIDE:

LDLo (Oral-Infant) 938 mg/kg/2 days: Lungs, Thorax, or Respiration: cyanosis, other changes; Nutritional and Gross Metabolic: changes in potassium
 LDLo (Oral-Man) 20 mg/kg: Cardiac: arrhythmias (including changes in conduction);

Gastrointestinal: nausea or vomiting; Blood: change in clotting factors

TDLo (Oral-Woman) 60 mg/kg: Gastrointestinal: nausea or vomiting; Blood: change in clotting factors

TDLo (Oral-Man) 214.29 mg/kg: Gastrointestinal: hypermotility, diarrhea, nausea or vomiting
 Standard Draize Test (Eye-Rabbit) 500 mg/24 hours: Mild

LD₅₀ (Oral-Rat) 2600 mg/kg

LD₅₀ (Oral-Mouse) 1500 mg/kg

LD₅₀ (Intraperitoneal-Rat) 660 mg/kg

LD₅₀ (Intraperitoneal-Mouse) 620 mg/kg

LD₅₀ (Intravenous-Mouse) 117 mg/kg

LD₅₀ (Intravenous-Rat) 142 mg/kg: Behavioral:

convulsions or effect on seizure threshold;

Lungs, Thorax, or Respiration: dyspnea

LDLo (Oral-Guinea Pig) 2500 mg/kg: Behavioral:

changes in motor activity (specific assay),

coma; Lungs, Thorax, or Respiration: other

changes

POTASSIUM CHLORIDE (continued):

LDLo (Intraperitoneal-Guinea Pig) 900 mg/kg; Behavioral: changes in motor activity (specific assay), coma; Lungs, Thorax, or Respiration: other changes

LDLo (Subcutaneous-Guinea Pig) 2550 mg/kg

LDLo (Intravenous-Guinea Pig) 77 mg/kg

LDLo (Parenteral-Guinea Pig) 40 mg/kg

LDLo (Intraarterial-Guinea Pig) 130 mg/kg

LDLo (Subcutaneous-Pigeon) 2210 mg/kg

LDLo (Subcutaneous-Frog) 2120 mg/kg

Mutation in Microorganisms (Bacteria-*Salmonella typhimurium*) 100 µg/plate

Mutation in Microorganisms (Yeast-*Saccharomyces cerevisiae*) 2500 mmol/L

Mutation in Microorganisms

Lymphocyte) 2048 mg/L

Gene Conversion and Mitotic Recombination

(Yeast-*Saccharomyces cerevisiae*) 400

Sex Chromosome Loss and

(Yeast-*Saccharomyces cerevisiae*) 300

Unscheduled DNA Synthesis (Oral-Rat) 1500

µg/kg

DNA Damage (Hamster-Ovary) 260 mmol/L

Cytogenetic Analysis (Hamster-Lung) 12 µm/L

Cytogenetic Analysis (Hamster-Ovary)

mmol/L

Sister Chromatid Exchange (Hamster-Ovary)

mmol/L

TRIS(HYDROXYM ETHYL)AM IN OM

HYDROCHLORIDE (TRIS-HCL):

Currently, there are no toxicological available for this compound.

SUSPECTED CANCER AGENT: The constituents in the components of this product are not found on the following lists: NTP, IARC, FEDERAL OSHA Z-List, and CAL-OSHA and therefore are not considered to be, nor suspected to be, cancer causing agents by these agencies.

IRRITANCY OF PRODUCT: While not tested, this product is not expected to cause irritancy to the skin. Mild eye irritation may occur if this product is splashed in the eye.

SENSITIZATION TO THE PRODUCT: The constituents in the components of this product are not known to be human skin or respiratory sensitizers.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its constituents on the human reproductive system.

Mutagenicity: The constituents in the components of this product are not reported to produce mutagenic effects in humans. Human mutation data are available for the Glycerin constituent of this product; these data were obtained during clinical studies on specific human tissues exposed to high doses of this compound. Animal mutation data are available for Potassium Chloride (a chemical in this product's solutions); these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.

Embryotoxicity: The constituents in the components of this product are not reported to cause human embryotoxic effects. **Teratogenicity:** The constituents in the components of this product are not reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of Ethylenediaminetetraacetic Acid (EDTA) (a chemical in this product's solutions present in less than 1 percent concentration) indicate teratogenic effects.



11. TOXICOLOGICAL INFORMATION (Continued)

REPRODUCTIVE TOXICITY INFORMATION (continued):

Reproductive Toxicity: The constituents in the components of this product are not reported to cause adverse reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of Ethylenediaminetetraacetic Acid (EDTA) (a chemical in this product's solutions present in less than 1 percent concentration) indicate adverse reproductive effects.

A *mutagen* is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An *embryotoxin* is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A *teratogen* is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A *reproductive toxin* is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, there are no Biological Exposure Indices (BEIs) applicable to the constituents in the components of this product.

12. ECOLOGICAL INFORMATION

WORK PRACTICES SHOULD BE AIMED AT ELIMINATING ENVIRONMENTAL RELEASES.

ENVIRONMENTAL STABILITY: The components of this product are dilute aqueous solutions that are expected to disperse rapidly in the environment. The following is some environmental data for components.

ETHYLENEDIAMINETETRAACETIC ACID (EDTA): Water Solubility = 500 mg/L, BCF = 19; BCF (bluegill, *Lepomis macrochirus*) = 1. EDTA should not significantly bioconcentrate in aquatic organisms. Biological Oxygen Demand (BOD) = 1%, 5 days. It is expected to persist in the environment and be very slowly biodegraded.

GLYCERIN: Log K_{ow} = -2.6

POTASSIUM CHLORIDE: Water Solubility = 34.2g/ 100 mL (20°C).

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No unusual effects on plants or animals are expected if this product is released into the environment.

EFFECT OF CHEMICAL ON AQUATIC LIFE: This product is not known to cause adverse effects on aquatic life. Additional aquatic toxicity data is available as follows:

ETHYLENEDIAMINETETRAACETIC ACID (EDTA):

Aquatic toxicity: (immersion, cat fish) = 129 ppm, 96 hr (fresh water)
 Toxicity threshold (cell multiplication inhibition test) *Entosiphon sulcatum* (protozoa)
 Toxicity threshold (cell multiplication inhibition test) *Uronema parduczi* Chatton-Lwoff (protozoa) = 17 mg/L
 Toxicity threshold (cell multiplication inhibition test) *Scenedesmus quadricauda* (green algae) = 11 mg/L

ETHYLENEDIAMINETETRAACETIC ACID (EDTA) [continued]:

Toxicity threshold (cell multiplication inhibition test) *Microcystis aeruginosa* (algae) = 76 mg/L
 Toxicity threshold (cell multiplication inhibition test) *Pseudomonas putida* (bacteria) = 105 mg/L
 LC₅₀ (*Lepomis macrochirus* (bluegill)) = 159 mg/L, 96 hr (no adverse effect level); 100 mg/L (static bioassay)

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: Not applicable to the product.

14. TRANSPORTATION INFORMATION

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Not Regulated
HAZARD CLASS NUMBER and DESCRIPTION:	Not Applicable
UN IDENTIFICATION NUMBER:	Not Applicable
PACKING GROUP:	Not Applicable
DOT LABEL(S) REQUIRED:	Not Applicable
EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004):	Not Applicable
MARINE POLLUTANT: The components of this product are not classified by the DOT as a Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).	



AmpliTaq Gold®; AmpliTaq Gold® HC;

AmpliTaq Gold® with GeneAmp® 10X PCR Gold Buffer and MgCl₂ Solution

14. TRANSPORTATION INFORMATION (Continued)

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is not classified as hazardous goods, per the regulations of Transport Canada. The components of this product are not designated by the TDG to be Marine Pollutants.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) DESIGNATION: This product is not classified as dangerous goods, per rules of IATA.

INTERNATIONAL MARITIME ORGANIZATION (IMO): This product is not classified as dangerous goods, per rules of the IMO. The components of this product are not designated by the IMO to be Marine Pollutants.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR): This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

15. REGULATORY INFORMATION

ADDITIONAL U.S. REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The constituents in the components of this product are not subject to Sections 302, 304, and 313 reporting requirements under the Superfund Amendment and Reauthorization Act.

U.S. SARA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCE THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. SARA SECTION 304 EXTREMELY HAZARDOUS SUBSTANCE REPORTABLE QUANTITY: Not applicable.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the constituents in the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) applies, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

U.S. TSCA INVENTORY STATUS: This product is regulated by the Food and Drug Administration; it is exempt from the requirements of TSCA.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): No constituent in the components of this product is on the California Proposition 65 lists.

ANSI LABELING (Z129.1; Provided to Summarize Occupational Hazard Information): **CAUTION! MAY CAUSE SKIN AND EYE IRRITATION.** Do not taste or swallow. Avoid skin or eye contact. Avoid prolonged or repeated skin contact. Avoid breathing mists or sprays. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves and goggles. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention if necessary. **IN CASE OF FIRE:** Use water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Absorb spill with polypads and place in suitable container. Consult Material Safety Data Sheet for additional information.

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDL STATUS: The constituents in the components of this product are listed on the DSL Inventory or are exempt.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: The constituents in the components of this product are not on the CEPA Priority Substances Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: Not applicable.

ADDITIONAL EUROPEAN UNION INFORMATION:

EU LABELING AND CLASSIFICATION: The components of this product do not meet the definition of hazardous, per the European Union Council Directives.

COMPONENT 1: AmpliTaq GOLD™ ENZYME SOLUTION:

EU CLASSIFICATION and SYMBOL: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: [Not applicable.]

COMPONENT 2: 10X PCR BUFFER:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

COMPONENT 3: 10X PCR BUFFER II:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.



EU RISK PHRASES: Not applicable.



15. REGULATORY INFORMATION (Continued)

ADDITIONAL EUROPEAN UNION INFORMATION (continued):

COMPONENT 4: 25mM MAGNESIUM CHLORIDE SOLUTION:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

COMPONENT 5: 10X PCR GOLD BUFFER:

EU CLASSIFICATION and SYMBOLS: This component does not meet the definition of any hazard class as defined by the European Union Council Directive 67/548/EEC or subsequent Directives.

EU RISK PHRASES: Not applicable.

16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc. PO
Box 3519, La Mesa, CA 91944-3519 800-441 -
3365

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used

include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

DFG MAK Germ Cell Mutagen Categories: **1:** Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed humans. **2:** Germ cell mutagens which have been shown to increase the mutant frequency in the progeny of exposed mammals. **3A:** Substances which have been shown to induce genetic damage in germ cells of human or animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. **3B:** Substances which are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but which are clearly mutagenic *in vitro* and structurally related to known *in vivo* mutagens. **4:** Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) **5:** Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: Group A: A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. **Group B:** Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A-C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH-Immediately Dangerous to Life and Health: This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

MAK: Federal Republic of Germany Maximum Concentration Values in the workplace.
NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits

EXPOSURE LIMITS IN AIR (continued):

PEL-Permissible Exposure Limit: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

STEL-Short Term Exposure Limit: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or RELTWA.

TLV-Threshold Limit Value: An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA-Time Weighted Average: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD

RATINGS: This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD:

0 (Minimal Hazard): No significant health risk, irritation of skin or eyes not anticipated. **Skin Irritation:** Essentially non-irritating. PII or Draize = "0". **Eye Irritation:** Essentially non-irritating, or minimal effects which clear in < 24 hours [e.g. mechanical irritation]. Draize = "0". **Oral Toxicity LD₅₀ Rat:** < 5000 mg/kg. **Dermal Toxicity LD₅₀ Rat or Rabbit:** < 2000 mg/kg. **Inhalation Toxicity 4-hrs LC₅₀ Rat:** < 20 mg/L.; **1 (Slight Hazard:** Minor reversible injury may occur; slightly or mildly irritating. **Skin Irritation:** Slightly or mildly irritating. **Eye Irritation:** Slightly or mildly irritating. **Oral Toxicity LD₅₀ Rat:** > 500-5000 mg/kg. **Dermal Toxicity LD₅₀ Rat or Rabbit:** > 1000-2000 mg/kg. **Inhalation Toxicity LC₅₀ 4-hrs Rat:** > 2-20 mg/L.; **2 (Moderate Hazard:** Temporary or transitory injury may occur. **Skin Irritation:** Moderately irritating; primary irritant; sensitizer. PII or Draize > 0, < 5. **Eye Irritation:** Moderately to severely irritating and/or corrosive; reversible corneal opacity; corneal involvement or irritation clearing in 8-21 days. Draize > 0, < 25. **Oral Toxicity LD₅₀ Rat:** > 50-500 mg/kg. **Dermal Toxicity LD₅₀ Rat or Rabbit:** > 200-1000 mg/kg. **Inhalation Toxicity LC₅₀ 4-hrs Rat:** > 0.5-2 mg/L.; **3 (Serious Hazard:** Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. **Skin Irritation:** Severely irritating and/or corrosive; may destroy dermal tissue, cause skin burns, dermal necrosis. PII or Draize > 5-8 with destruction of tissue. **Eye Irritation:** Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. **Oral Toxicity LD₅₀ Rat:** > 1-50 mg/kg. **Dermal Toxicity LD₅₀ Rat or Rabbit:** > 20-200 mg/kg. **Inhalation Toxicity LC₅₀ 4-hrs Rat:** > 0.05-0.5 mg/L.; **4 (Severe Hazard:** Life-threatening; major or permanent damage may result from single or repeated exposure. **Skin Irritation:** Not appropriate. Do not rate as a "4", based on skin irritation alone. **Eye Irritation:** Not appropriate. Do not rate as a "4", based on eye irritation alone. **Oral Toxicity LD₅₀ Rat:** < 1 mg/kg. **Dermal Toxicity LD₅₀ Rat or Rabbit:** < 20 mg/kg. **Inhalation Toxicity LC₅₀ 4-hrs Rat:** < 0.05 mg/L).



Solution

AmpliTaq Gold®; AmpliTaq Gold® HC;

AmpliTaq Gold® with GeneAmp® 10X PCR Gold Buffer and MgCl2 Solution

DEFINITIONS OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD

RATINGS (continued):

FLAMMABILITY HAZARD:

0 (Minimal Hazard-Materials that will not burn in air when exposure to a temperature of 815.5°C [1500°F] for a period of 5 minutes.); **1** (Slight Hazard-Materials that must be pre-heated before ignition can occur. Material require considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur, Including: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C [200°F] (e.g. OSHA Class IIIB, or; Most ordinary combustible materials [e.g. wood, paper, etc.]; **2** (Moderate Hazard-Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres in air, Including: Liquids having a flash-point at or above 37.8°C [100°F]; Solid materials in the form of course dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp; Solids and semisolids that readily give off flammable vapors.); **3** (Serious Hazard- Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions, including: Liquids having a flash point below 22.8°C [73°F] and having a boiling point at or above 38°C [100°F] and below 37.8°C [100°F] [e.g. OSHA Class IB and IC]; Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air [e.g., dusts of combustible solids, mists or droplets of flammable liquids]; Materials that burn extremely rapidly, usually by reason of self-contained oxygen [e.g. dry nitrocellulose and many organic peroxides]); **4** (Severe Hazard-Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and which will burn readily, including: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C [73°F] and a boiling point below 37.8°C [100°F] [e.g. OSHA Class IA; Material that ignite spontaneously when exposed to air at a temperature of 54.4°C [130° F] or below [e.g. pyrophoric].

PHYSICAL HAZARD:

0 (*Water Reactivity*: Materials that do not react with water. *Organic Peroxides*: Materials that are normally stable, even under fire conditions and will not react with water. *Explosives*: Substances that are Non-Explosive. *Unstable Compressed Gases*: No Rating. *Pyrophorics*: No Rating. *Oxidizers*: No "0" rating allowed. *Unstable Reactives*: Substances that will not polymerize, decompose, condense or self-react.); **1** (*Water Reactivity*: Materials that change or decompose upon exposure to moisture. *Organic Peroxides*: Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy. *Explosives*: Division 1.5 & 1.6 substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases*: Pressure below OSHA definition. *Pyrophorics*: No Rating. *Oxidizers*: Packaging Group III; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. *Liquids*: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives*: Substances that may decompose, condense or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosive hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors.); **2** (*Water Reactivity*: Materials that may react violently with water. *Organic Peroxides*: Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives*: Division 1.4 – Explosive substances where the explosive effect are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases*: Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packaging Group II Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD

RATINGS (continued):

PHYSICAL HAZARD (continued):

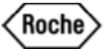
2 (continued): *Liquids*: any material that exhibits a mean pressure rise time less than or

equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Unstable Reactives*: Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature); **3** (*Water Reactivity*: Materials that may form explosive reactions with water. *Organic Peroxides*: Materials that are capable of detonation or explosive reaction, but require a strong initiating source, or must be heated under confinement before initiation; or materials that react explosively with water. *Explosives*: Division 1.2 – Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. *Compressed Gases*: Pressure > 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics*: No Rating. *Oxidizers*: Packing Group I Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. *Liquids*: Any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. *Unstable Reactives*: Substances that may polymerize, decompose, condense or self-react at ambient temperature and/or pressure and have a moderate potential to cause significant heat generation or explosion.); **4** (*Water Reactivity*: Materials that react explosively with water without requiring heat or confinement. *Organic Peroxides*: Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. *Explosives*: Division 1.1 & 1.2-explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. *Compressed Gases*: No Rating. *Pyrophorics*: Add to the definition of Flammability "4". *Oxidizers*: No "4" rating. *Unstable Reactives*: Substances that may polymerize, decompose, condense or selfreact at ambient temperature and/or pressure and have a high potential to cause significant heat generation or explosion.).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD

RATINGS:

HEALTH HAZARD: 0 (materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 200 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 2000 mg/kg. Materials that are essentially non-irritating to the respiratory tract, eyes and skin. **1** (materials that, under emergency conditions, can cause significant irritation): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 10 mg/L but less than or equal to 200 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 500 mg/kg but less than or equal to 2000 mg/kg. Materials that cause slight to moderate irritation to the respiratory tract, eyes and skin. **2** (materials that, under emergency conditions, can cause temporary incapacitation or residual injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 3,000 ppm but less than or equal to 5,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 2 mg/L but less than or equal to 10 mg/L. Materials whose LD₅₀ for acute dermal toxicity is greater than 200 mg/kg but less than or equal to 1000 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. **3** (materials that, under emergency conditions, can cause serious or permanent injury): Gases and vapors whose LC₅₀ for acute inhalation toxicity is greater than 1,000 ppm but less than or equal to 3,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is greater than 0.5 mg/L but less than or equal to 2 mg/L.



AmpliTaQ Gold®; AmpliTaQ Gold® HC;
AmpliTaQ Gold® with GeneAmp® 10X PCR Gold Buffer and MgCl₂ Solution

DEFINITIONS OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): 3 (continued): Materials whose LD₅₀ for acute dermal toxicity is greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials whose LD₅₀ for acute oral toxicity is greater than 5 mg/kg but less than or equal to 50 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials that are respiratory irritants. Cryogenic gases that cause frostbite and irreversible tissue damage. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials that are corrosive to the skin. **4** (materials that, under emergency conditions, can be lethal): Gases and vapors whose LC₅₀ for acute inhalation toxicity less than or equal to 1,000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD₅₀ for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD₅₀ for acute oral toxicity is less than or equal to 5 mg/kg. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 1000 ppm.

FLAMMABILITY HAZARD: 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand: Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur: Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in accordance with Annex D. Liquids, solids and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the *UN Recommendation on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition). Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85 percent by weight. Liquids that have no fire point when tested by ASTM D 92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup, up to a boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air: Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures in air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that, on account of their physical form or environmental conditions, can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with a representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): 4 Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily: Flammable gases. Flammable cryogenic

materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air, Solids containing greater than 0.5 percent by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent.

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures: Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures.

FLAMMABILITY LIMITS IN AIR:

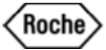
Much of the information related to fire and explosion is derived from the **National Fire Protection Association (NFPA)**. **Flash Point** - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. **Autoignition Temperature**: The minimum temperature required to initiate combustion in air with no other source of ignition. **LEL** - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. **UEL** - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. **Other Information:** **BEI** - ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

ECOLOGICAL INFORMATION:

EC is the effect concentration in water. **BCF** = Bioconcentration Factor, which is used to determine if a substance will concentrate in lifeforms which consume contaminated plant or animal matter. **TL_m** = median threshold limit; Coefficient of Oil/Water Distribution is represented by **log K_{ow}** or **log K_{oc}** and is used to assess a substance's behavior in the environment.



AmpliTa^q Gold®; AmpliTa^q Gold® HC;

AmpliTa^q Gold® with GeneAmp® 10X PCR Gold Buffer and MgCl₂ Solution

DEFINITION OF TERMS (Continued)

REGULATORY INFORMATION:

U.S. and CANADA:

ACGIH: American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Superfund Amendments and Reauthorization Act (**SARA**); the Canadian Domestic/Non-Domestic Substances List (**DSL/NDSL**); the U.S. Toxic Substance Control Act (**TSCA**); Marine Pollutant status according to the **DOT**; the Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA or Superfund**); and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label. **OSHA** - U.S. Occupational Safety and Health Administration.

EUROPEAN and INTERNATIONAL:

The DFG: This is the Federal Republic of Germany's Occupation Health Agency, similar to the U.S. OSHA. **EU** is the European Community (formerly known as the **EEC**, European Economic Community). **EINECS:** This is the European Inventory of Now-Existing Chemical Substances. The **ARD** is the European Agreement Concerning the International Carriage of Dangerous Goods by Road and the **RID** are the International Regulations Concerning the Carriage of Dangerous Goods by Rail.