

MATERIAL SAFETY DATA SHEET

Glycerol Kinase - Arthrobacter sp.

Section 1: Product and Company Identification

Material name	Glycerol Kinase - Arthrobacter sp.	
Synonyms	Glycerokinase; GK; ATP:glycerol 3-phosphotransferase	
Product No.	70-1291-00; 70-1291-01; 70-1291-10; GLKI-70-1291	
Product description	Lyophilized powder containing enzyme (protein) and buffering salts.	
Product use	For In Vitro Diagnostic Use Only.	
Emergency Telephone Numbers	Distributor	Corporate Headquarters
Americas: +1-760-476-3962	Sekisui Diagnostics (UK) Ltd	Sekisui Diagnostics LLC
Europe, Middle East	50 Gibson Drive	31 New York Avenue
& Africa: +1-760-476-3961	Kings Hill, West Malling	Framingham, MA 01701
Asia Pacific: +1-760-476-3960	Kent ME19 4AF UK	USA
Access code: 333512	Phone: 44 (0) 1732 220022	Phone: 508-661-1835

Section 2: Hazards Identification

Emergency overview	The chemical, physical and toxicological properties of this preparation, pertaining directly to occupational exposures, have not been thoroughly characterized.
OSHA regulatory status	This preparation is classified as hazardous under U.S. OSHA 29 CFR 1910.1200; E.C. Directive 1999/45/EC; Canadian R.S. 1985, c. H-3; U.K. CHIPS 2002 No. 1689; and/or U.N. GHS ST/SG/AC 10/30. Refer to Sec. 15, Regulatory Information, for details regarding hazard classification.
Precautionary statements	None of the components present in this preparation at concentrations equal to or greater than 0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen. WARNING! May be irritating to eyes, respiratory system and skin. May cause sensitization by inhalation. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: white to light-yellow powder.
Potential health effects:	
Routes of exposure	Typical occupational exposure routes are inhalation and skin contact.
Eyes	Eye exposure may cause irritation, redness, watering and pain.
Skin	Skin contact may cause irritation, dryness, redness, itching, burning, discomfort and swelling. As with all enzymes, skin irritation is possible, particularly at high enzyme concentrations, with prolonged enzyme contact, and under moist conditions.
Inhalation	Inhalation may be irritating to the nasal passages and throat. Respiratory sensitization may develop in certain individuals after repeated exposure, producing mild to severe symptoms similar to pollen allergy or asthma, including mucous membrane or eye irritation, itching of the skin or eyes, sneezing, nasal or sinus congestion, coughing, wheezing and tightness in the chest. These symptoms may develop as late as 12 hours after exposure.
Ingestion	Ingestion of large amounts may cause nausea, vomiting, diarrhea, dizziness, burning sensation, and tightness and numbness in the face and neck.
Chronic effects	Repeated and/or prolonged inhalation by certain individuals may result in respiratory sensitization and possibly permanent decreases in lung function.
Medical conditions aggravated by exposure	Individuals with pre-existing allergies to enzyme products may be more susceptible to health effects from accidental exposure and should be evaluated for their suitability for working with this product. Medical supervision for all employees who handle or come in contact with respiratory sensitizers is recommended.
Target organs	Respiratory system

Section 3: Composition / Information on Ingredients

Ingredient Name	CAS #	EC #	% (wt/wt)
Monosodium glutamate	142-47-2	205-538-1	45 - 55
EC R-Phrases: None	EC Hazard Class: None		
Glycerol kinase	9030-66-4	232-862-0	40 - 50
EC R-Phrases: R42	EC Hazard Class: Xn		
Potassium phosphate, monobasic	7778-77-0	231-913-4	6 - 8
EC R-Phrases: None	EC Hazard Class: None		

NOTE - Glycerol kinase - Enzyme source: Arthrobacter sp., Enzyme Commission number: 2.7.1.30

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Immediately flush eyes with plenty of tepid water while separating eyelids with fingers, removing contact lenses if worn. Obtain medical attention if needed or if symptoms, such as redness or irritation persist.

Skin contact

In case of contact, flush skin with copious amounts of cool water and remove contaminated clothing. Wash material from skin with soap and water and rinse thoroughly with clean water. Obtain medical attention if needed or if irritation or other symptoms develop.

Inhalation

If inhaled, move from exposure area to fresh air. Seek immediate medical attention if breathing becomes difficult or if cough or other symptoms develop. Watch for delayed symptoms.

Ingestion

In case of ingestion, drink 4 to 8 ounces (120 to 240 mL) of water to dilute. Seek medical attention if symptoms of digestive irritation or discomfort occur.

Section 5: Fire Fighting Measures**Flammable properties**

Like most organic solids, material will burn when exposed to sufficient heat or upon contact with an ignition source.

Suitable extinguishing media

Carbon dioxide, chemical foam, dry chemical or water spray.

Specific hazards arising from the chemical

Irritating or highly toxic gases may be generated by combustion, including carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), phosphorus oxides (PO_x), potassium oxides (KO_x) and sodium oxides.

Standard protective equipment and precautions for firefighters

As in any fire, firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

Section 6: Accidental Release Measures**Personal precautions**

Wear Personal Protective Equipment (PPE) as indicated in Section 8. Ensure adequate ventilation. Avoid physical contact with material and avoid generating or inhaling dust. Wash hands thoroughly after handling.

Methods and materials for containment and clean-up

Carefully vacuum up powdered spill with a HEPA-filtered vacuum and transfer into an appropriate clean, dry container. (If vacuuming is not possible lightly mist the spill to keep the dust down, taking care to avoid slipping, and scoop up.) After material pickup is complete, wash spill site to remove any residual material and dry completely. Dispose of spilled material and contaminated waste in accordance with all applicable federal, state, local and provincial environmental regulations, per Section 13.

Section 7: Handling and Storage**Handling**

Follow good laboratory hygiene practices. Wear proper Personal Protective Equipment (PPE) and employ exposure controls as indicated in Section 8. Avoid physical contact. Minimize dust generation during use. Wash hands thoroughly after handling.

Storage

Refer to product label and/or literature for specific storage conditions. The recommended storage temperature(s) at the time of MSDS preparation/revision is: Store desiccated at -20°C (-4°F). Keep container tightly closed. Do not store with incompatible substances or under avoidable conditions identified in Section 10.

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Section 8: Exposure Controls / Personal Protection

Exposure guidelines	There are no ACGIH, NIOSH, or OSHA occupational exposure limits currently established for components present in this preparation at concentrations equal to or greater than 1% (0.1% if carcinogen).
Engineering controls	Provide adequate ventilation by means of mechanical exhaust, to keep airborne concentrations low. Local exhaust is preferred, because it can control the emissions of the contaminant at its source, preventing dispersion into the general work area. Ventilation systems should be fitted with High Efficiency Particulate Air (HEPA) filters or other proper exhaust control at mixing and filling sites and where operations can create dust or aerosols. Facilities storing or utilizing this preparation should be equipped with an eyewash fountain and a safety shower.
Personal protective equipment:	
Eye / face protection	Wear appropriate protective safety eye wear as described in the ANSI standard 787.1-2003, OSHA's eye and face protection regulations 29 CFR 1910.133 and/or European Standard EN 166.
Skin protection	Wear appropriate protective clothing, such as a lab coat or other long-sleeved garment over your clothes, to minimize contact and contamination of clothing. Change into clean clothes promptly if clothing becomes contaminated. Wash contaminated clothing before reuse.
Hand protection	Prevent skin exposure by wearing protective gloves impermeable to this material/preparation. Change gloves regularly or immediately if they are contaminated, torn or punctured.
Respiratory protection	A respiratory protection program that meets U.S. Federal OSHA 29 CFR 1910.134 and ANSI Z99.2, Canadian CSA Standard Z94.4-93, European Standard CR 529, or other applicable regulatory standards must be followed whenever exposure limits are exceeded and engineering controls are not feasible, or if insufficient ventilation or workplace conditions warrant a respirator's use. In such cases an air purifying respirator equipped with particulate filter cartridges, (42 CFR 84 - NIOSH Part 84 particulate filter, EN 141/143 particulate "P" filter), selected to provide a filtration efficiency appropriate to your workplace is recommended.
General	Consult your company's safety manager/industrial hygienist or your safety equipment manufacturer/supplier for assistance with your selection of appropriate PPE.

Section 9: Physical and Chemical Properties

Appearance	White to light-yellow powder
Odor	Slight odor
pH	Not available
Melting point/Freezing point	Not available / Not available
Boiling point	Not applicable
Molecular formula	Protein mixture
Other	Minimum Ignition Energy (MIE) for dust not available
Other	Minimum Ignition Temperature (MIT) for dust not available
Vapor pressure	Not applicable
Vapor density	Not applicable
Solubility	Water-soluble
Partition coefficient (n-octanol/water)	Not available

Section 10: Chemical Stability and Reactivity Information

Possibility of hazardous reactions	Hazardous polymerization will not occur.
Chemical stability	Stable under ordinary conditions of use and storage; (see handling and storage information in Section 7).
Conditions to avoid	Avoid heat, flames, sparks and ignition sources. Avoid prolonged exposure to direct sunlight. Excessive heat may damage the product.
Incompatible materials	Avoid strong oxidizing agents, strong acids and bases.
Hazardous decomposition products	Thermal decomposition may lead to release of irritating gases and vapors.

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Section 11: Toxicological Information

Acute effects:

May be irritating to the eyes, skin and respiratory system.

NIOSH - Selected LD50s and LC50s

Monosodium glutamate	142-47-2	Oral LD50 Rat: 16600 mg/kg; Oral LD50 Mouse: 11400 mg/kg
Potassium phosphate, monobasic	7778-77-0	Dermal LD50 Rabbit: >4640 mg/kg

Local effects

Chronic effects

Chronic respiratory exposures in sensitized individuals may result in permanent decrease in lung function.

Sensitization

May cause sensitization by inhalation.

Section 12: Ecological Information

Ecotoxicity:

No information available for product.

Section 13: Disposal Considerations

Methods of disposal

Dispose of unused product, spilled material and waste in accordance with all applicable federal, state, local and provincial environmental and hazardous waste regulations.

Packaging

Containers of this material may retain product residues. Handle contaminated packaging in the same way as the substance itself, by disposing in accordance with all applicable federal, state, local, and provincial environmental and hazardous waste regulations. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

Waste classification

Chemical waste generators must refer to the relevant hazardous waste regulations to ensure complete and accurate classification. Disposal regulations may vary according to geographic location.

Section 14: Transport Information

Basic shipping description

Contact Sekisui for shipping information.

Section 15: Regulatory Information

US Federal Regulations:

Inventory - United States - Section 8(b) Inventory (TSCA):

Glycerol kinase	9030-66-4	XU
Monosodium glutamate	142-47-2	Present
Potassium phosphate, monobasic	7778-77-0	Present

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International Regulations:

Canada - WHMIS - Classifications of Substances

Monosodium glutamate	142-47-2	D2A
Potassium phosphate, monobasic	7778-77-0	Uncontrolled product according to WHMIS classification criteria

Inventory - Australia - Inventory of Chemical Substances (AICS)

Glycerol kinase	9030-66-4	Present
Monosodium glutamate	142-47-2	Present
Potassium phosphate, monobasic	7778-77-0	Present

Inventory - Canada - Domestic Substances List (DSL)

Monosodium glutamate	142-47-2	Present
Potassium phosphate, monobasic	7778-77-0	Present

Inventory - Canada - Organisms on the Domestic Substances List (DSL)

Glycerol kinase	9030-66-4	IUB #2.7.1.30
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Inventory - China

Glycerol kinase	9030-66-4	Present
Monosodium glutamate	142-47-2	Present
Potassium phosphate, monobasic	7778-77-0	Present

Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

Glycerol kinase	9030-66-4	232-862-0
Monosodium glutamate	142-47-2	205-538-1
Potassium phosphate, monobasic	7778-77-0	231-913-4

Inventory - Japan Existing and New Chemical Substances (ENCS)

Monosodium glutamate	142-47-2	9-1540
Potassium phosphate, monobasic	7778-77-0	1-452

Inventory - Korea - Existing and Evaluated Chemical Substances

Glycerol kinase	9030-66-4	KE-21797
Monosodium glutamate	142-47-2	KE-17776
Potassium phosphate, monobasic	7778-77-0	KE-28622

Switzerland - Toxic Substances Classification

Potassium phosphate, monobasic	7778-77-0	Class 5
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Canadian Hazardous Products

WHMIS Status	Controlled
Classification	
D2B - Other Toxic Effects-TOXIC	



European Communities Dangerous Substances/Preparations

EC Hazard Class	Xn - Harmful
Symbols	



Risk Phrases

R42

May cause sensitization by inhalation.

Safety Phrases

S22

Do not breathe dust.

S36

Wear suitable protective clothing.

S45

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

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For In Vitro Diagnostic Use Only. Not for human or drug use.

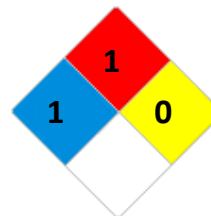
Further Information:

This MSDS has been prepared in accordance with the ANSI Z400.1 format. Every effort has been made to adhere to the hazard criteria and content requirements of the U.S. OSHA Hazard Communication Standard, Canadian Controlled Products Regulation (CPR), UK Chemical Hazard Information and Packaging Regulations, European Communities REACH Regulation, and UN Globally Harmonized System of Classification and Labelling of Chemicals.

The hazard ratings on this MSDS are for appropriately trained workers using a Hazardous Materials Identification System (HMIS®) or a National Fire Protection Association (NFPA) 704 program. The ratings are estimates and should be treated as such. The hazard rating scales range from (0) minimal hazards to (4) significant hazards or risks. Chronic (long-term) health effects are indicated in the HMIS® by an asterisk (*). HMIS® is a registered trade and service mark of the NPCA. For details on HMIS® ratings visit www.paint.org/hmis. For details on NFPA 704 visit www.nfpa.org.

HMIS® RATINGS

HEALTH	*	2
FLAMMABILITY		1
PHYSICAL HAZARD		0

NFPA RATINGS**Target Organ(s):**

Respiratory system

MSDS Origination Date: 04 January, 2006**Version #:** 2**Revision Date:** 30 November, 2012**Disclaimer:**

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