

MATERIAL SAFETY DATA SHEET

Choline Oxidase Ex. Arthrobacter globiformis

Section 1: Product and Company Identification

Material name	Choline Oxidase Ex. Arthrobacter globiformis	
Synonyms	Choline oxidase	
Product No.	CHOX-70-1121	
Product description	Lyophilized powder containing enzyme (protein) and salts.	
Product use	Enzyme reagent for laboratory use.	
Emergency Telephone Numbers	Manufacturer/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

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. CHIP 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. CAUTION! The chemical, physical and toxicological properties of this preparation have not been thoroughly characterized. Irritating to eyes. Avoid contact with eyes and skin. Do not ingest or inhale. Preparation appearance: yellow powder.
Potential health effects:	
Routes of exposure	Occupational exposure routes may include eye contact, skin contact and inhalation.
Eyes	Potassium chloride is irritating to the eyes. Eye exposure may cause irritation, redness, watering and pain.
Skin	No data available. Skin contact may cause irritation, dryness and redness.
Inhalation	No data available. Although there is no evidence that the enzyme(s) in this preparation induces specific respiratory hypersensitivity, all proteins are potential respiratory allergens and may result in respiratory sensitization in certain individuals after repeated and/or prolonged inhalation 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, and tightness in the chest. These symptoms may develop as late as 12 hours after exposure.
Ingestion	No data available.
Chronic effects	No data available. Repeated inhalation may result in respiratory sensitization.
Target organs	Potassium chloride: eyes.
Potential environmental effects	No data available.

Section 3: Composition / Information on Ingredients

Ingredient Name	CAS #	EC #	% (wt/wt)
Choline oxidase	9028-67-5	232-840-0	< 80
EC R-Phrases: None	EC Hazard Class: None		
Potassium chloride	7447-40-7	231-211-8	>= 20
EC R-Phrases: R36	EC Hazard Class: Xi		
Ethylenediamine tetraacetic acid (EDTA)	60-00-4	200-449-4	<= 2
EC R-Phrases: R36	EC Hazard Class: Xi		

NOTE - Choline oxidase - Enzyme source: Arthrobacter globiformis, Enzyme Commission number: 1.1.3.17

Section 4: First Aid Measures

First aid procedures:	
Eye contact	Immediately flush eyes with plenty of tepid water for 15 minutes while separating eyelids with fingers. Remove 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 cool water and remove contaminated clothing. Obtain medical attention if needed or if irritation or other symptoms develop.
Inhalation	If inhaled, move from exposure area to fresh air. Seek medical attention if breathing becomes difficult or if cough or other symptoms develop.
Ingestion	In case of ingestion, contact a poison control center or physician for instructions.

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Section 5: Fire Fighting Measures

Flammable properties	Material may burn when exposed to sufficient heat.
Suitable extinguishing media	Use extinguishing media suitable for surrounding fire, such as carbon dioxide, chemical foam, dry chemical or water spray.
Unsuitable extinguishing media	Unknown.
Specific hazards arising from the chemical	Toxic gases may be generated by combustion, including carbon monoxide (CO), carbon dioxide (CO ₂), nitrogen oxides (NO _x) and potassium oxides (KO _x).
Standard protective equipment and precautions for firefighters	Firefighters should wear NIOSH-approved or equivalent Self-Contained Breathing Apparatus and full protective gear.

Section 6: Accidental Release Measures

Personal precautions	Avoid physical contact with material and avoid generating or inhaling dust. Ensure adequate ventilation. Wear Personal Protective Equipment (PPE) as indicated in Section 8. Wash hands thoroughly after handling.
Environmental precautions	No information available.
Methods and materials for containment and clean-up	Do not dry sweep powder. Use HEPA-filtered vacuum, if available, otherwise wet mop to clean up a powder spill. Decontaminate the spill site following standard procedures. Dispose of materials 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. See Section 8, Engineering Controls. Minimize contact and contamination of personal clothing and skin. Wash hands thoroughly after handling.
Storage	Store desiccated at -20°C (-4°F). Do not store with incompatible substances; see Section 10.

Section 8: Exposure Controls / Personal Protection

Exposure guidelines	There are no ACGIH, NIOSH, OSHA or country-specific 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	Use in well ventilated areas. If handling large quantities or there is a potential for dust or aerosol generation, use local exhaust ventilation. Facilities storing or using this material should be equipped with an eyewash fountain and a safety shower.
Personal protective equipment:	
Eye / face protection	Wear appropriate protective chemical safety glasses.
Skin protection	Wear lab coat or other protective garments. Remove contaminated clothing promptly.
Hand protection	Wear chemical resistant protective gloves.
Respiratory protection	A respirator is not required under normal conditions of use.
General	Follow company-specific safety procedures.

Section 9: Physical and Chemical Properties

Appearance	Yellow powder
Odor	Not available
pH	7 - 8 (in aqueous solution)
Melting point/Freezing point	Not available / Not applicable
Boiling point	Not applicable
Evaporation rate	Not applicable
Flash point	Not applicable
Flammability/explosivity limits in air, upper	Not applicable
Flammability/explosivity limits in air, lower	Not applicable
Vapor pressure	Not available
Density	Not available
Solubility	Water-soluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available

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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 Section 7.	
Conditions to avoid	Unknown.	
Incompatible materials:		
Physical properties - chemical incompatibilities		
Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Incompatible with sulfuric acid, bases, ammonia, aliphatic amines, alkanolamines, isocyanates, alkylene oxides, epichlorohydrin.
Hazardous decomposition products	Thermal decomposition may lead to release of irritating gases and vapors.	

Section 11: Toxicological Information

Acute effects:

Toxicological data - Selected LD50s and LC50s

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Oral LD50 Rat: 1658 mg/kg; Dermal LD50 Rat: >2000 mg/kg
Potassium chloride	7447-40-7	Oral LD50 Rat: 2600 mg/kg
Local effects	No data available.	
Chronic effects	No data available.	
Sensitization	No data available.	
Carcinogenicity	No data available.	
Mutagenicity	No data available.	
Reproductive effects	No data available.	
Teratogenicity	No data available.	

Section 12: Ecological Information

Ecotoxicity:

Ecotoxicity - Freshwater Algae Data

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	72 Hr EC50 <i>Scenedesmus subspicatus</i> : 1.01 mg/L
Potassium chloride	7447-40-7	72 Hr EC50 <i>Scenedesmus subspicatus</i> : 2500 mg/L

Ecotoxicity - Freshwater Fish Species Data

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	96 Hr LC50 <i>Lepomis macrochirus</i> : 41 mg/L [static]; 96 Hr LC50 <i>Pimephales promelas</i> : 59.8 mg/L [static]
Potassium chloride	7447-40-7	96 Hr LC50 <i>Lepomis macrochirus</i> : 2010 mg/L [static]

Ecotoxicity - Water Flea Data

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	96 Hr EC50 water flea: >100 mg/L [Static] (as trisodium salt)
Potassium chloride	7447-40-7	48 Hr EC50 <i>Daphnia magna</i> : 825 mg/L

Persistence and degradability No data available.

Bioaccumulation potential No data available.

Mobility in environmental media No data available.

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.
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Section 14: Transport Information

Basic shipping description	Not classified as dangerous goods. Not regulated per IATA and DOT regulations.
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Section 15: Regulatory Information
US Federal Regulations:
Inventory - United States - Section 8(b) Inventory (TSCA):

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Present
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Potassium chloride	7447-40-7	Present
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U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	5000 lb final RQ; 2270 kg final RQ
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US State Regulations
U.S. - California - 8 CCR Section 339 - Director's List of Hazardous Substances

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Present
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International Regulations:
Canada - WHMIS - Classifications of Substances

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	D2B
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Potassium chloride	7447-40-7	Uncontrolled product according to WHMIS classification criteria (including 23.8%)
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Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	ID Number 104, hazard class 2 - hazard to waters
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Potassium chloride	7447-40-7	ID Number 230, hazard class 1 - low hazard to waters
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Inventory - Australia - Inventory of Chemical Substances (AICS)

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Present
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Potassium chloride	7447-40-7	Present
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Inventory - Canada - Domestic Substances List (DSL)

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Present
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Potassium chloride	7447-40-7	Present
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Inventory - China

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	Present
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Potassium chloride	7447-40-7	Present
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Inventory - European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

Choline oxidase	9028-67-5	232-840-0
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Ethylenediamine tetraacetic acid (EDTA)	60-00-4	200-449-4
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Potassium chloride	7447-40-7	231-211-8
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Inventory - Japan Existing and New Chemical Substances (ENCS)

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	2-1263; 2-1296
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Potassium chloride	7447-40-7	1-228
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Inventory - Korea - Existing and Evaluated Chemical Substances

Ethylenediamine tetraacetic acid (EDTA)	60-00-4	KE-13648
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Potassium chloride	7447-40-7	KE-29086
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Canadian Hazardous Products

WHMIS Status	Controlled
Classification	
D2B - Other Toxic Effects-TOXIC	



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European Communities Dangerous Substances/Preparations

EC Hazard Class

Xi - Irritant

Symbols

**Risk Phrases**

R36

Irritating to eyes.

Safety Phrases

S26

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Section 16: Other Information**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 (GHS).

MSDS Origination Date: 05 April, 2005**Version #:** 4**Revision Date:** 23 November, 2012**Disclaimer:**

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