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## MATERIAL SAFETY DATA SHEET

### CHEMICAL IDENTITY

Ethylene Glycol

### 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

PRODUCT NAME: MAD reagent, Marker detector and Mouse IgG enhancer for Easy - WESTERN II (BCL-EZS01, BCL-EZS02, BCL-EZS04, BCL-EZS03)  
Detection IgGs for HB Pre-S1 and Pre-S2 antigen Quantitative ELISA kits, Rapid (BCL-S1HP-01, and BCL-S2HP-01)  
MAD reagents for Leishmaniasis and Filariasis urinary antibody detection ELISA kits (BCL-LEI-0, BCL-FIL-01)

PRODUCT CODE: BCL-EZS21, BCL-EZS22, BCL-EZS23, BCL-EZS24, BCL-EZQ21, BCL-EZQ22, BCL-EZQ23, BCL-EZQ24, BCL-EZH01, BCL-EZM01, BCL-EZE01, BCL-1DA1, BCL-2DA1, BCL-MR

CHEMICAL IDENTIFICATION: Ethylene Glycol  
CONTENT IN THE PRODUCT: 30 ~ 43.3%  
RECOMMENDED USE: Western blotting and ELISA (for research use only)  
MANUFACTURER: Beacle Inc.  
SUPPLIER: Beacle Inc.  
Address: 25-10 Kamikazan-Sakajiri, Yamashina-ku, Kyoto, Japan  
Tel: +81-75-582-8505  
Fax: +81-75-582-6055  
Emergency: +81-75-582-8505

(THE BELOW DESCRIPTION IS APPLIED FOR THE IDENTIFIED CHEMICAL OF 100%)

### 2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION: Skin corrosion/irritation: Category 3  
Serious eye damage/eye irritation: Category 2B  
Acute toxicity-Oral: Category 5  
Toxic to reproductive: Category 1B  
Specific target organ systemic toxicity Single exposure: Category 1<central nervous system><kidney><heart><respiratory organ>  
Specific target organ systemic toxicity Repeated exposure: Category 1<central nervous system><heart><respiratory organ>

HAZARD SYMBOL: **DANGER**

HAZARD STATEMENTS: Causes mild skin irritation  
Causes eye irritation  
May be harmful if swallowed  
May damage fertility or the unborn child  
Causes damage to organs<central nervous system><kidney><heart><respiratory organ>  
Causes damage to organs through prolonged or repeated exposure<central nervous system><heart><respiratory organ>

PRECAUTIONARY STATEMENTS: Avoid breathing dust/fume/gas/vapours.  
Do not eat, drink or smoke when using this product.  
Use personal protective equipment as required.  
Wash hands thoroughly after handling.  
Get medical attention/advice if you feel unwell. .  
IF exposed or concerned: Get medical attention/advice.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
If skin irritation occurs, get medical advice/attention.  
Store locked up.  
Dispose of contents/container to a located point (in accordance with local/regional/national/international regulation).

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL IDENTITY: Ethylene glycol  
SYNONYMS: 1,2-Ethanediol, Ethylenealcohol, Glycol, 1,2-Dihydroxyethane  
FORMULA: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>  
MOLECULAR WEIGHT: 62.07  
CAS NUMBER: 107-21-1  
TSCA INVENTORY: Listed  
EINECS No.: 203-473-3  
EC INDEX NUMBER: 603-027-00-1

### 4. FIRST AID MEASURES

GENERAL ADVICE: Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.

INHALATION: Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.

SKIN CONTACT :	Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.
EYE CONTACT :	Remove any contact lenses at once. Flush eyes well with flooding amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician.
INGESTION :	Rinse mouth, give plenty of water to dilute the substance and induce vomiting(only in conscious persons!). Never give anything by mouth to an unconscious person. Transport to a hospital immediately.
<b>5. FIRE FIGHTING MEASURES</b>	
EXTINGUISHING MEDIA :	Carbon dioxide, dry chemical powder, alcohol resistant foam, water
FIRE & EXPLOSION HAZARDS :	Toxic, irritating fumes or smoke may be emitted.
SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHT	Firemen should wear normal protective equipment(full bunker gear)and positive-pressure self-contained breathing apparatus.
<b>6. ACCIDENTAL RELEASE MEASURES</b>	
PERSONAL PRECAUTIONS :	Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.
ENVIRONMENTAL PRECAUTIONS :	Prevent spills from entering sewers, watercourses or low areas.
METHODS FOR CLEANING UP :	Do not touch spilled material without suitable protection(See section 8). Take up spilled material with ashes or other absorbents. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Put all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose of contaminated clothing.
<b>7. HANDLING AND STORAGE</b>	
PRECAUTION FOR SAFE HANDLING :	Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Handle material with suitable protection away from source of heat or ignition and use non-sparking type tools. This material is hygroscopic.
CONDITIONS FOR SAFE STORAGE :	Store away from sunlight in well-ventilated dry place at room temperature (preferably cool place). Keep container tightly closed.
INCOMPATIBILITIES :	Oxidizers, strong alkalis, chlorosulfonic acid, sulfuric acid and sulfuric acid, fuming
<b>8. EXPOSURE CONTROLS/PERSONAL PROTECTION</b>	
ENGINEERING MEASURES :	Use exhaust ventilation to keep airborne concentrations below exposure limits. Use only with adequate ventilation.
VENTILATION :	Local Exhaust ; Necessary, Mechanical(General) ; Recommended
INDIVIDUAL PROTECTION MEASURES ;	
Respiratory protection :	Use a NIOSH/MSHA or European Standard EN149 approved respirator if the vapor concentrations exceed regulatory guidelines.
Hand protection :	Chemical resistant gloves
Eye protection :	Safety glasses(goggles)
Skin protection :	Protective clothing
CONTROL PARAMETER :	
OSHA Final Limits :	TWA= 10mg/m3;
ACGIH TLV(s) :	Ceiling= 100mg/m3
<b>9. PHYSICAL AND CHEMICAL PROPERTIES</b>	
APPEARANCE :	Colourless clear liquid
ODOUR :	Odourless
pH :	Not available
MELTING POINT :	-13 °C= -8.6 °F
INITIAL BOILING POINT :	Approx. 198 °C= 388 °F
FLASH POINT :	116 °C= 241 °F(TCC)
FLAMMABILITY (solid, gas) :	-----
EXPLOSIVE LIMITS :	Lower; 3.2 %, Upper; 15.3 %
VAPOR PRESSURE :	7Pa (at 20 °C= 68 °F)
VAPOR DENSITY :	2.1(Air=1)
RELATIVE DENSITY :	1.112-1.115g/ml (at 20 °C= 68 °F)
SOLUBILITY IN ;	
WATER :	Miscible
DIETHYL ETHER :	Miscible
ALCOHOL :	Miscible
PARTITION COEFFICIENT :	-1.36
AUTOIGNITION TEMPERATURE :	402 °C= 756 °F
DECOMPOSITION TEMPERATURE :	Not available
<b>10. STABILITY AND REACTIVITY</b>	
CHEMICAL STABILITY :	Will not occur.
CONDITIONS TO AVOID :	Sunlight, heat, moisture, open flames, high temperature, sparks and other ignition sources
INCOMPATIBLE MATERIALS :	Oxidizers, strong alkalis, chlorosulfonic acid, sulfuric acid and sulfuric acid, fuming
HAZARDOUS DECOMPOSITION PRODUCTS :	Carbon monoxide may be formed.
<b>11. TOXICOLOGICAL INFORMATION</b>	
ACUTE TOXICITY(oral/dermal/inhalation) :	LD50(ori,rat) : 4700mg/kg (VCVGK* -,139,1984) LDLo(ori,human): 398mg/kg (SMEZA5 26(2),48,1983) LD50(ori,mouse): 5500mg/kg(GISAAA 32(3),31,1967) LC(ihl,rat): >200mg/m3/4H(GTPZAB 25(11), 57,1981) LD50(skin,rabbit): 9530µL/kg(34ZIAG -,731,1969) LD50(ori,rat): 4000-10200mg/kg(CICAD 45, 2002)
SKIN CORROSION/IRRITATION :	Skin; rabbit; 555mg; Mild (UCDS** 7/21/1965)
EYE DAMAGE/EYE IRRITATION :	Eye ; rabbit; 1440mg/6H; Moderate(BUYRAI 31,25,1977)
RESPIRATORY OR SKIN SENSITIZATION :	Not available
GERM CELL MUTAGENICITY :	DNA inhibition; human: lymphocyte; 320mmol/L(PNASA6 79,1171,1982)

TOXIC TO REPRODUCTION :	Reverse mutation assay in S.typhimuriun and E.coli; Negative TDLo(ori, rat): 8580mg/kg(female 6-15D preg)(CHYCDW 20,289,1986) TCLo(ihl, rat): 2500mg/m3/6H(female 6-15D preg)(FAATDF 24,57,1995)
STOST-SINGLE EXPOSURE :	Human; 34 days after accidental ingestion; disturbance of consciousness, convulsion, stuporosa, renal disorder(CERI Hazard sheet data, 97-24, 1998)
STOST-REPEATED EXPOSURE :	Human; unconsciousness, ocular concussion, light headache and lumbago(Japan, department of environment report vol 3,2004)
ASPIRATION TOXICITY :	Not available
CARCINOGENICITY :	Not available
ADDITIONAL INFORMATION :	
NTP :	Not listed
IARC :	Not listed
OSHA :	Not listed
ACGIH :	Not Classifiable as a Human Carcinogen (A4)
EPA GENETOX PROGRAM 1988, Negative: Histidine reversion-Ames test	
EPA GENETOX PROGRAM 1988, Inconclusive: D melanogaster-whole sex chrom. loss	
<b>12. ECOLOGICAL INFORMATION</b>	
ECOTOXICITY :	LC50(Guppies) : 493000ppm/7days LC50(goldfish) : >5000mg/l/24hr LC50(golden orfe): >100000mg/l LC50(daphnids): >1100mg/L/48hr LC50(orange-red killifish): >100mg/L/96hr
PERSISTENCE AND DEGRADABILITY :	This material is biodegradable.
BIOACCUMULATION POTENTIAL :	Not available
MOBILITY IN SOIL :	Not available
OTHER ADVERSE EFFECTS :	WGK; 1
<b>13. DISPOSAL CONSIDERATION (INCLUDING CONTAINER)</b>	
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber in accordance After contents are completely removed, dispose of its container at hazardous or special waste collection point. (in accordance with	
<b>14. TRANSPORT INFORMATION</b>	
IATA :	Not Restricted.
MARINE POLLUTANT :	Yes
DOT(Department of Transportation) :	Not a Hazardous Material for DOT shipping.
<b>15. REGULATORY INFORMATION</b>	
US REGULATIONS :	
CAA/111 Volat. Org. Comp., CAA/112 1990 Amend., CERCLA Haz. Subst., SARA III/313 Tox. Chem., NTP Test. Prog., DOT Haz. Sub. and Rep.	
EPA :	CERCLA RQ= 5000lb EPCRA SECTION 313 de minimis concentration is 1.0%. EPCRA TPQ= Not listed
OSHA :	TQ= Not listed
NFPA :	HR= health- 1, flam.- 1, react.- 0
HMIS :	HR= health- 1, flam.- 1, react.- 0
<b>16. OTHER INFORMATION INCLUDING INFORMATION ON PREPARATION AND REVISION OF THE SDS</b>	
No specific notes	

The information described above is believed to be correct to be the best of our knowledge and information but does not purport to be all inclusive and shall be used only as a guide. The product should be used by expert persons having knowledge and skill with their own risk. Beacle shall not be held liable for any damageresulting from handling or from contact with the above material.