



BARTEK INGREDIENTS INC.
 421 SEAMAN STREET
 STONEY CREEK; ONTARIO; L8E 3J4
 CANADA

PRODUCT: DL MALIC ACID, 50-60% SOLUTION, TYPE A

Section 01: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER/SUPPLIER..... BARTEK INGREDIENTS INC.
 421 SEAMAN STREET
 STONEY CREEK
 ONTARIO
 CANADA
 L8E 3J4
 905-662-3292

PREPARED BY..... REGULATORY AFFAIRS
 PREPARATION DATE..... Nov02/09

PRODUCT CODE
 PRODUCT NAME..... DL MALIC ACID, 50-60% SOLUTION, TYPE A
 CHEMICAL NAME & SYNONYMS..... HYDROXYBUTANEDIOIC ACID.
 CHEMICAL FORMULA..... MIXTURE.
 PRODUCT USE..... FOOD ACIDULANT, CHELATING AGENT.
 EMERGENCY PHONE NO..... IN CASE OF A DANGEROUS GOODS EMERGENCY CALL CANUTEC AT THE
 24-HOUR NUMBER 613-996-6666.

Section 02: COMPOSITION/INFORMATION ON INGREDIENTS

| Hazardous Ingredients | % | Exposure Limit | C.A.S.# | LD/50, Route, Species | LC/50 Route, Species |
|-----------------------|-------|----------------|-----------|-----------------------|----------------------|
| DL MALIC ACID | 45-65 | SEE SECTION 11 | 6915-15-7 | SEE SECTION 11 | SEE SECTION 11 |
| MALEIC ACID | <12 | SEE SECTION 11 | 110-16-7 | SEE SECTION 11 | SEE SECTION 11 |
| FUMARIC ACID | <4 | SEE SECTION 11 | 110-17-8 | SEE SECTION 11 | SEE SECTION 11 |

Section 03: HAZARDS IDENTIFICATION

ROUTE OF ENTRY:
 SKIN CONTACT..... IRRITATING TO SKIN.
 SKIN ABSORPTION..... N.AV.
 EYE CONTACT..... IRRITATING TO EYES.
 INHALATION..... IRRITATING TO MUCOUS MEMBRANES.
 INGESTION..... HARMFUL IF SWALLOWED.
 EFFECTS OF ACUTE EXPOSURE..... SEE ABOVE. POSSIBLE HYPERSENSITIZATION.
 EFFECTS OF CHRONIC EXPOSURE..... N.AV.

Section 04: FIRST AID MEASURES

INHALATION..... REMOVE PERSON FROM THE AREA OF CONTAMINATION TO FRESH AIR.
 EYE CONTACT..... FLUSH EYES WITH CLEAN WATER, LIFTING EYELIDS OCCASIONALLY, FLUSH WITH
 WATER FOR 15 MINUTES.
 SKIN CONTACT..... WASH AFFECTED BODY AREAS WITH LARGE VOLUMES OF WATER, IF IRRITATION
 PERSISTS, SEE A PHYSICIAN.
 INGESTION..... IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED THE PERSON IS
 CONSCIOUS. GET MEDICAL ATTENTION IMMEDIATELY.
 NOTES TO PHYSICIAN..... N.AV.

Section 05: FIRE FIGHTING MEASURES

FLAMMABILITY..... NON-FLAMMABLE.
 IF YES, UNDER WHICH CONDITIONS?
 EXTINGUISHING MEDIA..... WATER, CARBON DIOXIDE, DRY CHEMICALS.
 FIRE FIGHTING PROCEDURES..... FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND
 SELF-CONTAINED BREATHING APPARATUS.
 FLASH POINT (C), METHOD..... N.AP.
 AUTO IGNITION TEMPERATURE..... N.AP.
 UPPER FLAMMABLE LIMIT (% BY VOL.)... N.AP.
 LOWER FLAMMABLE LIMIT (% BY VOL.)... N.AP.
 SENSITIVITY TO STATIC DISCHARGE..... N.AP.
 SENSITIVITY TO IMPACT..... NIL.
 HAZARDOUS COMBUSTION PRODUCTS.. TOXIC FUMES OF CARBON MONOXIDE, CARBON DIOXIDE.

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PROCEDURES TO BE FOLLOWED IN NEUTRALIZE WITH EXCESS SODA ASH OR SODIUM BICARBONATE; MIX AND
CASE OF LEAK OR SPILL SCOOP UP SLURRY. WASH RESIDUAL WITH WATER. EMPTY CONTAINERS
SHOULD BE TRANSPORTED/DELIVERED USING A REGISTERED WASTE CARRIER
FOR LOCAL RECYCLING OR WASTE DISPOSAL.

Section 07: HANDLING AND STORAGE

HANDLING PROCEDURES AND INITIATE NORMAL SAFETY PROCEDURES. AVOID ALL DIRECT CONTACT WITH
EQUIPMENT THIS MATERIAL. LAUNDRY CONTAMINATED CLOTHING BEFORE REUSE. USE
GOOD PERSONAL HYGIENE AND GOOD HOUSEKEEPING.
STORAGE NEEDS..... DO NOT STORE WITH OXIDANTS, STRONG BASES, AMINES, CARBONATE, AND
ALKALI METALS. STORE IN A COOL DRY PLACE. KEEP CONTAINERS SEALED TO
AVOID CONTAMINATION AND SPILLAGE.

Section 08: EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE/FACE PROTECTION..... SAFETY GLASSES WITH SIDE SHIELDS, CHEMICAL GOGGLES IF CONTACT LIKELY.
SKIN PROTECTION..... PROTECTIVE GLOVES RECOMMENDED.
RESPIRATORY PROTECTION..... USE NIOSH/OSHA APPROVED RESPIRATOR.
PROTECTIVE CLOTHING..... WEAR APPROVED PROTECTIVE WORK BOOTS, WORK CLOTHING. SOME FORM OF
HAT OR HAIR COVERING.
OTHER..... EYE WASH AND SAFETY SHOWER SHOULD BE AVAILABLE NEARBY WHEN THIS
PRODUCT IS HANDLED OR USED.
ENGINEERING CONTROLS..... PROVIDE CORROSION RESISTANT STORAGE TANKS AND TRANSFER LINES.
PROVIDE ADEQUATE VENTILATION. A LOCAL AND/OR GENERAL EXHAUST IS
RECOMMENDED.
HYGIENE MEASURES..... WASH HANDS BEFORE CONSUMPTION OF FOOD OR DRINK.

Section 09: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE..... LIQUID.
APPEARANCE..... CLEAR TO AMBER LIQUID.
ODOUR..... MILD.
ODOUR THRESHOLD..... N.AV.
VAPOUR PRESSURE (MMHG)..... N.AV.
VAPOUR DENSITY (AIR=1)..... N.AV.
BY VOLUME
BY WEIGHT
EVAPORATION RATE..... N.AV.
BOILING POINT..... 101 (C) INITIAL.
FREEZING/MELTING POINT..... -9 (C) TO -14 (C).
PH..... N.AV.
SPECIFIC GRAVITY (WATER=1)..... 1.23.
SOLUBILITY IN WATER (% W/W)..... ALL PROPORTIONS.
COEFFICIENT OF WATER/OIL DIST..... N.AV.

Section 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY:..... STABLE AT NORMAL TEMPERATURES.
CONDITIONS TO AVOID:..... EXCESS HEAT.
INCOMPATIBILITY, MATERIALS TO AVOID: STRONG OXIDANTS, STRONG BASES, ALKALI METALS, AMINES, AND
CARBONATES.
REACTIVITY CONDITIONS:..... CONTACT WITH INCOMPATIBLES.
HAZARDOUS PRODUCTS OF MALEIC ACID, MALEIC ANHYDRIDE, CARBON MONOXIDE, AND CARBON DIOXIDE.
DECOMPOSITION
HAZARDOUS POLYMERIZATION..... WILL NOT OCCUR.

Section 11: TOXICOLOGICAL INFORMATION

EXPOSURE LIMIT OF MATERIAL..... N.AV.
LC 50 OF MATERIAL, SPECIES & ROUTE.. N.AV.
LD 50 OF MATERIAL, SPECIES & ROUTE.. LD50 (ORAL, MOUSE): 1600-3200 MG/KG; LD50 (INTRAPERITONEAL, RAT): 100-200
MG/KG.
CARCINOGENICITY OF MATERIAL..... DL MALIC ACID, MALEIC ACID AND FUMARIC ACID ARE NOT LISTED BY IARC.
REPRODUCTIVE EFFECTS..... N.AV.
TERATOGENICITY:..... N.AV.
MUTAGENICITY..... N.AV.
IRRITANCY OF MATERIAL..... SKIN IRRITATION (RABBIT): MODERATE. EYE IRRITATION (RABBIT): SEVERE.
SENSITIZING CAPABILITY OF MATERIAL. POSSIBLE HYPERSENSITIZATION.
SYNERGISTIC MATERIALS..... N.AV.

PRODUCT: DL MALIC ACID, 50-60% SOLUTION, TYPE A**Section 12: ECOLOGICAL CONSIDERATIONS**

BOD (BIOCHEMICAL OXYGEN DEMAND).. UNKNOWN.
 COD (CHEMICAL OXYGEN DEMAND)..... UNKNOWN.
 ECOTOXICITY..... UNKNOWN.

Section 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL..... DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE FEDERAL,
 PROVINCIAL/STATE AND LOCAL REGULATIONS.

Section 14: TRANSPORT INFORMATION

USA:
 D.O.T. CLASSIFICATION:..... 8.
 CANADA:
 TDG CLASSIFICATION:..... 8.
 PACKAGING GROUP:..... II.
 UN NUMBER..... 1760.
 SPECIAL SHIPPING INSTRUCTIONS..... N.AV.

Section 15: REGULATORY INFORMATION

US REGULATIONS:..... N.AV.
 CANADIAN REGULATIONS:
 WHMIS CLASSIFICATION..... E.
 CPR COMPLIANCE..... 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.

Section 16: OTHER INFORMATION

ADDITIONAL INFORMATION..... BARTEK INGREDIENTS INC. CANNOT ANTICIPATE ALL CONDITIONS UNDER WHICH
 THIS INFORMATION AND ITS PRODUCT, OR THE PRODUCTS OF OTHER
 MANUFACTURERS IN COMBINATION WITH ITS PRODUCT, MAY BE USED. IT IS THE
 USERS' RESPONSIBILITY TO ENSURE SAFE CONDITIONS FOR HANDLING,
 STORAGE AND DISPOSAL OF THE PRODUCT, AND TO ASSUME LIABILITY FOR
 LOSS, INJURY, DAMAGE OR EXPENSE DUE TO IMPROPER USE. THIS
 INFORMATION IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESS OR
 IMPLIED IS MADE.

N.AP.=NOT APPLICABLE
 N.AV.=NOT AVAILABLE