



MURSATT CHEMICALS LIMITED
11 REGALCREST COURT
WOODBIDGE, ONTARIO, CANADA; L4L 8P3
(905)-850-8444

PRODUCT: MOR-CAL

CODE: MUR0035

Section 01: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER/SUPPLIER..... MURSATT CHEMICALS LIMITED
11 REGALCREST COURT
WOODBIDGE, ONTARIO
CANADA
L4L 8P3
PREPARED BY..... REGULATORY AFFAIRS
PREPARATION DATE..... Apr23/14
PRODUCT NAME..... MOR-CAL
PRODUCT CODE..... MUR0035
CHEMICAL FORMULA..... N.AV.
MOLECULAR WEIGHT..... N.AV.
CHEMICAL FAMILY..... N.AV.
MATERIAL USE..... SPA WATER TREATMENT.
EMERGENCY PHONE NO..... CANUTEC (613)-996-6666.

Section 02: HAZARDS IDENTIFICATION

ROUTE OF ENTRY:
SKIN CONTACT..... BRIEF CONTACT IS ESSENTIALLY NONIRRITATING TO SKIN. PROLONGED CONTACT MAY CAUSE SKIN IRRITATION, EVEN A BURN. NOT CLASSIFIED AS CORROSIVE TO THE SKIN ACCORDING TO DOT GUIDELINES. MAY CAUSE MORE SEVERE RESPONSE IF SKIN IS DAMP. MAY CAUSE MORE SEVERE RESPONSE IF SKIN IS ABRADED (SCRATCHED OR CUT). MAY CAUSE MORE SEVERE RESPONSE ON COVERED SKIN (UNDER CLOTHING, GLOVES).

SKIN ABSORPTION..... N.AV.

EYE CONTACT..... FOR SOLID: MAY CAUSE SLIGHT EYE IRRITATION, MECHANICAL INJURY ONLY. DUST FORMATION SHOULD BE AVOIDED, AS DUST CAN CAUSE SEVERE EYE IRRITATION WITH CORNEAL INJURY.

INHALATION..... DUST MAY CAUSE IRRITATION TO UPPER RESPIRATORY TRACT (NOSE AND THROAT).

INGESTION..... LOW TOXICITY IF SWALLOWED. SMALL AMOUNTS SWALLOWED INCIDENTALLY AS A RESULT OF NORMAL HANDLING OPERATIONS ARE NOT LIKELY TO CAUSE INJURY; HOWEVER, SWALLOWING LARGER AMOUNTS MAY CAUSE INJURY. SWALLOWING MAY RESULT IN GASTROINTESTINAL IRRITATION OR ULCERATION.

EFFECTS OF ACUTE EXPOSURE..... SEE ABOVE.

EFFECTS OF CHRONIC EXPOSURE..... CHRONIC TOXICITY: FOR THE MINOR COMPONENT(S): POTASSIUM CHLORIDE - IN ANIMALS, EFFECTS HAVE BEEN REPORTED ON THE FOLLOWING ORGANS AFTER INGESTION: GASTROINTESTINAL TRACT, HEART, AND KIDNEY. DOSE LEVELS PRODUCING THESE EFFECTS WERE MANY TIMES HIGHER THAN ANY DOSE LEVELS EXPECTED FROM EXPOSURE DUE TO USE. MEDICAL EXPERIENCE WITH SODIUM CHLORIDE HAS SHOWN A STRONG ASSOCIATION BETWEEN ELEVATED BLOOD PRESSURE AND PROLONGED DIETARY OVERUSE. RELATED EFFECTS COULD OCCUR IN THE KIDNEYS.

Section 03: COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	%	Exposure Limit	C.A.S.#	LD/50, Route,Species	LC/50 Route,Species
CALCIUM CHLORIDE	83-87	SEE SECTION 11	10043-52-4	SEE SECTION 11	SEE SECTION 11
POTASSIUM CHLORIDE	2-3	SEE SECTION 11	7447-40-7	SEE SECTION 11	SEE SECTION 11
SODIUM CHLORIDE	1-2	SEE SECTION 11	7647-14-5	SEE SECTION 11	SEE SECTION 11

Section 04: FIRST AID MEASURES

EYE CONTACT..... IMMEDIATELY FLUSH WITH PLENTY OF WATER. AFTER INITIAL FLUSHING, REMOVE ANY CONTACT LENSES AND CONTINUE FLUSHING FOR AT LEAST 15 MINUTES. IF EFFECTS OCCUR, CONSULT A PHYSICIAN, PREFERABLY AN OPHTHALMOLOGIST. MAY CAUSE INJURY DUE TO MECHANICAL ACTION.

SKIN CONTACT..... WASH OFF IMMEDIATELY WITH PLENTY OF WATER.

INHALATION..... MOVE PERSON TO FRESH AIR; IF EFFECTS OCCUR, CONSULT A PHYSICIAN.

INGESTION..... IF SWALLOWED, DO NOT INDUCE VOMITING. GIVE ONE CUP (8 OUNCES OR 240 ML) OF WATER OR MILK IF AVAILABLE AND TRANSPORT TO A MEDICAL FACILITY. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSIVE PERSON.

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Section 04: FIRST AID MEASURES

NOTES TO PHYSICIAN..... DUE TO IRRITANT PROPERTIES, SWALLOWING MAY RESULT IN BURNS/ULCERATION OF MOUTH, STOMACH AND LOWER GASTROINTESTINAL TRACT WITH SUBSEQUENT STRICTURE. ASPIRATION OF VOMITUS MAY CAUSE LUNG INJURY. SUGGEST ENDOTRACHEAL/ESOPHAGEAL CONTROL IF LAVAGE IS DONE. IF BURN IS PRESENT, TREAT AS ANY THERMAL BURN, AFTER DECONTAMINATION. NO SPECIFIC ANTIDOTE. TREATMENT OF EXPOSURE SHOULD BE DIRECTED AT THE CONTROL OF SYMPTOMS AND THE CLINICAL CONDITION OF THE PATIENT.

Section 05: FIRE FIGHTING MEASURES

T.D.G. FLAM. CLASS..... NOT REGULATED.
 FLAMMABILITY..... NON FLAMMABLE.
 EXTINGUISHING MEDIA..... USE EXTINGUISHING AGENTS APPROPRIATE FOR SURROUNDING FIRE.
 FIRE FIGHTING PROCEDURES..... KEEP UNNECESSARY PEOPLE AWAY, ISOLATE HAZARD AREA AND DENY ENTRY. THIS MATERIAL DOES NOT BURN. FIGHT FIRE FOR OTHER MATERIAL THAT IS BURNING. WATER SHOULD BE APPLIED IN LARGE QUANTITIES AS FINE SPRAY. WEAR NIOSH APPROVED POSITIVE-PRESSURE SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE DEMAND MODE. WEAR PROTECTIVE FIRE FIGHTING CLOTHING (INCLUDES FIRE FIGHTING HELMET, COAT, TROUSERS, BOOTS, AND GLOVES). AVOID CONTACT WITH THIS MATERIAL DURING FIRE FIGHTING OPERATIONS. IF CONTACT IS LIKELY, CHANGE TO FULL CHEMICAL RESISTANT FIRE FIGHTING CLOTHING WITH SELF-CONTAINED BREATHING APPARATUS. IF THIS IS NOT AVAILABLE, WEAR FULL CHEMICAL RESISTANT CLOTHING WITH SELF-CONTAINED BREATHING APPARATUS AND FIGHT FIRE FROM A REMOTE LOCATION. FOR PROTECTIVE EQUIPMENT IN POST-FIRE OR NON-FIRE CLEAN-UP SITUATIONS, REFER TO THE RELEVANT SECTIONS.

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.
 EXPLOSION DATA..... N.AP.
 EXPLOSIVE POWER..... N.AP.
 RATE OF BURNING..... N.AV.
 SENSITIVITY TO STATIC DISCHARGE..... N.AV.
 SENSITIVITY TO IMPACT..... N.AV.
 HAZARDOUS COMBUSTION PRODUCTS.. SEE HAZARDOUS DECOMPOSITION PRODUCTS.

Section 06: ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL RELEASE..... SMALL AND LARGE SPILLS: CONTAIN SPILLED MATERIAL IF POSSIBLE. COLLECT IN SUITABLE AND PROPERLY LABELED CONTAINERS. FLUSH RESIDUE WITH PLENTY OF WATER. SEE SECTION 13, DISPOSAL CONSIDERATIONS, FOR ADDITIONAL INFORMATION.

PERSONAL PRECAUTIONS..... ISOLATE AREA. KEEP UNNECESSARY AND UNPROTECTED PERSONNEL FROM ENTERING THE AREA. USE APPROPRIATE SAFETY EQUIPMENT. FOR ADDITIONAL INFORMATION, REFER TO SECTION 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION. REFER TO SECTION 7, HANDLING, FOR ADDITIONAL PRECAUTIONARY MEASURES.

ENVIRONMENTAL PRECAUTIONS..... PREVENT FROM ENTERING INTO SOIL, DITCHES, SEWERS, WATERWAYS AND/OR GROUNDWATER. SEE SECTION 12, ECOLOGICAL INFORMATION.

Section 07: HANDLING AND STORAGE

HANDLING PROCEDURES AND EQUIPMENT HEAT DEVELOPED DURING DILUTING OR DISSOLVING IS VERY HIGH. USE COOL WATER WHEN DILUTING OR DISSOLVING (TEMPERATURE LESS THAN 80°F, 27°C). AVOID CONTACT WITH EYES, SKIN, AND CLOTHING. DO NOT SWALLOW. WASH THOROUGHLY AFTER HANDLING. KEEP CONTAINER TIGHTLY CLOSED. SEE SECTION 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

STORAGE NEEDS..... STORE IN A DRY PLACE. PROTECT FROM ATMOSPHERIC MOISTURE.

Section 08: EXPOSURE CONTROLS AND PERSONAL PROTECTION

GLOVES/ TYPE..... USE GLOVES CHEMICALLY RESISTANT TO THIS MATERIAL. IF HANDS ARE CUT OR SCRATCHED, USE GLOVES CHEMICALLY RESISTANT TO THIS MATERIAL EVEN FOR BRIEF EXPOSURES. EXAMPLES OF PREFERRED GLOVE BARRIER MATERIALS INCLUDE: NEOPRENE, POLYVINYL CHLORIDE ("PVC" OR "VINYL"), NITRILE/BUTADIENE RUBBER ("NITRILE" OR "NBR"). NOTICE: THE SELECTION OF A SPECIFIC GLOVE FOR A PARTICULAR APPLICATION AND DURATION OF USE IN A WORKPLACE SHOULD ALSO TAKE INTO ACCOUNT ALL RELEVANT WORKPLACE

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Section 08: EXPOSURE CONTROLS AND PERSONAL PROTECTION

GLOVES/ TYPE.....	FACTORS SUCH AS, BUT NOT LIMITED TO: OTHER CHEMICALS WHICH MAY BE HANDLED, PHYSICAL REQUIREMENTS (CUT/PUNCTURE PROTECTION, DEXTERITY, THERMAL PROTECTION), POTENTIAL BODY REACTIONS TO GLOVE MATERIALS, AS WELL AS THE INSTRUCTIONS/SPECIFICATIONS PROVIDED BY THE GLOVE SUPPLIER.
RESPIRATORY/TYPE.....	RESPIRATORY PROTECTION SHOULD BE WORN WHEN THERE IS A POTENTIAL TO EXCEED THE EXPOSURE LIMIT REQUIREMENTS OR GUIDELINES. IF THERE ARE NO APPLICABLE EXPOSURE LIMIT REQUIREMENTS OR GUIDELINES, WEAR RESPIRATORY PROTECTION WHEN ADVERSE EFFECTS, SUCH AS RESPIRATORY IRRITATION OR DISCOMFORT HAVE BEEN EXPERIENCED, OR WHERE INDICATED BY YOUR RISK ASSESSMENT PROCESS. IN DUSTY OR MISTY ATMOSPHERES, USE AN APPROVED PARTICULATE RESPIRATOR. THE FOLLOWING SHOULD BE EFFECTIVE TYPES OF AIR-PURIFYING RESPIRATORS: HIGH EFFICIENCY PARTICULATE AIR (HEPA) N95. A RESPIRATORY PROTECTION PROGRAM THAT MEETS 29 CFR 1910.134 MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT USE OF A RESPIRATOR.
EYE/TYPE.....	WEAR SAFETY GLASSES WITH SIDE-SHIELDS. FOR DUSTY OPERATIONS OR WHEN HANDLING SOLUTIONS OF THE MATERIAL, WEAR CHEMICAL GOGGLES.
FOOTWEAR/TYPE.....	PROTECTIVE FOOTWEAR.
CLOTHING/TYPE.....	PROTECTIVE CLOTHING.
OTHER/TYPE.....	EYEWASH STATION AND SAFETY SHOWER IN WORK AREA.
ENGINEERING CONTROLS.....	USE LOCAL EXHAUST VENTILATION, OR OTHER ENGINEERING CONTROLS TO MAINTAIN AIRBORNE LEVELS BELOW EXPOSURE LIMIT REQUIREMENTS OR GUIDELINES. IF THERE ARE NO APPLICABLE EXPOSURE LIMIT REQUIREMENTS OR GUIDELINES, GENERAL VENTILATION SHOULD BE SUFFICIENT FOR MOST OPERATIONS. LOCAL EXHAUST VENTILATION MAY BE NECESSARY FOR SOME OPERATIONS.
HYGIENIC PRACTICES.....	INGESTION: USE GOOD PERSONAL HYGIENE. DO NOT CONSUME OR STORE FOOD IN THE WORK AREA. WASH HANDS BEFORE SMOKING OR EATING.

Section 09: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE.....	SOLID FLAKES.
COLOR.....	WHITE.
ODOUR.....	ODOURLESS.
ODOUR THRESHOLD.....	N.AV.
VAPOUR PRESSURE (MMHG).....	N.AP.
VAPOUR DENSITY (AIR=1).....	N.AP.
EVAPORATION RATE.....	N.AP.
BOILING POINT.....	N.AP.
MELTING POINT (C).....	260 °C (500 °F) LITERATURE APPROXIMATELY.
PH.....	N.AP.
SPECIFIC GRAVITY (WATER=1).....	BULK DENSITY: 45 – 54 LB/FT3 ESTIMATED.
SOLUBILITY IN WATER (% W/W).....	READILY SOLUBLE.
COEFFICIENT OF WATER/OIL DIST.....	N.AV.

Section 10: STABILITY AND REACTIVITY

CHEMICAL STABILITY:.....	STABLE. HYGROSCOPIC.
CONDITIONS TO AVOID.....	NONE KNOWN. AVOID MOISTURE.
MATERIALS TO AVOID.....	HEAT IS GENERATED WHEN MIXED WITH WATER. SPATTERING AND BOILING CAN OCCUR. AVOID CONTACT WITH: SULFURIC ACID. CORROSIVE WHEN WET. FLAMMABLE HYDROGEN MAY BE GENERATED FROM CONTACT WITH METALS SUCH AS: ZINC. SODIUM. REACTION OF BROMIDE IMPURITY WITH OXIDIZING MATERIALS MAY GENERATE TRACE LEVELS OF IMPURITIES SUCH AS BROMATE.
HAZARDOUS PRODUCTS OF DECOMPOSITION.....	DOES NOT DECOMPOSE.
HAZARDOUS POLYMERIZATION.....	WILL NOT OCCUR.

Section 11: TOXICOLOGICAL INFORMATION

EXPOSURE LIMIT OF MATERIAL.....	TWA OSHA FINAL PEL: 15 MG/M3 (TOTAL); 5 MG/M3 (RESP).
LC 50 OF MATERIAL, SPECIES & ROUTE..	N.AV.
LD 50 OF MATERIAL, SPECIES & ROUTE..	TYPICAL FOR THIS FAMILY OF MATERIALS. LD50 (ORAL, RAT): 918 - 1,668 MG/KG. FOR THE MAJOR COMPONENT(S): LD50 (DERMAL, RABBIT) > 5,000 MG/KG.
CARCINOGENICITY OF MATERIAL.....	THIS PRODUCT IS NOT CLASSIFIED AS A CARCINOGEN BY NTP, IARC OR OSHA.
REPRODUCTIVE EFFECTS.....	FOR THE MAJOR COMPONENT(S): DID NOT CAUSE BIRTH DEFECTS OR ANY OTHER FETAL EFFECTS IN LABORATORY ANIMALS.
IRRITANCY OF MATERIAL.....	SEE SECTION 02.
SENSITIZING CAPABILITY OF MATERIAL.	N.AV.
SYNERGISTIC MATERIALS.....	N.AV.

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Section 11: TOXICOLOGICAL INFORMATION

MUTAGENICITY..... THE DATA PRESENTED ARE FOR THE FOLLOWING MATERIAL: CALCIUM CHLORIDE (CaCl₂) - IN VITRO GENETIC TOXICITY STUDIES WERE NEGATIVE. THE DATA PRESENTED ARE FOR THE FOLLOWING MATERIAL: POTASSIUM CHLORIDE - IN VITRO GENETIC TOXICITY STUDIES WERE POSITIVE. HOWEVER, THE RELEVANCE OF THIS TO HUMANS IS UNKNOWN. FOR THE MINOR COMPONENT(S): SODIUM CHLORIDE - IN VITRO GENETIC TOXICITY STUDIES WERE PREDOMINANTLY NEGATIVE.

TERATOGENICITY..... N.A.V.

Section 12: ECOLOGICAL CONSIDERATIONS

ECOLOGICAL DATA..... MATERIAL IS PRACTICALLY NON-TOXIC TO AQUATIC ORGANISMS ON AN ACUTE BASIS (LC 50 GREATER THAN 100 MG/L IN MOST SENSITIVE SPECIES). FRESHWATER FISH TOXICITY - CALCIUM CHLORIDE: LC50, BLUEGILL (LEPOMIS MACROCHIRUS): 8,350 - 10,650 MG/L. POTASSIUM CHLORIDE: LC50, RAINBOW TROUT (ONCORHYNCHUS MYKISS), 96 H: 4,236 MG/L. SODIUM CHLORIDE: LC50, FATHEAD MINNOW (PIMEPHALES PROMELAS): 10,610 MG/L. INVERTEBRATE TOXICITY - CALCIUM CHLORIDE: LC50, WATER FLEA DAPHNIA MAGNA: 759 - 3,005 MG/L. POTASSIUM CHLORIDE: EC50, WATER FLEA DAPHNIA MAGNA, 24 H, IMMOBILIZATION: 590 MG/L. LC50, WATER FLEA CERIODAPHNIA DUBIA, 96 H: 3,470 MG/L. SODIUM CHLORIDE: LC50, WATER FLEA DAPHNIA MAGNA: 4,571 MG/L. MICROORGANISM TOXICITY - SODIUM CHLORIDE: IC50, OECD 209 TEST; ACTIVATED SLUDGE, RESPIRATION INHIBITION: > 1,000 MG/L.

DEGRADABILITY..... NO BIOCONCENTRATION IS EXPECTED BECAUSE OF THE RELATIVELY HIGH WATER SOLUBILITY. POTENTIAL FOR MOBILITY IN SOIL IS VERY HIGH (KOC BETWEEN 0 AND 50).

PARTITIONING..... PARTITIONING FROM WATER TO N-OCTANOL IS NOT APPLICABLE.

Section 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL..... DISPOSE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

Section 14: TRANSPORT INFORMATION

TDG CLASSIFICATION..... NOT REGULATED.

PROPER SHIPPING NAME..... N.A.P.

UN NUMBER..... N.A.P.

PACKING GROUP..... N.A.P.

SPECIAL SHIPPING INSTRUCTIONS..... NOT REGULATED.

Section 15: REGULATORY INFORMATION

WHMIS CLASSIFICATION..... D2B.

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

N.A.P.=NOT APPLICABLE
N.A.V.=NOT AVAILABLE

OTHER INFORMATION..... THE DATA IN THIS MSDS RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED HEREIN AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS. THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS PRODUCT SPECIFICATIONS. NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.