



KENCRO

CHEMICALS

PRODUCT: SULPHURIC ACID 96% REAGENT GRADE

SECTION 1: PRODUCT INFORMATION

T.D.G. CLASSIFICATION 8
UN NUMBER 1830
PACKING GROUP II
PRODUCT NAME SULPHURIC ACID 96%
WHMIS CLASSIFICATION D1A
E
CHEMICAL FORMULA H₂SO₄ IN H₂O
MOLECULAR WEIGHT 98.07
CHEMICAL FAMILY MINERAL ACID
MATERIAL USE REFER TO TECHNICAL LITERATURE

SECTION 2: HAZARDOUS INGREDIENTS

| HAZARDOUS INGREDIENTS | % | T.L.V. | C.A.S. # | LD/50,ROUTE,SPECIE | LC/50,ROUTE,SPECIE |
|-------------------------|----|---------------------|-----------|--------------------------|--|
| SULPHURIC ACID | 96 | 1 MG/M ³ | 7664-93-9 | 2140 MG/KG (ORAL,RAT) | 510 MG/M ³ /2H (RAT, INHALATION) |
| NON-HAZARDOUS: WATER | 4 | | 7732-18-5 | | |

SECTION 3: PHYSICAL DATA

APPEARANCE OILY, CLEAR TO SLIGHTLY CLOUDY
PHYSICAL STATE LIQUID
ODOR ODORLESS TO SLIGHTLY PUNGENT
ODOR THRESHOLD N.A.V.
VAPOR PRESSURE (MMHG) 93.2% : 0.0016 98% : 0.002
VAPOR DENSITY (AIR=1) NO INFORMATION
EVAPORATION RATE <1
BOILING POINT 307.8°C
PH <1.0
SPECIFIC GRAVITY (WATER=1) 1.8427
SOLUBILITY IN WATER (% W/W) COMPLETELY MISCIBLE, LIBERATES MUCH HEAT
COEFFICIENT OF WATER/OIL N.A.V.
DIST.

SECTION 4: FIRE AND EXPLOSION DATA

FLAMMABILITY **NOT FLAMMABLE**
IF YES, UNDER WHICH CONDITIONS? CONCENTRATED MATERIAL IS A STRONG DEHYDRATING AGENT. REACTS WITH ORGANIC MATERIALS AND MAY CAUSE IGNITION OF FINELY DIVIDED MATERIALS ON CONTACT.
EXTINGUISHING MEDIA USE DRY CHEMICAL, FOAM, OR CO₂ BASE FIRE EXTINGUISHERS TO FIGHT SURROUNDING FIRE. DO NOT USE WATER ON ACID ITSELF. HOWEVER, WATER SPRAY MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL. APPLY FROM FARTHEST POSSIBLE DISTANCE.
SPECIAL PROCEDURES WEAR NIOSH SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. COOL EXTERIOR OF STORAGE TANKS.
FLASH POINT(C), METHOD NOT FLAMMABLE. MAY IGNITE COMBUSTIBLE MATERIALS.
AUTO IGNITION TEMPERATURE N.A.V.
T.D.G. FLAM. CLASS NONE
UPPER FLAMMABLE LIMIT (UFL) N.A.P.

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| (% BY VOL) LOWER FLAMMABLE LIMIT (LFL (% BY VOL) | N.AP. |
| UNUSUAL FIRE AND EXPLOSION HAZARDS | ACID REACTS VIOLENTLY WITH WATER AND CAN SPLATTER ACID ONTO HAZARDS PERSONNEL. EVOLUTION OF EXPLOSIVE HYDROGEN GAS ON CONTACT WITH MOST METALS. TOXIC GASES (SULPHURIC ACID FUMES, SULFUR DIOXIDE AND CARBON MONOXIDE) MAY BE RELEASED DUE TO THERMAL DECOMPOSITION. HIGHLY REACTIVE WITH ORGANIC SUBSTANCES AND CYANIDES. |
| HAZARDOUS COMBUSTION PRODUCTS | SULPHURIC ACID DECOMPOSITION MAY RESULT IN THE RELEASE OF TOXIC GASES (SULPHURIC ACID FUMES, SULFUR DIOXIDE, CARBON MONOXIDE) |
| EXPLOSION DATA | |
| SENSITIVITY TO STATIC DISCHARGE | N.AV. |
| SENSITIVITY TO IMPACT | N.AV. |
| RATE OF BURNING | N.AV. |
| EXPLOSIVE POWER | N.AV. |

SECTION 5: REACTIVITY DATA

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| CHEMICAL STABILITY | |
| YES | STABLE UNDER ORDINARY CONDITIONS OF USE & STORAGE |
| NO, WHICH CONDITIONS? | CONCENTRATED SOLUTIONS REACT VIOLENTLY WITH H ₂ O, SPLATTERING AND LIBERATING HEAT. |
| COMPATIBILITY WITH OTHER SUBSTANCES: | |
| YES | |
| NO, WHICH ONES? | HIGHLY REACTIVE WITH MANY MATERIALS INCLUDING WATER, METALS, METAL OXIDES, HYDROXIDES, NITRATES, AMINES, CARBONATES AND OTHER ALKALINE MATERIALS. REACTIONS CAN GENERATE A GREAT DEAL OF OTHER ALKALINE MATERIALS. REACTIONS CAN GENERATE A GREAT DEAL OF HEAT AS DOES THE DILUTION OF ACID WITH WATER. CONCENTRATED ACID IS A STRONG OXIDIZING AGENT. MAY CAUSE IGNITION OF COMBUSTIBLE MATERIALS ON CONTACT WITH GENERATION OF SULFUR DIOXIDE FUMES. AVOID OPEN FLAMES OR SPARKS. EXCESSIVE HEAT, SPARKS AND OPEN FLAME. CONTAMINATION OF ANY KIND. FLAMMABLE HYDROGEN GAS MAY BE PRODUCED ON PROLONGED CONTACT WITH METALS SUCH AS ALUMINUM, TIN, LEAD AND ZINC. IN THE PRESENCE OF OXIDIZING MATERIALS. |
| REACTIVITY CONDITIONS | |
| HAZARDOUS POLYMERIZATION CONDITIONS TO AVOID | WILL NOT OCCUR CONCENTRATED ACID IS A STRONG OXIDIZING AGENT. MAY CAUSE INGESTION OF COMBUSTIBLE MATERIAL ON CONTACT WITH GENERATION OF TOXIC FUMES. AVOID OPEN FLAMES AND SPARKS. HEAT, MOISTURE, INCOMPATIBLES. |
| HAZARDOUS PRODUCTS OF DECOMPOSITION | EXPLOSIVE HYDROGEN GAS IS GENERATED BY THE ACTION OF ACID ON MOST METALS AND MAY ACCUMULATE IN METAL CONTAINERS. RELEASES SULFUR DIOXIDE AT EXTREMELY HIGH TEMPERATURES. TOXIC FUMES OF OXIDES OF SULFUR WHEN HEATED TO DECOMPOSITION. WILL REACT WITH WATER OR STREAM TO PRODUCE TOXIC AND CORROSIVE FUMES. REACTS WITH CARBONATES TO GENERATE CARBON DIOXIDE GAS, AND WITH CYANIDES AND SULFIDES TO FORM POISONOUS HYDROGEN CYANIDE AND HYDROGEN SULFIDE RESPECTIVELY. |

SECTION 6: TOXICOLOGICAL PROPERTIES

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| ROUTE OF ENTRY | |
| SKIN CONTACT | CORROSIVE. SYMPTOMS OF REDNESS, PAIN, AND SEVERE BURN CAN OCCUR. CIRCULATORY COLLAPSE WITH CLAMMY SKIN, WEAK AND RAPID PULSE, SHALLOW RESPIRATION, AND SCANTY URINE MAY FOLLOW SKIN CONTACT OR INGESTION. CIRCULATORY SHOCK IS OFTEN THE IMMEDIATE CAUSE OF DEATH. PERSONS WITH PRE-EXISTING SKIN DISORDERS MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE. |
| SKIN ABSORPTION | N.AV. |
| EYE CONTACT | CORROSIVE. CONTACT CAN CAUSE BLURRED VISION, REDNESS, PAIN AND SEVERE TISSUE BURNS. CONTACT WITH EYES MAY RESULT IN PERMANENT VISUAL LOSS UNLESS REMOVED QUICKLY BY THOROUGH IRRIGATION WITH WATER. PERSONS WITH PRE-EXISTING EYE PROBLEMS MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE. |

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| INHALATION | INHALATION PRODUCES DAMAGING EFFECTS ON THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT. SYMPTOMS MAY INCLUDE IRRITATION OF THE NOSE AND THROAT, AND LABORED BREATHING. MAY CAUSE LUNG EDEMA, A MEDICAL EMERGENCY. PERSONS WITH PRE-EXISTING IMPAIRED RESPIRATORY FUNCTION MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THE SUBSTANCE. |
| INHALATION, CHRONIC INGESTION | N.A.V. CORROSIVE. SWALLOWING CAN CAUSE SEVERE BURNS OF THE MOUTH, THROAT, AND STOMACH, LEADING TO DEATH. CAN CAUSE SORE THROAT, VOMITING, DIARRHEA. CIRCULATORY COLLAPSE WITH CLAMMY SKIN, WEAK AND RAPID PULSE, SHALLOW RESPIRATIONS AND SCANTY URINE MAY FOLLOW INGESTION OR SKIN CONTACT. CIRCULATORY SHOCK IS OFTEN THE IMMEDIATE CAUSE OF DEATH. |
| EFFECTS OF ACUTE EXPOSURE | SEVERE CHEMICAL BURNS TO EYES AND SKIN. SEVERITY OF BURN IS GENERALLY DETERMINED BY THE CONCENTRATION OF THE SOLUTION AND THE DURATION OF EXPOSURE. |
| EFFECTS OF CHRONIC EXPOSURE | AT HIGHER CONCENTRATIONS, EXPOSURE CAN LEAD TO SEVERE INFLAMMATION OF RESPIRATORY TRACT. REPEATED EXPOSURE MAY CAUSE CHRONIC BRONCHITIS, PULMONARY EDEMA, AND EROSION OR DISCOLORATION OF TEETH. REPEATED SKIN CONTACT WITH THIS PRODUCT MAY PRODUCE DERMATITIS. CHRONIC EXPOSURE TO <u>MISTS CONTAINING SULFURIC ACID</u> IS A CANCER HAZARD. |
| LD 50 MATERIAL, SPECIES & ROUTE | SEE SECTION II |
| LC 50 MATERIAL, SPECIES & ROUTE | SEE SECTION II |
| EXPOSURE LIMIT OF MATERIAL | SEE SECTION II |
| IRRITANCY OF MATERIAL | CORROSIVE |
| SENSITIZING CAPABILITY OF MATERIAL | N.A.V. |
| CARCINOGENICITY OF MATERIAL | NONE OF THE COMPONENTS OF SULFURIC ACID SOLUTIONS IS LISTED BY IARC, NTP, OSHA OR ACGIH AS A CARCINOGEN. HOWEVER, IARC HAS CLASSIFIED "STRONG INORGANIC ACID <u>MISTS CONTAINING SULPHURIC ACID</u> " AS KNOWN HUMAN CARCINOGEN. |
| REPRODUCTIVE EFFECTS | NONE |
| SYNERGISTIC MATERIALS | NONE |

SECTION 7: PREVENTATIVE MEASURES

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| GLOVES/TYPE | WEAR IMPERVIOUS RUBBER GLOVES |
| RESPIRATORY/TYPE | USE NIOSH/MSHA APPROVED, FULL FACE RESPIRATOR WITH CANISTER APPROVED FOR SULFURIC ACID VAPOR AND MIST. CONSULT RESPIRATOR MANUFACTURER TO DETERMINE APPROPRIATE EQUIPMENT. IF CONCENTRATIONS ARE HIGH OR UNKNOWN, USE SELF-CONTAINED BREATHING APPARATUS. |
| EYE/TYPE | WEAR SPLASH-PROOF CHEMICAL SAFETY GOGGLES. EYEWASH FOUNTAINS RECOMMENDED IN STORAGE AND HANDLING AREAS. DO NOT WEAR CONTACT LENSES. FULL FACE SHIELD. |
| FOOTWEAR/TYPE | RUBBER FOOTWEAR SHOULD BE USED. BOOTS. |
| CLOTHING /TYPE | WEAR PROTECTIVE CLOTHING TO PREVENT SKIN CONTACT. ACID -RESISTANT HOOD AND FULL BODY SUIT RECOMMENDED. IMPERVIOUS CLOTHING. LAB COAT, APRON, COVERALLS. |
| OTHER/TYPE | SAFETY SHOWER RECOMMENDED IN ALL STORAGE AND HANDLING AREAS. |
| ENGINEERING CONTROLS | PROVIDE VENTILATION TO CONTROL EXPOSURE LEVELS BELOW AIRBORNE EXPOSURE LIMITS. USE LOCAL EXHAUST VENTILATION. REFERENCE NFPA STANDARD 91 FOR DESIGN OF EXHAUST SYSTEMS. |
| VENTILATION SYSTEM | A SYSTEM OF LOCAL AND/OR GENERAL EXHAUST IS RECOMMENDED TO KEEP EMPLOYEE EXPOSURES BELOW THE AIRBORNE EXPOSURE LIMITES. LOCAL EXHAUST VENTILATION IS GENERALLY PREFERRED BECAUSE IT CAN CONTROL THE EMISSIONS OF THE CONTAMINANT AT ITS SOURCE, PREVENTING DISPERSION OF IT INTO THE GENERAL WORK AREA. |
| LEAK/SPILL | UTILIZE FULL PROTECTIVE CLOTHING, INCLUDING BOOTS AND PROTECTIVE EQUIPMENT. CONTAIN SPILL IN ORDER TO PREVENT CONTAMINATION OF SEWAGE SYSTEM OR WATERWAY. PUMP INTO MARKED CONTAINERS FOR RECLAMATION OR DISPOSAL. IF POSSIBLE NEUTRALIZE ON A DRY BASIS WITH SUITABLE ALKALI SUCH AS LIME OR SODA ASH, THEN ABSORB WITH INERT MATERIAL (E.G., VERMICULITE, DRY SAND, EARTH) AND PLACE IN A CHEMICAL WASTE CONTAINER. <u>DO NOT</u> USE COMBUSTIBLE MATERIALS, SUCH AS SAW DUST. <u>DO NOT</u> FLUSH TO SEWER! THEN FLUSH WITH WATER IN ACCORDANCE WITH APPLICABLE REGULATIONS. |

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| WASTE DISPOSAL | DISPOSE OF SPILLED, NEUTRALIZED OR WASTE PRODUCT, CONTAMINATED SOIL AND OTHER MATERIALS IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. WHATEVER CANNOT BE SAVED FOR RECOVERY OR RECYCLING SHOULD BE HANDLED AS A HAZARDOUS WASTE AND SENT TO AN APPROVED INCINERATOR OR DISPOSED IN AN APPROVED WASTE FACILITY. PROCESSING, USE OR CONTAMINATION OF THIS PRODUCT MAY CHANGE THE WASTE MANAGEMENT OPTIONS. STATE/PROVINCIAL AND LOCAL DISPOSAL REGULATIONS MAY DIFFER FROM FEDERAL DISPOSAL REGULATIONS. |
| HANDLING PROCEDURES AND EQUIPMENT | AVOID BREATHING FUMES. USE GLOVES WHEN HANDLING. REMOVE AND CHANGE CONTAMINATED CLOTHING IMMEDIATELY. DO NOT ADD WATER TO CONCENTRATED ACID. WHEN DILUTING, SLOWLY ADD ACID TO WATER WHILE STIRRING TO AVOID SPATTERING, BOILING, AND ERUPTION. KEEP CONTAINER CLOSED AND PROTECT FROM CONTACT WITH WATER. PROTECT CONTAINER FROM PHYSICAL DAMAGE. DO NOT STRIKE CONTAINERS OR FITTINGS WITH TOOLS. WASH THOROUGHLY AFTER HANDLING. EMPTIED CONTAINER WILL RETAIN VAPOR AND PRODUCT RESIDUE. |
| STORAGE NEEDS | STORE AWAY FROM SOURCES OF IGNITION. KEEP CONTAINER CLOSED AND PROTECT FROM CONTACT WITH WATER. PROTECT CONTAINER FROM PHYSICAL DAMAGE. EMPTIED CONTAINER WILL RETAIN VAPOR AND PRODUCT RESIDUE. STORE IN A COOL, DRY, VENTILATED STORAGE AREA WITH ACID RESISTANT FLOORS AND GOOD DRAINAGE. PROTECT FROM PHYSICAL DAMAGE. KEEP OUT DIRECT SUNLIGHT AND AWAY FROM HEAT, WATER AND INCOMPATIBLE MATERIALS. <u>DO NOT WASH OUT CONTAINER AND USE FOR OTHER PURPOSES. WHEN DILUTING, ALWAYS ADD THE ACID TO WATER; NEVER ADD WATER TO THE ACID.</u> WHEN OPENING METAL CONTAINERS, USE NON-SPARKING TOOLS BECAUSE OF THE POSSIBILITY OF HYDROGEN GAS BEING PRESENT. CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTY SINCE THEY RETAIN PRODUCT RESIDUES (VAPORS, LIQUID); OBSERVE ALL WARNINGS AND PRECAUTIONS LISTED FOR THIS PRODUCT. |
| SPECIAL SHIPPING INSTRUCTIONS | SEE SECTION 1 TDG CLASSIFICATION |

SECTION 8: FIRST AID MEASURES

INHALATION: REMOVE VICTIM TO FRESH AIR. IF NOT BREATHING, PERFORM ARTIFICIAL RESPIRATION / GIVE OXYGEN. OBTAIN MEDICAL ATTENTION IMMEDIATELY.

INGESTION: DRINK COPIOUS AMOUNTS OF WATER OR MILK. DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. OBTAIN MEDICAL ATTENTION IMMEDIATELY.

DIRECT CONTACT: WIPE OFF EXCESS. FLUSH IMMEDIATELY WITH WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING. WASH CLOTHING BEFORE RE-USE. DESTROY CONTAMINATED SHOES. EXCESS ACID ON SKIN CAN BE NEUTRALIZED WITH A 2% SOLUTION OF BICARBONATE OF SODA. OBTAIN MEDICAL ATTENTION IMMEDIATELY.

DIRECT EYE CONTACT: FLUSH IMMEDIATELY WITH WATER FOR AT LEAST 15 MINUTES. FORCIBLY HOLD EYELIDS APART TO ENSURE COMPLETE IRRIGATION OF EYE/LID TISSUE. OBTAIN MEDICAL ATTENTION IMMEDIATELY.

SECTION 9: PREPARATION INFORMATION

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| EMERGENCY PHONE NO | (613) 996 6666 (CANUTEC) |
| PREPARED BY | KENCRO CHEMICALS LIMITED |
| | (905) 827 4133 |
| DATE | JUNE 2008 |

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LEGEND:

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| ACGIH | AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS |
| IARC | INTERNATIONAL AGENCY FOR RESEARCH ON CANCER |
| LFL | LOWER FLAMMABLE LIMIT |
| MSHA | MINE SAFETY AND HEALTH ADMINISTRATION |
| N.AP | NOT APPLICABLE |
| N. AV | NOT AVAILABLE |
| NIOSH | NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH |
| NTP | NATIONAL TOXICOLOGY PROGRAM |
| OSHA | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION |
| T.D.G. | TRANSPORTATION OF DANGEROUS GOODS ACT/REGULATIONS |
| TLV | THRESHOLD LIMIT VALUE |
| TWA | TIME-WEIGHTED AVERAGE |
| UFL | UPPER FLAMMABLE LIMIT |
| WHMIS | WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM |

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