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## M A T E R I A L   S A F E T Y   D A T A   S H E E T

## SECTION 1. ----- CHEMICAL IDENTIFICATION-----

CATALOG #:      311413  
NAME:            PERCHLORIC ACID, 60%, A.C.S. REAGENT

## SECTION 2. ----- COMPOSITION/INFORMATION ON INGREDIENTS -----

CAS #: 7601-90-3  
MF: HClO<sub>4</sub>  
EC NO: 231-512-4

## SECTION 3. ----- HAZARDS IDENTIFICATION -----

## LABEL PRECAUTIONARY STATEMENTS

OXIDIZING  
CORROSIVE  
HEATING MAY CAUSE AN EXPLOSION.  
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
CAUSES SEVERE BURNS.  
HARMFUL IF SWALLOWED.  
KEEP AWAY FROM COMBUSTIBLE MATERIAL.  
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.  
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.  
DO NOT BREATHE VAPOR.

## SECTION 4. ----- FIRST-AID MEASURES-----

IF SWALLOWED, WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS.  
CALL A PHYSICIAN.  
IF INHALED, REMOVE TO FRESH AIR. IF BREATHING BECOMES DIFFICULT, CALL A PHYSICIAN.  
IN CASE OF SKIN CONTACT, FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. REMOVE CONTAMINATED CLOTHING AND SHOES. CALL A PHYSICIAN.  
IN CASE OF CONTACT WITH EYES, FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. ASSURE ADEQUATE FLUSHING BY SEPARATING THE EYELIDS WITH FINGERS. CALL A PHYSICIAN.

## SECTION 5. ----- FIRE FIGHTING MEASURES -----

EXTINGUISHING MEDIA  
CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.  
SPECIAL FIREFIGHTING PROCEDURES  
WEAR SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.  
UNUSUAL FIRE AND EXPLOSIONS HAZARDS  
EMITS TOXIC FUMES UNDER FIRE CONDITIONS.  
CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.  
MAY ACCELERATE COMBUSTION.

## SECTION 6. ----- ACCIDENTAL RELEASE MEASURES-----

ABSORB ON SAND OR VERMICULITE AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL.  
VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.  
EVACUATE AREA.  
WEAR SELF-CONTAINED BREATHING APPARATUS, RUBBER BOOTS AND HEAVY RUBBER GLOVES.

## SECTION 7. ----- HANDLING AND STORAGE-----

REFER TO SECTION 8.

## SECTION 8. ----- EXPOSURE CONTROLS/PERSONAL PROTECTION-----

DO NOT BREATHE VAPOR.  
DO NOT GET IN EYES, ON SKIN, ON CLOTHING.  
AVOID PROLONGED OR REPEATED EXPOSURE.  
KEEP AWAY FROM COMBUSTIBLE MATERIALS, HEAT, SPARKS, AND OPEN FLAME.  
KEEP TIGHTLY CLOSED.  
STORE IN A COOL DRY PLACE.  
USE ONLY IN A CHEMICAL FUME HOOD.  
SAFETY SHOWER AND EYE BATH.

NIOSH/MSHA-APPROVED RESPIRATOR.  
COMPATIBLE CHEMICAL-RESISTANT GLOVES.  
CHEMICAL SAFETY GOGGLES.  
WASH THOROUGHLY AFTER HANDLING.  
REMOVE AND WASH CONTAMINATED CLOTHING PROMPTLY.

## SECTION 9. ----- PHYSICAL AND CHEMICAL PROPERTIES -----

## APPEARANCE AND ODOR

COLORLESS LIQUID

## PHYSICAL PROPERTIES

FLASHPOINT NONE

VAPOR PRESSURE: 7MM 25 C

SPECIFIC GRAVITY: 1.535

SWISS POISON CLASS: 1

## SECTION 10. -----STABILITY AND REACTIVITY -----

## STABILITY

STABLE.

## CONDITIONS TO AVOID

ALTHOUGH 68-72% COLD PERCHLORIC ACID BEHAVES AS A STRONG BUT NON-OXIDIZING ACID, IT BECOMES AN EXTREME OXIDANT AND POWERFUL DEHYDRATOR AT ELEVATED TEMPERATURES (>160°C) OR WHEN ANHYDROUS. IT MAY BE FAIRLY READILY DEHYDRATED TO THE ANHYDROUS ACID, E.G. STRONG CONCENTRATED ACIDS (SULFURIC, OLEUM, FUMING NITRIC), INORGANIC ANHYDRIDES (SULFUR TRIOXIDE AND DIOXIDE, PHOSPHOROUS PENTOXIDE, THIONYL CHLORIDE ETC.), ORGANIC ANHYDRIDES AND HALOGENS. CONTACT WITH ALCOHOLS, GLYCOLS OR POLYHYDROXY COMPOUNDS PRODUCE EXPLOSIVE COMPOUNDS. CONTACT WITH WOOD, CELLULOSE AND ITS DERIVATIVES (PAPER, CARDBOARD, ETC.) CAN PRODUCE VIOLENT EXPLOSIONS. ATTEMPTS TO DISSOLVE BISMUTH OR ITS ALLOYS IN HOT PERCHLORIC ACID CARRIES A VERY HIGH RISK OF AN EXPLOSION OCCURRING. CONTACT WITH SULFOXIDES OR ETHERS MAY PRODUCE EXPLOSIONS. THE CRYSTALLINE SALT OBTAINED BY THE ACTION OF PHOSPHINE ON 68% PERCHLORIC ACID AT -20°C IS DANGEROUSLY EXPLOSIVE, SENSITIVE TO MOIST AIR, INCREASE IN TEMPERATURE, OR FRICTION AND CANNOT BE DRIED. VIOLENT REACTIONS WITH TRICHLORETHYLENE, SODIUM PHOSPHINATE, ZINC PHOSPHIDE, ORGANOPHOSPHOROUS COMPOUNDS AND UNSATURATED ORGANICS HAVE OCCURRED ON HEATING WITH PERCHLORIC ACID.

## INCOMPATIBILITIES

ORGANIC MATERIALS

FINELY POWDERED METALS

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS

CARBON MONOXIDE, CARBON DIOXIDE

HAZARDOUS POLYMERIZATION

WILL NOT OCCUR.

## SECTION 11. ----- TOXICOLOGICAL INFORMATION -----

## ACUTE EFFECTS

MATERIAL IS EXTREMELY DESTRUCTIVE TO TISSUE OF THE MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT, EYES AND SKIN.

INHALATION MAY RESULT IN SPASM, INFLAMMATION AND EDEMA OF THE LARYNX AND BRONCHI, CHEMICAL PNEUMONITIS AND PULMONARY EDEMA. SYMPTOMS OF EXPOSURE MAY INCLUDE BURNING SENSATION, COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA AND VOMITING.

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

MAY CAUSE SKIN IRRITATION.

MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN.

MAY CAUSE EYE IRRITATION.

MAY BE HARMFUL IF INHALED.

MATERIAL MAY BE IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

MAY BE HARMFUL IF SWALLOWED.

RTECS #: SC7500000

PERCHLORIC ACID

## TOXICITY DATA

ORL-RAT LD50:1100 MG/KG GTPZAB 17(8),33,1973

SCU-MUS LD50:250 MG/KG GTPZAB 17(8),33,1973

ORL-DOG LD50:400 MG/KG GTPZAB 17(8),33,1973

## TARGET ORGAN DATA

BEHAVIORAL (EXCITEMENT)

LUNGS, THORAX OR RESPIRATION (DYSPPNAE)

NUTRITIONAL AND GROSS METABOLIC (BODY TEMPERATURE DECREASE)

ONLY SELECTED REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) DATA IS PRESENTED HERE. SEE ACTUAL ENTRY IN RTECS FOR

COMPLETE INFORMATION.

SECTION 12. ----- ECOLOGICAL INFORMATION -----  
DATA NOT YET AVAILABLE.

SECTION 13. ----- DISPOSAL CONSIDERATIONS -----  
CONTACT A LICENSED PROFESSIONAL WASTE DISPOSAL SERVICE TO DISPOSE OF THIS MATERIAL.  
OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

SECTION 14. ----- TRANSPORT INFORMATION -----  
CONTACT ALDRICH CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

SECTION 15. ----- REGULATORY INFORMATION -----  
EUROPEAN INFORMATION  
EC INDEX NO: 017-006-00-4  
OXIDIZING  
CORROSIVE  
R 5  
HEATING MAY CAUSE AN EXPLOSION.  
R 8  
CONTACT WITH COMBUSTIBLE MATERIAL MAY CAUSE FIRE.  
R 35  
CAUSES SEVERE BURNS.  
S 26  
IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.  
S 36/37/39  
WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.  
S 45  
IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

REVIEWS, STANDARDS, AND REGULATIONS  
OEL=MAK  
OEL-POLAND: MAC(TWA) 1 MG/M3, MAC(STEL) 3 MG/M3, JAN1999  
NOHS 1974: HZD 80182; NIS 34; TNF 2227; NOS 13; TNE 7468  
NOES 1983: HZD 80182; NIS 27; TNF 1514; NOS 24; TNE 27220; TFE 11531  
EPA TSCA SECTION 8(B) CHEMICAL INVENTORY  
EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, JANUARY 2001

SECTION 16. ----- OTHER INFORMATION-----  
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