

LTS RESEARCH LABORATORIES, INC.
MATERIAL SAFETY DATA SHEET
PRASEODYMIUM CALCIUM MANGANESE OXIDE

1. PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME: PRASEODYMIUM CALCIUM MANGANESE OXIDE (PCMO)
CHEMICAL FORMULA: $\text{Pr}_x\text{Ca}_{(1-x)}\text{MnO}_3$

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.
COMPANY'S STREET: 37 RAMLAND ROAD
COMPANY'S CITY: ORANGEBURG
COMPANY'S STATE: NEW YORK
COMPANY'S ZIP CODE: 10962

EMERGENCY CHEMTREC #: 800-262-8200
COMPANY'S EMERGENCY TEL. #: 800-424-9300 (LOCAL)
703-527-3887 (INTERNATIONAL)
COMPANY'S TEL #: 845-494-2940

RECOMMENDED USE: SCIENTIFIC RESEARCH AND DEVELOPMENT

2. HAZARDS IDENTIFICATION

SIGNAL WORD: WARNING



HAZARD SYMBOLS: CORROSIVE
HARMFUL

HMIS HEALTH RATINGS (0-4):

HEALTH: 2
FLAMMABILITY: 0
REACTIVITY: 1
CARCINOGEN: UNKNOWN

3. COMPOSITION

CHEMICAL FAMILY: METAL OXIDE
ADDITIONAL NAMES: PCMO
PRASEODYMIUM OXIDE (PrO):
PERCENTAGE: 0-50 mol%
CAS #: 12037-29-5
CALCIUM OXIDE (CaO):
PERCENTAGE: 0-50 mol%
CAS #: 1305-78-8
MANGANESE OXIDE (MnO):
PERCENTAGE: 50 mol%
CAS #: 1344-43-0

4. FIRST AID PROCEDURES

IMPORTANT SYMPTOMS: INHALATION: MAY CAUSE A RED, DRY THROAT, COUGHING AND SHORTNESS OF BREATH

SPECIAL TREATMENT: NONE

INHALATION: REMOVE VICTIM TO FRESH AIR, KEEP WARM AND QUIET, GIVE OXYGEN IF BREATHING IS DIFFICULT AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

INGESTION: GIVE 1-2 GLASSES OF MILK OR WATER AND INDUCE VOMITING, SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. NEVER INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SKIN: REMOVE CONTAMINATED CLOTHING, BRUSH MATERIAL OFF SKIN, WASH AFFECTED AREA WITH MILD SOAP AND WATER, AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

EYES: FLUSH EYES WITH LUKEWARM WATER, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 20 MINUTES. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

5. FIRE AND EXPLOSION HAZARDS DATA

FLAMMABILITY: NON-FLAMMABLE

FLASH POINT: N/A

AUTOIGNITION TEMPERATURE: N/A

EXTINGUISHING MEDIA: CO₂, SAND, DRY AGENTS. DO NOT USE WATER

SPEC. FIRE FIGHTING PROCEDURE: USE FULL-FACE, SELF-CONTAINED BREATHING APPARATUS WITH FULL PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES. FUMES FROM FIRE IS HAZARDOUS. ISOLATE RUNOFF TO PREVENT ENVIRONMENTAL POLLUTION.

UNUSUAL FIRE & EXPLOSION HAZ: WHEN HEATED TO DECOMPOSITION, MAY EMIT TOXIC FUMES.

6. ACCIDENTAL RELEASE MEASURES

IF MATERIAL IS RELEASED/ SPILLED: WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT SPECIFIED IN SPECIAL PROTECTION INFORMATION. ISOLATE SPILL AREA AND PROVIDE VENTILATION. VACUUM UP SPILL USING A HIGH EFFICIENCY PARTICULATE ABSOLUTE (HEPA) AIR FILTER AND PLACE IN A CLOSED CONTAINER FOR DISPOSAL. TAKE CARE NOT TO RAISE DUST.

ENVIRONMENTAL PRECAUTIONS: N/A

7. HANDLING AND STORAGE

HANDLING CONDITIONS: WASH THOROUGHLY AFTER HANDLING.

HMS PROTECTIVE EQUIPMENT: GLASSES, GLOVES, APRON, DUST RESPIRATOR

STORAGE CONDITIONS: STORE IN A COOL DRY PLACE IN A TIGHTLY SEALED CONTAINER.

WORK/HYGIENIC/MAINTENANCE: IMPLEMENT ENGINEERING AND WORK PRACTICE CONTROLS TO REDUCE AND MAINTAIN CONCENTRATION OF EXPOSURE AT LOW LEVELS. USE GOOD HOUSEKEEPING AND SANITATION PRACTICES. DO NOT USE TOBACCO OR FOOD IN WORK AREA. WASH THOROUGHLY BEFORE EATING AND SMOKING. DO NOT BLOW DUST OFF CLOTHING OR SKIN WITH COMPRESSED AIR.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PCMO:

OSHA PEL: N/A

LD50/LC50: ORL-RAT LDLO: 1980 mg/kg

CARCINOGEN:

NTP: N/A

IARC MONOGRAPHS: N/A

OSHA REGULATED: N/A

SPECIAL EQUIPMENT: NONE
RESPIRATORY PROTECTION: NIOSH APPROVED DUST, MIST RESPIRATOR
PROTECTIVE GLOVES: RUBBER GLOVES
EYE PROTECTION: SAFETY GLASSES
OTHER: PROTECTIVE GEAR SUITABLE TO PREVENT CONTAMINATION.

9. PHYSICAL AND CHEMICAL CHARACTERISTICS

COLOR: BLACK
FORM: POWDER, PIECES, GRANULES, SPUTTERING TARGET
ODOR: ODORLESS
SOLUBILITY IN H₂O: INSOLUBLE
BOILING POINT: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY (H₂O=1): N/A
MOLECULAR WEIGHT: N/A

10. REACTIVITY

STABILITY: STABLE
INCOMPATIBILITY: AIR, ACIDS, OXIDIZING AGENTS, MOISTURE
HAZ. DECOMPOSITION PRODUCTS: N/A
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

11. TOXICOLOGICAL INFORMATION

EMERGENCY OVERVIEW: TO THE BEST OF OUR KNOWLEDGE THE CHEMICAL, PHYSICAL & TOXICOLOGICAL PROPERTIES OF THIS MATERIAL HAVE NOT BEEN THOROUGHLY INVESTIGATED AND RECORDED.

POTENTIAL HEALTH EFFECTS:

EYE:

MAY CAUSE CORROSIVE BURNS AND BLINDNESS

SKIN:

MAY CAUSE CORROSIVE BURNS IN POWDER FORM

INGESTION:

CAUSES CORROSIVE BURNS AND DANGER OF PERFORATION OF ESOPHAGUS AND STOMACH.

INHALATION:

MAY CAUSE BURNS TO THE RESPIRATORY TRACT.

PRASEODYMIUM OXIDE:

LANTHANONS CAN CAUSE DELAYED BLOOD CLOTTING LEADING TO HEMORRHAGES. EXPOSURE MAY ALSO LEAD TO SENSITIVITY TO HEAT, ITCHING, INCREASED AWARENESS OF ODOR AND TASTE, AND LIVER DAMAGE.

CALCIUM OXIDE:

CALCIUM OXIDE IS CORROSIVE TO THE SKIN, EYES, AND RESPIRATORY TRACT. MAY CAUSE ALKALI BURNS IN THE MOUTH AND THROAT. CHRONIC INHALATION OF DUST MAY CAUSE INFLAMMATION OF THE RESPIRATORY PASSAGES, ULCERS OF THE MUCOUS MEMBRANES, AND POSSIBLY PERFORATION OF THE NASAL SEPTUM. CORROSIVE MATERIALS ARE ACUTELY DESTRUCTIVE TO THE RESPIRATORY TRACT, EYES, SKIN, AND DIGESTIVE TRACT. EYE CONTACT MAY RESULT IN PERMENENT DAMAGE AND COMPLETE VISION LOSS. INHALATION MAY RESULT IN RESPIRATORY EFFECTS SUCH AS INFLAMMATION, EDEMA, AND CHEMICAL PNEUMONITIS. MAY CAUSE COUGHING, WHEEZING, LARYNGITIS, SHORTNESS OF BREATH, HEADACHE, NAUSEA, AND VOMITING. INGESTION MAY CAUSE DAMAGE TO THE MOUTH, THROAT, AND ESOPHAGUS. MAY CAUSE SKIN BURNS OR IRRITATION DEPENDING ON THE SEVERITY OF THE EXPOSURE.

MANGANESE OXIDE: CHRONIC EXPOSURE TO MANGANESE MAY CAUSE IMPAIRMENT TO THE CENTRAL NERVOUS SYSTEM. SYMPTOMS INCLUDE SLUGGISHNESS, SLEEPINESS, MUSCLE WEAKNESS, LOSS OF FACIAL MUSCLE CONTROL, EDEMA, EMOTIONAL DISTURBANCES, SPASTIC GAIT, AND FALLING. CHRONIC MANGANESE POISONING MAY DEVELOP AFTER AS LITTLE AS THREE MONTHS OF HEAVY EXPOSURE BUT USUALLY AFTER ONE TO THREE YEARS.

ROUTES OF ENTRY: INHALATION, SKIN, EYES, AND INGESTION.
SIGNS & SYMPTOMS OF EXPOSURE: INHALATION: MAY CAUSE A RED, DRY THROAT, COUGHING AND SHORTNESS OF BREATH.

MEDICAL CONDITIONS
AGGRAVATED BY EXPOSURE: PRE-EXISTING RESPIRATORY DISORDERS.

12. ECOLOGICAL INFORMATION

ECOLOGICAL DATA IS NOT AVAILABLE.

13. DISPOSAL CONSIDERATIONS

DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

14. TRANSPORTATION DATA

NOTES:	APPLIES TO POWDER ONLY
UN NUMBER:	1910
UN PROPER SHIPPING NAME:	METAL OXIDE POWDER, N.O.S.
HAZARD CLASS:	8
PACKING GROUP:	III
ROAD TRAN. ADR//RID CLASS:	8 (C6) CORROSIVE SUBSTANCES
AIR TRAN. ICAO/IATA CLASS:	8
MARITIME TRAN. IMDG CLASS:	8

15. REGULATORY INFORMATION

SEC.302 (EHS):	NO
SEC.304 (RQ):	N/A
SEC.313 (SARA):	NO

16. OTHER INFORMATION

THIS SAFETY DATA SHEET SHOULD BE USED IN CONJUNCTION WITH TECHNICAL SHEETS. IT DOES NOT REPLACE THEM. THE INFORMATION GIVEN IS BASED ON OUR KNOWLEDGE OF THIS PRODUCT, AT THE TIME OF PUBLICATION. IT IS GIVEN IN GOOD FAITH. THE ATTENTION OF THE USER IS DRAWN TO THE POSSIBLE RISKS INCURRED BY USING THE PRODUCT FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS INTENDED. THIS DOES NOT IN ANY WAY EXCUSE THE USER FROM KNOWING AND APPLYING ALL THE REGULATIONS GOVERNING HIS ACTIVITY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO TAKE ALL PRECAUTIONS REQUIRED IN HANDLING THE PRODUCT. THE AIM OF THE MANDATORY REGULATIONS MENTIONED IS TO HELP THE USER TO FULFILL HIS OBLIGATIONS REGARDING THE USE OF HAZARDOUS PRODUCTS.

DATE MSDS PREPARED: 3/12/09
DATE LAST REVISED: 6/17/14