

ALUMINA
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **ALUMINA**

CAS-NUMBER 1344-28-1

TRADE NAMES/SYNONYMS:

ALUNDUM; ALUMINUM OXIDE; DIALUMINUM TRIOXIDE; ALUMINUM SESQUIOXIDE;
GAMMA-ALUMINUM OXIDE; ALPHA-ALUMINA; BETA-ALUMINA; ALON; GAMMA-ALUMINA;
ALUMITE; ALMITE; DISPAL; ALOXITE; ALON C; COMPALOX; MARTOXIN; KETJEN B;
FASERTON; BOILEEZERS; A-540; A-591; B-365;

CHEMICAL FAMILY:
METAL OXIDE

MOLECULAR FORMULA: AL₂O₃

MOLECULAR WEIGHT: 101.94

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=U FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: ALUMINA
CAS# 1344-28-1

PERCENT: 100

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ALUMINUM OXIDE (ALUMINA):
5 MG/M³ OSHA TWA (RESPIRABLE DUST); 10 MG/M³ OSHA TWA (TOTAL DUST)
10 MG/M³ ACGIH TWA (TOTAL DUST)

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING
(APPLIES ONLY TO FIBROUS FORMS)

PHYSICAL DATA

DESCRIPTION: ODORLESS, WHITE CRYSTALS, BALLS OR POWDER.

BOILING POINT: 5396 F (2980 C) MELTING POINT: 3762 F (2072 C) ACC00950 PAGE 02 OF 05
SPECIFIC GRAVITY: 3.965 @ 25 C SOLUBILITY IN WATER: INSOLUBLE
SOLVENT SOLUBILITY: SLIGHTLY SOLUBLE IN MINERAL ACIDS AND STRONG ALKALIS;
PRACTICALLY INSOLUBLE IN NON-POLAR ORGANIC SOLVENTS
HARDNESS (MOHS): 8.8

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLECTIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:

USE DRY SAND, DOLOMITE, GRAPHITE, SODIUM CHLORIDE, SODA ASH, OR APPROPRIATE METAL-EXTINGUISHING POWDER. DO NOT APPLY WATER TO BURNING MATERIAL (NFPA FIRE PROTECTION HANDBOOK, 16TH EDITION).

FIREFIGHTING:

NO ACUTE HAZARD. MOVE CONTAINER FROM FIRE AREA IF POSSIBLE. AVOID BREATHING VAPORS OR DUSTS; KEEP UPWIND.

TOXICITY

ALUMINUM OXIDE (ALUMINA):
TOXICITY DATA: TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE.
ACUTE TOXICITY LEVEL: NO DATA AVAILABLE.
TARGET EFFECTS: CHRONIC EXPOSURE MAY AFFECT THE LUNGS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH IMPAIRED PULMONARY FUNCTION.

HEALTH EFFECTS AND FIRST AID

INHALATION:

ALUMINUM OXIDE (ALUMINA):
NUISANCE DUST.

ACUTE EXPOSURE-- INHALATION OF HIGH CONCENTRATIONS MAY CAUSE COUGHING, SHORTNESS OF BREATH, AND RESPIRATORY TRACT IRRITATION DUE TO MECHANICAL ACTION. NUISANCE DUSTS MAY CAUSE EXACERBATION OF SYMPTOMS IN PERSONS WITH IMPAIRED PULMONARY FUNCTION AND CAUSE UNPLEASANT DEPOSITS IN THE NASAL PASSAGES. METAL FUME FEVER, AN INFLUENZA-LIKE ILLNESS, MAY OCCUR DUE TO THE INHALATION OF FRESHLY FORMED METAL OXIDE PARTICLES SIZED BELOW 1.5 MICRONS AND USUALLY BETWEEN 0.02-0.05 MICRONS. SYMPTOMS MAY BE DELAYED 4-12 HOURS AND BEGIN WITH A SUDDEN ONSET OF THIRST, AND A SWEET, METALLIC OR FOUL TASTE IN THE MOUTH. OTHER SYMPTOMS MAY INCLUDE UPPER RESPIRATORY TRACT IRRITATION ACCOMPANIED BY COUGHING AND A DRYNESS OF THE MUCOUS MEMBRANES, LASSITUDE AND A GENERALIZED FEELING OF MALAISE, FEVER, CHILLS, MUSCULAR PAIN, MILD TO SEVERE HEADACHE, NAUSEA, OCCASIONAL VOMITING, EXAGGERATED MENTAL ACTIVITY, PROFUSE SWEATING, EXCESSIVE URINATION, DIARRHEA AND PROSTRATION MAY ALSO OCCUR. TOLERANCE TO FUMES DEVELOPS RAPIDLY, BUT IS QUICKLY LOST. ALL SYMPTOMS USUALLY SUBSIDE WITHIN 24-36 HOURS.

CHRONIC EXPOSURE- HUMANS EXPOSED CHRONICALLY TO ALUMINUM OXIDE, PARTICLE SIZE APPROXIMATELY 1.2 MICRONS, DID NOT EXPERIENCE EITHER SYSTEMIC OR RESPIRATORY ADVERSE EFFECTS. IN ANIMAL STUDIES, THE PULMONARY RESPONSE VARIED WITH THE SPECIES USED, THE METHOD OF EXPOSURE, THE PARTICLE SIZE, AND THE FORM OF THE OXIDE. A PRODUCTION PROCESS IN WHICH ALUMINUM OXIDE (BAUXITE), IRON, COKE, AND SILICA ARE FUSED AT 2000 C POSES A THREAT OF SHAVER'S DISEASE, A RAPIDLY PROGRESSIVE AND OFTEN FATAL INTERSTITIAL FIBROSIS OF THE LUNG.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:

ALUMINUM OXIDE (ALUMINA):

ACUTE EXPOSURE- CONTACT MAY CAUSE AN IRRITANT DERMATITIS ACCOMPANIED BY PRURITIS. HIGH CONCENTRATIONS OF NUISANCE DUSTS MAY CAUSE UNPLEASANT DEPOSITS ON THE SKIN AND INJURY MAY OCCUR BY CHEMICAL OR MECHANICAL ACTION OR BY THE RIGOROUS SKIN CLEANSING PROCEDURES NECESSARY FOR REMOVAL OF THE DUST.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

ALUMINUM OXIDE (ALUMINA):

ACUTE EXPOSURE- NUISANCE DUSTS IN HIGH CONCENTRATIONS MAY SERIOUSLY REDUCE VISIBILITY AND CAUSE UNPLEASANT DEPOSITS IN THE EYES WITH REDNESS AND PAIN.

CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

ALUMINUM OXIDE (ALUMINA):

ACUTE EXPOSURE- NO DATA AVAILABLE.

CHRONIC EXPOSURE- NO SPECIFIC DATA AVAILABLE. SOME ALUMINUM COMPOUNDS CAUSE CONSTIPATION.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:

STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:

ALUMINUM OXIDE (ALUMINA):
 CHLORINATED RUBBER (HOT): INCOMPATIBLE.
 CHLORINE TRIFLUORIDE: VIOLENT REACTION AND POSSIBLE IGNITION.
 ETHYLENE OXIDE: MAY INITIATE EXPLOSIVE POLYMERIZATION.
 HALOCARBONS: EXOTHERMIC REACTION ABOVE 200 C.
 HALOCARBONS + METALS: EXOTHERMIC REACTION AT AMBIENT TEMPERATURES.
 OXYGEN DIFLUORIDE: EXOTHERMIC REACTION.
 SODIUM NITRATE: MAY FORM EXPLOSIVE MIXTURE.
 VINYL ACETATE: POSSIBLE VIGOROUS REACTION.

DECOMPOSITION:

THERMAL DECOMPOSITION MAY RELEASE TOXIC AND/OR HAZARDOUS GASES.

POLYMERIZATION:

HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

 STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

 CONDITIONS TO AVOID

NONE REPORTED.

 SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
 SWEEP UP AND PLACE IN SUITABLE (FIBERBOARD) CONTAINERS FOR RECLAMATION OR LATER DISPOSAL.

 PROTECTIVE EQUIPMENT

VENTILATION:

PROVIDE LOCAL EXHAUST VENTILATION AND/OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:

THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
 THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

DUST, MIST, AND FUME RESPIRATOR.

POWERED AIR-PURIFYING RESPIRATOR WITH A DUST, MIST, AND FUME FILTER.

TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACE PIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:

PROTECTIVE CLOTHING NOT REQUIRED. AVOID REPEATED OR PROLONGED CONTACT WITH THIS SUBSTANCE.

GLOVES:

PROTECTIVE GLOVES ARE NOT REQUIRED BUT RECOMMENDED.

EYE PROTECTION:

EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.

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