

ALUMINUM OTHER THAN POWDER
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 7429-90-5

SUBSTANCE: **ALUMINUM OTHER THAN POWDER**

TRADE NAMES/SYNONYMS:

NORAL ALUMINUM; NORAL EXTRA FINE LINING GRADE; NORAL NON-LEAFING GRADE;
ALUMINA FIBRE; ALUMINUM BRONZE; METANA; ALUMINIUM; NORAL INK GRADE ALUMINUM;
A-552; A-557; A-547; I-213; I-213-10;

CHEMICAL FAMILY:
METAL

MOLECULAR FORMULA: AL

MOLECULAR WEIGHT: 26.98

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

COMPONENTS AND CONTAMINANTS

COMPONENT: ALUMINUM
CAS# 7429-90-5

PERCENT: 100

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:

ALUMINUM:
10 MG/M3 ACGIH TWA

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: SILVERY-WHITE, DUCTILE METAL WITH A SOMEWHAT BLuish TINT

BOILING POINT: 4442 F (2450 C) MELTING POINT: 1220 F (660 C)

SPECIFIC GRAVITY: 2.7 VAPOR PRESSURE: 1 MM @ 1284 C

SOLUBILITY IN WATER: INSOLUBLE

SOLVENT SOLUBILITY: SOLUBLE IN HYDROCHLORIC ACID, HOT, CONCENTRATED
SULFURIC ACID, PERCHLORIC ACID, STRONG ALKALIES; INSOLUBLE IN CONCENTRATED
NITRIC ACID, HOT ACETIC ACID

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLECTIBLE FIRE AND EXPLOSION HAZARD IN BULK METALLIC FORM.
THE MOIST, FINELY DIVIDED METAL MAY IGNITE IN AIR.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

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

TOXICITY

ALUMINUM:
CARCINOGEN STATUS: NONE.
ACUTE TOXICITY LEVEL: NO DATA AVAILABLE.
TARGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
ALUMINUM:
ACUTE EXPOSURE-- THE ONLY REPORTED INHALATION EFFECTS ARE FOR THE DUST,
POWDER OR FUME FORMS.
CHRONIC EXPOSURE-- NO DATA AVAILABLE.

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:
ACUTE EXPOSURE-- A SLIVER OF ALUMINUM PENETRATING THE SKIN MAY FORM ALUMINUM
SALTS WHICH INDUCE LOCAL IRRITATION AND POSSIBLY SECONDARY INFECTIONS.
CONTACT WITH ROUGH OR SHARP EDGES MAY CAUSE CUTS OR ABRASIONS.
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:

ACUTE EXPOSURE-- SMALL METAL PARTICLES HAVE BEEN OBSERVED IN THE EYES OF HUMANS ON OR NEAR THE RETINA AND ARE USUALLY NONIRRITATING AND WELL TOLERATED. THE PARTICLES GRADUALLY CHANGE INTO A WHITE POWDER AND DISAPPEAR IN 2 OR 3 YEARS LEAVING ONLY A CHARACTERISTIC LOCAL NECROTIC "IMPRINT". LARGER PARTICLES AND SPLINTERS MAY SCRATCH OR CUT THE CORNEA AND LIDS.

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:

ACUTE EXPOSURE-- THE ACTUAL EFFECTS MAY BE DETERMINED BY THE FORM OF THE ALUMINUM THAT IS INGESTED. GENERALLY IT HAS A VERY LOW ACUTE SYSTEMIC TOXICITY DUE TO ITS POOR ABSORPTION FROM THE GASTROINTESTINAL TRACT. MASSIVE DOSES MAY CAUSE GASTROINTESTINAL IRRITATION AND MAY BE TOXIC.

CHRONIC EXPOSURE-- LARGE AMOUNTS MAY INTERFERE WITH INTESTINAL ABSORPTION OF PHOSPHATES LEADING TO RICKETTS. CERTAIN DISEASE STATES INFLUENCE THE CONCENTRATION OF ALUMINUM IN ORGANS, FOR EXAMPLE, ALZHEIMER'S DISEASE IN WHICH EXCESSIVE LEVELS HAVE BEEN FOUND IN THE BRAIN.

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 OTHER THAN POWDER:

ARSENIC TRIOXIDE, SODIUM ARSENATE AND SODIUM HYDROXIDE: THE ALKALINE ATTACK ON THE METAL PRODUCED FLAMMABLE HYDROGEN WHICH IN TURN GENERATED TOXIC TOXIC ARSINE GAS.

BARIUM SULFATE: VIOLENT EXPLOSION.

BROMATES (BARIUM, CALCIUM, MAGNESIUM, POTASSIUM, SODIUM OR ZINC): WHEN BOTH ARE FINELY DIVIDED THE MIXTURE CAN BE EXPLODED BY HEAT, PERCUSSION, AND, SOMETIMES, LIGHT FRICTION.

BROMINE: THE FOIL REACTS WITH THE LIQUID AT 15 C AND INCANDESCENCE OCCURS ON WARMING IN THE VAPOR.

BUTANOL: SEVERELY ATTACKED THE METAL IN AN AUTOCLAVE AT AROUND 100 C LIBERATING FLAMMABLE HYDROGEN AND CAUSING A SHARP RISE IN PRESSURE. OTHER ALCOHOLS WOULD BEHAVE SIMILARLY.

CALCIUM SULFATE: VIOLENT EXPLOSION.

CHLORATES (BARIUM, CALCIUM, MAGNESIUM, POTASSIUM, SODIUM OR ZINC): WHEN BOTH ARE FINELY DIVIDED, THE MIXTURE CAN BE EXPLODED BY HEAT, PERCUSSION, AND,

SOMETIMES, LIGHT FRICTION.
CHLORINE FLUORIDE: POSSIBLE IGNITION.
CHLORINE TRIFLUORIDE AND CARBON: VIOLENT REACTION.
CHLOROFLUOROHYDROCARBONS: CONTACT WITH FRESH METAL SURFACES MAY RESULT IN INTENSE EXOTHERMIC REACTIONS.
CHLOROMETHANE, LIQUIFIED: POSSIBLE IGNITION DUE TO FORMATION OF AN ALKYLALUMINUM COMPOUND.
COPPER AND SULFATE: POSSIBLE EXPLOSION IN A SILICA VACUUM TUBE @ 900-1000 C.
COPPER OXIDE: STRONG EXPLOSION ON HEATING.
DIBORANE: INTERACTION GIVES COMPLEX HYDRIDES WHICH MAY IGNITE IN AIR.
1,2-DIFLUOROTETRAFLUOROETHANE: CONTACT WITH FRESH METAL SURFACES MAY RESULT IN INTENSE EXOTHERMIC REACTIONS.
ETHYLENE DICHLORIDE, PROPYLENE DICHLORIDE AND ORTHODICHLOROBENZENE: EXPLOSIVE REACTION.
FLUOROCHLORO LUBRICANTS: EXPLOSIVE REACTION WITH FRESH ALUMINUM SURFACES UNDER PRESSURE.
HYDROCHLORIC ACID: THE METAL IS ATTACKED VIOLENTLY BY THE AQUEOUS ACID.
HYDROGEN CHLORIDE: VIGOROUS EXOTHERMIC REACTION.
IODATES (BARIUM, CALCIUM, MAGNESIUM, POTASSIUM, SODIUM, OR ZINC: WHEN BOTH ARE FINELY DIVIDED, THE MIXTURE CAN BE EXPLODED BY HEAT, PERCUSSION, AND, SOMETIMES, LIGHT FRICTION.
IODINE: VIOLENT REACTION IN THE PRESENCE OF WATER AS LIQUID, VAPOR OR THAT PRESENT IN HYDRATED SALTS.
IODINE MONOCHLORIDE: THE METAL FOIL IGNITES SPONTANEOUSLY AND BURNS WITH A BLUISH-WHITE FLAME AFTER CONTINUED CONTACT.
IODINE HEPTAFLUORIDE: INTERACTION ON HEATING WITH EVOLUTION OF HEAT AND LIGHT.
IODINE PENTAFLUORIDE: IGNITION ON PROLONGED CONTACT.
IRON OXIDE: IMPACT BETWEEN AN ALUMINUM OBJECT AND A RUSTY SURFACE MAY CAUSE SPARKS, POSSIBLY INITIATING AN EXOTHERMIC REACTION.
LEAD OXIDE: VIOLENT REACTION.
MERCURY(II) SALTS: IN CONTACT WITH THE FOIL, IN THE PRESENCE OF MOISTURE, A VIGOROUS AMALGAMATION REACTION ENSUES.
METHANOL AND CARBON TETRACHLORIDE (9:1): RAPID AUTOCATALYTIC DISSOLUTION OF THE METAL.
METHYL BROMIDE: POSSIBLE IGNITION AND EXPLOSION.
MONOBROMOTRIFLUOROMETHANE: CONTACT WITH FRESH METAL SURFACES MAY RESULT IN INTENSE EXOTHERMIC REACTIONS.
PALLADIUM: IF AN ALUMINUM SHEATH SURROUNDING A PALLADIUM CORE ABOUT .0025 INCH DIAMETER IS HEATED TO THE MELTING POINT OF ALUMINUM, 600 C, AN ALLOYING REACTION TAKES PLACE WITH PRODUCTION OF A BRILLANT FLASH AND A TEMPERATURE OF 2,800 C.
PLATINUM: THIN LAYERS ON ALUMINUM FOIL OR WIRE ARE USED AS IGNITERS DUE TO THE INTENSE HEAT OF ALLOY FORMATION WHICH IS SUFFICIENT TO MELT THE INTERMETALLIC COMPOUNDS.
POLYTRIFLUOROETHYLENE GREASES OR OILS: EXPLOSIVE REACTION WITH FRESH ALUMINUM SURFACES UNDER PRESSURE.
POTASSIUM HYDROXIDE: VIGOROUS REACTION WITH EVOLUTION OF FLAMMABLE HYDROGEN.
POTASSIUM SULFATE: VIOLENT EXPLOSION ON MELTING.
PROPYLENE DICHLORIDE: RAPID DECOMPOSITION MAY OCCUR.
SILICON AND LEAD OXIDE: EXPLOSION ON HEATING.
SODIUM CARBONATE: EXPLOSION WHEN APPLIED TO THE RED-HOT METAL.
SODIUM HYDROXIDE: VIGOROUS REACTION WITH EVOLUTION OF FLAMMABLE HYDROGEN.
SODIUM PEROXIDE: IGNITION UNDER HIGH FRICTION AT 240 C WHEN THE METAL IS FINELY DIVIDED.
SODIUM SULFATE: VIOLENT EXPLOSION ON MELTING.
SULFURIC ACID, HOT, CONCENTRATED: ATTACKS THE METAL WITH EVOLUTION OF FLAMMABLE HYDROGEN.

TETRACHLOROETHYLENE: VIOLENT REACTION.
TETRAFLUOROMETHANE: CONTACT WITH FRESH METAL SURFACES MAY RESULT IN INTENSE EXOTHERMIC REACTIONS.
1,1,1-TRICHLOROETHANE: VIOLENT DECOMPOSITION WITH EVOLUTION OF HYDROGEN

DECOMPOSITION:
THERMAL DECOMPOSITION MAY RELEASE ACRID SMOKE AND IRRITATING FUMES.

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:
NO SPECIAL PRECAUTIONS INDICATED.

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:

EYE PROTECTION NOT REQUIRED, BUT ADVISABLE.

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