PRODUCT #: 215481 NAME: ZINC, MOSSY, 99+% MATERIAL SAFETY DATA SHEET, Valid 11/97 - 1/98 Printed Wednesday, March 19, 1903 8:57AM

Aldrich Chemical Co., Inc. Fluka Chemical Corp. Sigma Chemical Co. 

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P.O. Box 14508 St. Louis, MO 63178 Phone: 314-771-5765 SECTION 1. - - - - - - - CHEMICAL IDENTIFICATION- - - - - - - - -CATALOG #: 215481 NAME: ZINC, MOSSY, 99+% SECTION 2. - - - - COMPOSITION/INFORMATION ON INGREDIENTS - - - - -7440-66-6 CAS #: MF: ZN EC NO: 231-175-3 SYNONYMS BLUE POWDER \* GRANULAR ZINC \* LS 2 \* LS 6 \* MERRILLITE \* RHEINZINK \* UN1435 (DOT) \* UN1436 (DOT) \* ZINC DUST \* ZINC DUST (UN1436) (DOT) \* ZINC POWDER \* ZINC POWDER (UN1436) (DOT) \* ZINC ASHES (UN1435) (DOT) \* SECTION 3. - - - - - - - - HAZARDS IDENTIFICATION - - - - - - - -LABEL PRECAUTIONARY STATEMENTS AIR AND MOISTURE SENSITIVE STORE IN A DRY AREA. IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. FLUSH SKIN WITH WATER. IF INHALED, REMOVE TO FRESH AIR. SECTION 5. - - - - - - - - FIRE FIGHTING MEASURES - - - - - -EXTINGUISHING MEDIA USE APPROVED CLASS D EXTINGUISHERS OR SMOTHER WITH DRY SAND, DRY GROUND LIMESTONE OR DRY CLAY. 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. SECTION 6. - - - - - - - ACCIDENTAL RELEASE MEASURES- - - - - - - -SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL. SECTION 7. - - - - - - - HANDLING AND STORAGE- - - - - - - - -REFER TO SECTION 8. ADDITIONAL INFORMATION ZINC REACTS WITH ACIDS, STRONG ALKALIES, CHLORIDES, CHLORATES, OXIDES, NITRATES, FLUORINE, CARBON DISULFIDE. THE PRESENCE OF MOISTURE CAN RESULT IN SPONTANEOUS COMBUSTION. SECTION 8. - - - - - EXPOSURE CONTROLS/PERSONAL PROTECTION- - - - -CHEMICAL SAFETY GOGGLES. COMPATIBLE CHEMICAL-RESISTANT GLOVES. NIOSH/MSHA-APPROVED RESPIRATOR. SAFETY SHOWER AND EYE BATH. MECHANICAL EXHAUST REQUIRED. AVOID CONTACT AND INHALATION. WASH THOROUGHLY AFTER HANDLING. KEEP TIGHTLY CLOSED. AIR AND MOISTURE SENSITIVE SECTION 9. - - - - - PHYSICAL AND CHEMICAL PROPERTIES - - - - -APPEARANCE AND ODOR

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SILVERY METAL CHUNKS PHYSICAL PROPERTIES MELTING POINT: 420 C VAPOR PRESSURE: 1MM 487 C SPECIFIC GRAVITY: 7.140 SECTION 10. - - - - - - - - STABILITY AND REACTIVITY - - -INCOMPATIBILITIES AMINES CADMIUM PROTECT FROM MOISTURE. AIR SENSITIVE CHLORINATED SOLVENTS SULFUR STRONG ACIDS STRONG BASES HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS NATURE OF DECOMPOSITION PRODUCTS NOT KNOWN. SECTION 11. - - - - - - - TOXICOLOGICAL INFORMATION - - - - -ACUTE EFFECTS MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED. RTECS #: ZG8600000 ZINC IRRITATION DATA SKN-HMN 300 UG/3D-I MLD 85DKA8 -,127,1977 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 - - - - - -MATERIAL IN THE ELEMENTAL STATE SHOULD BE RECOVERED FOR REUSE OR RECYCLING. 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: 030-001-00-1 R 15 CONTACT WITH WATER LIBERATES EXTREMELY FLAMMABLE GASES. R 17 SPONTANEOUSLY FLAMMABLE IN AIR. S 7/8KEEP CONTAINER TIGHTLY CLOSED AND DRY. S 43 IN CASE OF FIRE, USE DRY POWDER. NEVER USE WATER. REVIEWS, STANDARDS, AND REGULATIONS OFT-MAK OEL-ARAB REPUBLIC OF EGYPT:TWA 0.1 MG/M3 JAN 1993 NOHS 1974: HZD T0146; NIS 2; TNF 44; NOS 1; TNE 324 NOHS 1974: HZD 77115; NIS 120; TNF 9450; NOS 90; TNE 118548 NOES 1983: HZD X4242; NIS 46; TNF 3278; NOS 47; TNE 79920; TFE 7874 NOES 1983: HZD X5913; NIS 1; TNF 22; NOS 2; TNE 269; TFE 22

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NOES 1983: HZD X5990; NIS 2; TNF 42; NOS 3; TNE 1007; TFE 321 NOES 1983: HZD X5991; NIS 8; TNF 177; NOS 18; TNE 10589; TFE 3273 NOES 1983: HZD 77115; NIS 211; TNF 23711; NOS 133; TNE 320917; TFE 34194 ATSDR TOXICOLOGY PROFILE (NTIS\*\* PB/90/171414/AS) EPA GENETOX PROGRAM 1988, INCONCLUSIVE: IN VIVO CYTOGENETICS-HUMAN LYMPHOCYTE EPA TSCA SECTION 8(B) CHEMICAL INVENTORY EPA TSCA SECTION 8(D) UNPUBLISHED HEALTH/SAFETY STUDIES ON EPA IRIS DATABASE EPA TSCA TEST SUBMISSION (TSCATS) DATA BASE, APRIL 1997 NIOSH ANALYTICAL METHOD, 1994: ZINC AND COMPOUNDS AS ZN, 7030 NIOSH ANALYTICAL METHOD, 1994: ELEMENTS IN BLOOD OR TISSUE, 8005 NIOSH ANALYTICAL METHOD, 1994: METALS IN URINE, 8310 SECTION 16. - - - - - - - - OTHER INFORMATION- - - - - -THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. SIGMA, ALDRICH, FLUKA SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT. SEE REVERSE SIDE OF INVOICE OR PACKING SLIP FOR ADDITIONAL TERMS AND CONDITIONS OF SALE. COPYRIGHT 1997 SIGMA CHEMICAL CO., ALDRICH CHEMICAL CO., INC., FLUKA CHEMIE AG LICENSE GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY