
MATERIAL SAFETY DATA SHEET (EnduraShield 2254 Hardener)

EMERGENCY CONTACT: (864) 680-1547

SECTION I. IDENTIFICATION

PRODUCT NAME: EnduraShield 2254 *Hardener*

CHEMICAL FAMILY: ALIPHATIC ISOCYANATE HARDENER

PRODUCT TYPE: URETHANE HARDENER

IMPORTANT: THIS MATERIAL WILL NOT BE SOLD FOR USE IN PRODUCTS FOR WHICH PROLONGED CONTACT WITH MUCOUS MEMBRANES, ABRADED SKIN, OR IMPLANTATION WITHIN THE HUMAN BODY IS SPECIFICALLY INTENDED. BECAUSE OF THE WIDE RANGE OF SUCH POTENTIAL USES, WOLVERINE COATINGS CORPORATION IS NOT ABLE TO RECOMMEND THIS MATERIAL AS SAFE AND EFFECTIVE FOR SUCH USES AND ASSUMES NO LIABILITY FOR ANY SUCH USES.

HAZARD STATEMENT: THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200. THIS PRODUCT IS CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD.

SECTION II. HAZARDOUS INGREDIENTS

SPECIFIC CHEMICAL NAME: HEXANE, 1,6-DIISOCYANATO, HOMOPOLYMER

CAS# 028182-81-2

EINECS – 500-060-2

EXPOSURE LIMITS:

OSHA PEL - NOT ESTABLISHED

ACGIH TLV - NOT ESTABLISHED

SUPPLIER OEL – 0.5 MG/M3 TWA; 1.0 MG/M3 STEL

SPECIFIC CHEMICAL NAME: 1,6-HEXAMETHYLENE DIISOCYANATE

CAS # 000822-06-0

EINECS – 212-485-8

EXPOSURE LIMITS:

OSHA PEL - NOT ESTABLISHED

ACGIH TLV – 0.005 PPM TWA

CARCINOGENICITY: THIS PRODUCT DOES NOT CONTAIN ANY INGREDIENTS DESIGNATED BY NTP, IARC, ACGIH OR OSHA AS A PROBABLE OR SUSPECTED HUMAN CARCINOGEN.

COMMENTS: CRITERIA FOR LISTING COMPONENTS IN THIS MSDS ARE AS FOLLOWS: CARCINOGENS ARE LISTED AT 0.1% OR GREATER; HAZARDOUS COMPONENTS ACCORDING TO OSHA 29 CFR 1910-1200 ARE LISTED AT 1.0% OR GREATER; NON-HAZARDOUS COMPONENTS ARE NOT LISTED. THIS IS NOT INTENDED TO BE THE COMPLETE COMPOSITIONAL DISCLOSURE.

SECTION III. PHYSICAL DATA

APPEARANCE AND ODOR: CLEAR TO PALE YELLOW LIQUID WITH NO ODOR.

VAPOR PRESSURE: 12 MMHG AT 50 C

SOLUBILITY IN WATER: REACTS VIOLENTLY

MATERIAL SAFETY DATA SHEET (EnduraShield 2254 Hardener)

VISCOSITY: 700 CPS AT 25 C

SPECIFIC GRAVITY: 1.130 AT 25 C

VOC: 0.001 G/L (VOC LISTED ON THE MSDS IS FOR THIS COMPONENT ONLY. MIXED VOC FOR THE COMBINED PRODUCT MAY HAVE A DIFFERENT VALUE.)

SECTION IV. FIRE AND EXPLOSION DATA

FLASHPOINT: 160 C (320 F) CLOSED CUP

AUTOIGNITION TEMPERATURE: 480 C (896 F)

FLAMMABLE CLASS: NOT APPLICABLE

EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL. WATER IS NOT RECOMMENDED DUE TO REACTION.

SPECIAL FIRE FIGHTING PROCEDURES: DO NOT RELEASE RUNOFF FROM FIRE CONTROL METHODS TO SEWERS OR WATERWAYS.

FIRE FIGHTING EQUIPMENT: FIRE FIGHTING PERSONNEL ARE REQUIRED TO USE RESPIRATORY AND EYE PROTECTION. FULL FIRE PROTECTIVE EQUIPMENT (BUNKER GEAR) AND SELF CONTAINED BREATHING APPARATUS (SCBA) IS RECOMMENDED TO BE USED FOR ALL INDOOR FIRES AND ANY SIGNIFICANT OUTDOOR FIRES. SCBA MAY NOT BE REQUIRED FOR SMALL OUTDOOR FIRES THAT MAY EASILY BE EXTINGUISHED WITH A PORTABLE FIRE EXTINGUISHER.

HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF NITROGEN, OXIDES OF CARBON

SECTION V. REACTIVITY DATA

STABILITY: STABLE. FOLLOW RECOMMENDATIONS FOR PROPER STORAGE AND USE.

CONDITIONS TO AVOID: HIGH TEMPERATURES, SOURCES OF IGNITION, AND MOISTURE

INCOMPATIBILITY (MATERIALS TO AVOID): WATER, STRONG BASES, STRONG ACIDS, STRONG OXIDIZING AGENTS, ALCOHOLS, AND AMINES

HAZARDOUS DECOMPOSITION PRODUCTS: THERMAL OXIDATIVE DECOMPOSITION OF THIS PRODUCT CAN PRODUCE CO, NO_x, HCN, AND HDI VAPORS. SOME CURING AGENTS WILL REACT TO PRODUCE A LARGE AMOUNT OF HEAT.

HAZARDOUS POLYMERIZATION: NO

POLYMERIZATION: MAY OCCUR IF MATERIAL IS IN CONTACT WITH MOISTURE.

SECTION VI. HEALTH HAZARDOUS DATA

PRIMARY ROUTES OF ENTRY: EYE CONTACT, SKIN CONTACT, INGESTION, INHALATION

HEALTH HAZARDS: EYE IRRITANT. HARMFUL IF INHALED. MILD SKIN IRRITANT. MAY CAUSE SKIN SENSITIZATION.

EFFECTS OF OVEREXPOSURE: CONTACT WITH THE SKIN MAY CAUSE AN ALLERGIC REACTION AND SIGNIFICANT IRRITATION TO THE SKIN IS POSSIBLE. MAY CAUSE SIGNIFICANT IRRITATION TO THE EYES. INHALATION MAY BE IRRITATING TO THE NOSE, THROAT AND RESPIRATORY TRACT. INGESTION MAY CAUSE SIGNIFICANT IRRITATION TO THE DIGESTIVE TRACT.

SENSITIZATION: POSSIBLE SENSITIZER BY INHALATION AND SKIN CONTACT.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: SKIN DISORDERS AND ALLERGIES

CARCINOGENS UNDER OSHA, ACGIH, NTP, IARC, OTHER: THIS PRODUCT CONTAINS NO CARCINOGENS IN CONCENTRATIONS OF 0.1 % OR GREATER.

EMERGENCY AND FIRST AID PROCEDURES:

EYES - FOR EYE CONTACT, IMMEDIATELY FLUSH EYES FOR AT LEAST FIFTEEN MINUTES WITH RUNNING WATER. HOLD EYELIDS APART TO ENSURE RINSING OF THE ENTIRE EYE SURFACE AND LIDS WITH WATER. IF PHYSICIAN IS NOT AVAILABLE, FLUSH FOR AN ADDITIONAL FIFTEEN MINUTES. GET IMMEDIATE MEDICAL ATTENTION.

SKIN - FOR SKIN CONTACT, IMMEDIATELY REMOVE CONTAMINATED CLOTHING AND SHOES UNDER A SAFETY SHOWER. WASH AFFECTED AREAS THOROUGHLY WITH PLENTY OF WATER AND SOAP FOR AT LEAST FIFTEEN MINUTES. GET IMMEDIATE MEDICAL ATTENTION. DISCARD OR DECONTAMINATE CLOTHING BEFORE RE-USE, AND DESTROY CONTAMINATED SHOES.

INGESTION - IF SWALLOWED, SEEK IMMEDIATE MEDICAL ATTENTION. IF AFFECTED PERSON

MATERIAL SAFETY DATA SHEET (EnduraShield 2254 Hardener)

IS CONSCIOUS AND ALERT, GIVE 2-3 GLASSES OF WATER TO DRINK AND INDUCE VOMITING BY TOUCHING THE BACK OF THE THROAT WITH FINGER. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. DO NOT LEAVE VICTIM UNATTENDED. VOMITING MAY OCCUR SPONTANEOUSLY. TO PREVENT ASPIRATION OF SWALLOWED PRODUCT, LAY VICTIM ON SIDE WITH HEAD LOWER THAN WAIST. IF VOMITING OCCURS AND THE VICTIM IS CONSCIOUS, GIVE WATER TO FURTHER DILUTE THE CHEMICAL.

INHALATION - IF INHALED, REMOVE FROM AREA TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. GET IMMEDIATE MEDICAL ATTENTION IF BREATHING IS DIFFICULT, TRANSPORT TO MEDICAL CARE AND, IF AVAILABLE, GIVE SUPPLEMENTAL OXYGEN.

OTHER - PROMPTLY REMOVE WET CONTAMINATED NON-IMPERVIOUS CLOTHING. WASH BEFORE RE-USE.

SECTION VII. SPILL OR LEAK PROCEDURES

SMALL SPILL PROCEDURES: DIKE AREA TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIAL ON ADSORBENT, SUCH AS DIATOMACEOUS EARTH, SAWDUST, VERMICULITE, OR ANY APPROPRIATE READILY AVAILABLE MATERIAL AND SWEEP OR SHOVEL ADSORBED MATERIAL INTO CLOSED CONTAINERS FOR DISPOSAL. AFTER ALL VISIBLE TRACES, INCLUDING IGNITIBLE VAPORS, HAVE BEEN REMOVED THOROUGHLY, WASH THE CONTAMINATED AREA. DO NOT FLUSH TO SEWER. IF AREA OF SPILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH AND GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL. WEAR THE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT, REMOVE THE LEAKING CONTAINER TO A CONTAINMENT AREA AND PLACE INTO AN APPROPRIATE CONTAINER TO PREVENT ANY FURTHER SPILL.

LARGE SPILL PROCEDURES: CONSTRUCT TEMPORARY DIKES OF DIRT OR SAND TO CONTAIN SPILL. TAKE PRECAUTIONS AS NECESSARY TO PREVENT CONTAMINATION OF GROUND AND SURFACE WATERS. RECOVER SPILLED MATERIAL ON ADSORBENT, SUCH AS DIATOMACEOUS EARTH, SAWDUST, VERMICULITE, OR ANY APPROPRIATE READILY AVAILABLE MATERIAL AND SWEEP OR SHOVEL ADSORBED MATERIAL INTO CLOSED CONTAINERS FOR DISPOSAL. IF AREA OF THE SPILL IS POROUS, REMOVE AS MUCH CONTAMINATED EARTH AND GRAVEL, ETC. AS NECESSARY AND PLACE IN CLOSED CONTAINERS FOR DISPOSAL. WEAR THE APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT DESIGNATED. CLOSE OR CAP LEAKING VALVES AND/OR BLOCK OR PLUG HOLE IN LEAKING CONTAINER. REMOVE THE LEAKING CONTAINERS TO A CONTAINMENT AREA AND PLACE INTO AN APPROPRIATE CONTAINER TO PREVENT ANY FURTHER SPILL. CONTAIN MATERIAL AS DESCRIBED ABOVE, AND CALL THE LOCAL FIRE, POLICE, OR APPROPRIATE EMERGENCY RESPONSE PROVIDER FOR IMMEDIATE EMERGENCY ASSISTANCE.

ENVIRONMENTAL PRECAUTIONS: PREVENT SPREADING OF MATERIAL INTO SOURCES OF WATER BY CONSTRUCTING TEMPORARY DIKES OF DIRT, SAND, OR ANY APPROPRIATE READILY AVAILABLE MATERIAL.

WASTE DISPOSAL METHODS: MIX TOGETHER WITH THE PROPER COMPONENTS OF MULTI-COMPONENT MATERIALS PER THE MANUFACTURERS INSTRUCTIONS, AND ALLOW TO HARDEN. DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS.

SECTION VIII. SPECIAL PROTECTION INFORMATION

VENTILATION: GOOD GENERAL MECHANICAL VENTILATION AND LOCAL EXHAUST IS REQUIRED.

SKIN PROTECTION: WEAR IMPERVIOUS COMPATIBLE CHEMICAL RESISTANT PROTECTIVE CLOTHING SUCH AS NEOPRENE OR BUTYL RUBBER GLOVES, APRONS, BOOTS, OR TYVEK COVERALLS, AS APPROPRIATE TO PREVENT CONTACT WITH SKIN.

EYE PROTECTION: WEAR SPLASH-PROOF CHEMICAL RESISTANT GOGGLES OR SAFETY GLASSES WITH SIDE SHIELDS WHEN HANDLING AND MIXING THIS MATERIAL.

RESPIRATORY PROTECTION: FOR RESPIRATOR SELECTION AND TRAINING, SEEK PROFESSIONAL ADVICE. WHENEVER WORKPLACE CONDITIONS REQUIRE A USE OF A RESPIRATOR, FOLLOW A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA 1910.134 AND ANSI Z88.2 REQUIREMENTS.

MATERIAL SAFETY DATA SHEET (EnduraShield 2254 Hardener)

WEAR AN OSHA/NIOSH APPROVED RESPIRATOR SELECTED ON ITS SUITABILITY TO PROVIDE ADEQUATE WORKER PROTECTION FOR THE CHEMICALS USED AND GIVEN WORKING CONDITIONS INCLUDING THE LEVEL OF AIRBORNE CONTAMINATION AND PRESENCE OF SUFFICIENT OXYGEN. **OTHER PROTECTIVE EQUIPMENT:** WEAR PROTECTIVE EQUIPMENT TO PREVENT EXPOSURE AND PERSONAL CONTACT.

WORK HYGIENIC PRACTICES: ALWAYS PRACTICE "GOOD PERSONAL HYGIENE" DURING AND AFTER THE USE OF THIS MATERIAL, ESPECIALLY BEFORE EATING, DRINKING, SMOKING, USING THE TOILET, OR APPLYING COSMETICS. DO NOT EAT, DRINK, OR SMOKE IN WORK AREAS THAT CONTAIN HAZARDOUS CHEMICALS.

SECTION IX. TOXICOLOGICAL AND ECOLOGICAL INFORMATION

ACUTE:

1,6-HEXAMETHYLENE DIISOCYANATE: ORAL LD50 (RAT)-738; DERMAL LD50(RABBIT)-593; INHALATION LC50(RAT)-60; DERMAL LD50(RAT) - >5000 MG/KG

GENERAL COMMENTS: THIS PRODUCT DOES NOT CONTAIN SUBSTANCES CONSIDERED BY OSHA, NTP, IARC OR ACGIH TO BE "PROBABLE" OR "SUSPECTED" HUMAN CARCINOGENS. THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BE THOROUGHLY INVESTIGATED OR TESTED TO THE BEST OF OUR KNOWLEDGE.

ENVIRONMENTAL DATA: NO ENVIRONMENTAL DATA HAS BEEN ESTABLISHED OR IS AVAILABLE FOR THIS PRODUCT. AVOID CONTAMINATING WATERWAYS.

SECTION X. SPECIAL PRECAUTIONS

HMIS CODE:

HEALTH: 2 FIRE: 1 REACTIVITY: 1

GENERAL STORAGE: STORE PRODUCT IN ORIGINAL CONTAINERS. STORE CONTAINER IN A SECURE COOL, DRY, WELL VENTILATED AREA BETWEEN **55-85 DEG. F.** OPENED CONTAINERS SHOULD BE BLANKETED WITH NITROGEN GAS AT ATMOSPHERIC PRESSURE TO AVOID REACTION WITH MOISTURE. CONTAMINATION WITH MOISTURE OR "BASIC" COMPOUNDS CAN CAUSE DANGEROUS PRESSURE BUILDUP IN CLOSED CONTAINERS. PROTECT MATERIALS FROM EXCESSIVE EXPOSURE TO HEAT.

HANDLING: AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID BREATHING VAPOR, MIST, OR SPRAY. USE ONLY WITH GOOD VENTILATION. INDIVIDUALS SHOULD WASH THOROUGHLY AFTER HANDLING. DO NOT ALLOW PRODUCT TO CONTACT OPEN FLAME OR ELECTRICAL HEATING ELEMENTS BECAUSE DANGEROUS DECOMPOSITION PRODUCTS MAY FORM. FOR INDUSTRIAL USE ONLY. IF BULGING OF CONTAINERS OCCURS, TRANSFER TO A WELL VENTILATED AREA AND OPEN CAREFULLY TO RELIEVE PRESSURE THEN RESEAL.

FIRST AID: IN CASE OF CONTACT WITH:

EYES- IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST FIFTEEN MINUTES. CALL A PHYSICIAN.

SKIN- FLUSH SKIN WITH PLENTY OF WATER.

CLOTHING- WASH CLOTHING BEFORE REUSE.

SECTION XI. REGULATORY INFORMATION

DOT CLASS: NOT DOT REGULATED

DOT NUMBER: NOT DOT REGULATED

AIR (ICAO/IATA): NOT REGULATED

VESSEL (IMO/IMDG): NOT REGULATED

CANADA TRANSPORT OF DANGEROUS GOODS: NOT REGULATED

SARA TITLE III TOXIC CHEMICAL LIST:

FIRE: NO PRESSURE GENERATING: NO REACTIVITY: YES ACUTE: YES CHRONIC: NO

CERCLA STATUS: 1,6-HEXAMETHYLENE DIISOCYANATE >0.5% WT. %, CERCLA RQ 100 LBS.

OSHA STATUS: THIS MSDS HAS BEEN PREPARED IN COMPLIANCE WITH FEDERAL OSHA HAZZARD COMMUNICATION STANDARD 29 CFR 1910.1200. THIS PRODUCT IS NOT CONSIDERED TO BE A HAZARDOUS CHEMICAL UNDER THAT STANDARD.

MATERIAL SAFETY DATA SHEET (EnduraShield 2254 Hardener)

TSCA INVENTORY STATUS: CHEMICAL COMPONENTS LISTED ON TSCA INVENTORY.

CANADA

WHMIS HAZARD SYMBOL AND CLASSIFICATION: POISON, TOXIC

D1A – POISONOUS AND INFECTIOUS MATERIAL – IMMEDIATE AND SERIOUS EFFECTS – VERY TOXIC

D2A – POISONOUS AND INFECTIOUS MATERIAL – OTHER EFFECTS – VERY TOXIC

D2B – POISONOUS AND INFECTIOUS MATERIAL – OTHER EFFECTS – TOXIC

D1A – ACUTE LETHALITY – VERY TOXIC = IMMEDIATE

D2A – RESPIRATORY TRACT SENSITIZATION – VERY TOXIC – OTHER

D2B – SKIN IRRITATION – TOXIC – OTHER

D2B – SKIN SENSITIZATION – TOXIC – OTHER

DOMESTIC SUBSTANCE LIST (INVENTORY): THIS PRODUCT OR ITS COMPONENTS ARE LISTED OR EXEMPT FROM THE CANADIAN DOMESTIC SUBSTANCE LIST (DSL). COMPONENTS NOT LISTED HAVE BEEN SUBMITTED TO ENVIRONMENT CANADA.

EUROPEAN COMMUNITY

EUROPEAN COMMUNITY REGULATORY: EINECS INVENTORY STATUS: THE COMPONENTS IN THIS PRODUCT ARE LISTED ON OR EXEMPT FROM THE EUROPEAN INVENTORY OF EXISTING CHEMICAL SUBSTANCES (EINECS) OR THE EUROPEAN LIST OF NOTIFIED CHEMICAL SUBSTANCE (ELINCS).

AUSTRALIAN INVENTORY STATUS: THE COMPONENTS IN THIS PRODUCT ARE LISTED ON OR EXEMPT FROM THE AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS).

ISSUE DATE: 07/2008

FOR FURTHER INFORMATION, PLEASE CONTACT PRODUCT SAFETY DIRECTOR.

THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN IS, TO THE BEST OF OUR KNOWLEDGE AND BELIEF, ACCURATE. HOWEVER, SINCE THE CONDITIONS OF HANDLING AND USE ARE BEYOND OUR CONTROL, WE MAKE NO GUARANTEE OF RESULTS, AND ASSUME NO LIABILITY FOR DAMAGES INCURRED BY USE OF THIS MATERIAL. ALL CHEMICALS MAY PRESENT UNKNOWN HEALTH HAZARDS AND SHOULD BE USED WITH CAUTION. ALTHOUGH CERTAIN HAZARDS ARE DESCRIBED HEREIN, WE CANNOT GUARANTEE THAT THESE ARE THE ONLY HAZARDS THAT EXIST. FINAL DETERMINATION OF SUITABILITY OF THE CHEMICAL IS THE SOLE RESPONSIBILITY OF THE USER. USERS OF ANY CHEMICAL SHOULD SATISFY THEMSELVES THAT THE CONDITIONS AND METHODS OF USE ASSURE THAT THE CHEMICAL IS USED SAFELY. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER NATURE, ARE MADE HEREUNDER WITH RESPECT TO THE INFORMATION CONTAINED HEREIN, OR TO THE CHEMICAL TO WHICH THE USER REFERS.