

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: TURBO-LINER 1110 Part-A

SECTION I - MANUFACTURER IDENTIFICATION

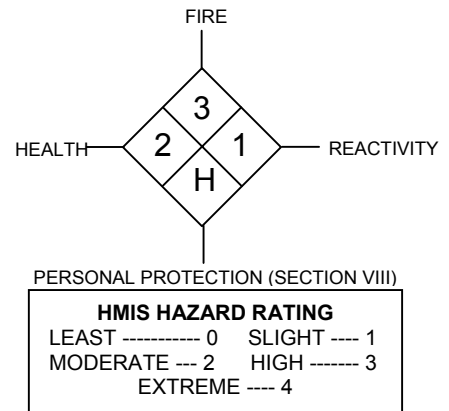
MANUFACTURER'S NAME: Turbo Products, Inc.

ADDRESS: 1 West Cameron, Kellogg, ID 83837

INFORMATION PHONE: (877) 678-8726

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300

DATE REVISED: OCTOBER 2001



SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	OCCUPATIONAL EXPOSURE LIMITS				VAPOR PRESSURE	
	CAS NUMBER	OSHA PEL	ACGIH TLV	MFG TLV	mm Hg	Hg @ TEMP
HDI HOMOPOLYMER	28182-81-2	N/E (STEL-1 mg/m ³)	N/E	.5 mg/m ³	Negligible	20°C (68°F)
HEXAMETHYLENE DIISOCYANATE	822-06-0	N/E	.005 ppm		N/A	
N-BUTYL ACETATE	123-86-4	150 ppm (STEL-200 ppm)	150 ppm (STEL-200 ppm)		15	25°C (77°F)

* Indicate toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: N/E

SPECIFIC GRAVITY: (H₂O=1): 1.06

VAPOR DENSITY: N/A

EVAPORATION RATE: Slower than ether

SOLUBILITY IN WATER: Reacts with water

APPEARANCE AND ODOR: Thin clear liquid

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 32.7°C (91°F)

METHOD USED: Setaflash

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 1.38% n-Butyl Acetate Upper: 7.6% n-Butyl Acetate.

EXTINGUISHING MEDIA: Dry chemical, foam, carbon dioxide, water spray for large fires. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous.

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH approved self-contained breathing apparatus in positive pressure mode with full-face piece. Boots, gloves (neoprene), goggles, and full protective clothing are also required. Excessive pressure or temperature may cause explosive rupture of containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

SECTION V - REACTIVITY DATA

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Heat, high temperature, open flame, sparks, and moisture. Contact with incompatible materials in a closed system will cause liberation of carbon dioxide and buildup of pressure.

INCOMPATIBILITY (MATERIALS TO AVOID): This product will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis and acids, the reaction with water is very slow under 50°C, but is accelerated at higher temperature and in the presence of alkalis, tertiary amines, and metal compounds. Some reactions can be violent.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Carbon dioxide, carbon monoxide, nitrogen oxides, ammonia, trace amounts of hydrogen cyanide and unidentified organic compounds may be formed during combustion.

HAZARDOUS POLYMERIZATION: May occur. High temperatures, above 204°C (400°F) in the presence of moisture, alkalis, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of carbon dioxide gas may rupture closed containers.

SECTION VI - HEALTH HAZARD DATA

SKIN CONTACT: Isocyanates react with skin protein and moisture and can cause irritation. Prolonged contact can cause reddening, swelling, rash, scaling, blistering, and, in some cases, skin sensitization. Individuals who have developed a skin sensitization can develop these symptoms as a result of contact with very small amounts of liquid material or as a result of exposure to vapor. Animal tests have indicated that respiratory sensitization can result from skin contact with HDI. This data reinforces the need to prevent direct skin contact with the product.

EYE CONTACT: Liquid, aerosols or vapors are severely irritating and can cause pain, tearing, reddening and swelling. Prolonged vapor contact may cause conjunctivitis. Any level of contact should not be left untreated.

SKIN ABSORPTION: Systemically toxic concentrations of this product will probably not be absorbed through human skin.

INGESTION: Can result in irritating and corrosive action in the mouth, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea.

INHALATION: HDI homopolymers vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). High vapor concentrations may cause central nervous system (CNS) depression as evidenced by giddiness, headache, dizziness, and nausea. Persons with a preexisting, nonspecific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack. Exposure well above the TLV may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). As a result of previous repeated overexposures or a single large dose, certain individuals may develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanate has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

HEALTH HAZARDS: ACUTE: Exposure may cause mucous membrane and respiratory tract irritation, tightness of chest, headache, shortness of breath, and a dry cough. At concentrations exceeding current occupational limits and for sensitized individuals at levels less than or greater than current occupational limits, asthma-like symptoms may occur. These symptoms may include coughing, wheezing, and shortness of breath. A hypersensitive pneumonitis may also occur if the person is sensitized. This syndrome is characterized by fever, nonproductive cough, wheezing, chills, and shortness of breath. Central nervous system (CNS) depression may also result. The effects of acute exposure may be delayed in onset up to 12-24 hours. **CHRONIC:** Repeated exposure above current occupational limits may cause an allergic sensitization of the respiratory tract. This is characterized by an asthma-like response upon re-exposure to the chemical. The symptoms may include coughing, wheezing, shortness of breath and chest tightness, and may be fatal. Central nervous system (CNS) impairment leading to unconsciousness.

CARCINOGENICITY: NTP: No IARC Monographs: No OSHA Regulated: No

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Cardiovascular disease, asthma or asthmatic bronchitis, emphysema, allergic disease, chronic respiratory disease, sinusitis, headache and dizziness.

EMERGENCY AND FIRST AID PROCEDURES: EYE CONTACT: Immediately flush eyes with plenty of water, preferably lukewarm. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and treated by medical personnel. **INHALATION:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel. **SKIN CONTACT:** Wash material off the skin thoroughly with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention. Wash contaminated clothing and decontaminate footwear before reuse. **INGESTION:** Do not induce vomiting. Give 1 or 2 glasses of milk or water to drink and refer person to medical personnel. Do not give anything by mouth to an unconscious person.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work

area. Prepare a decontamination solution of 2.0% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets. All operations should be performed by trained personnel familiar with the hazards of the chemicals used. Treat the spill area with the decontamination solution, using about 10 parts of solution for each part of the spill, and allow it to react for at least 15 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. Residues from spill cleanup, even when treated as described may continue to be regulated under provisions of RCRA and require storage and disposal as hazardous waste. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

WASTE DISPOSAL METHOD: Slowly stir the isocyanate waste into the decontamination solution described above using 10 parts of the solution for each part of the isocyanate. Let stand for 48 hours, allowing the evolved carbon dioxide to vent away, residues may still be subject to RCRA storage and disposal requirements. Dispose off in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep in cool, dry, ventilated storage area, in closed containers and out of direct sunlight. Keep liquid and vapors away from heat, sparks and flame, store in containers above ground and surrounded by dikes to contain spills or leaks. Sufficient heat or pressure may ignite or detonate even liquid product in the absence of sparks or open flame. Extinguish pilot lights, cigarettes and turn off other sources of ignition before use and until all vapors are gone. Vapors may accumulate and travel to ignition sources distant from the handling site: flash fire can result. Keep containers closed when not in use. Containers, even those that have been emptied, may contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers. Do not pressurize containers to empty them. Use explosion-proof lighting and equipment, non-sparking tools, clothes and shoes. Ground all structures, transfer containers and equipment to conform to the national electrical code. Use procedures that prevent static electrical sparks. Static electricity may accumulate and create a fire hazard.

OTHER PRECAUTIONS: Prevent skin and eye contact, observe TLV limitations. Avoid breathing vapors. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product that caused the sensitization. Air circulation and exhaustion of isocyanate vapors must be maintained until the coatings have fully cured to insure that no potential fire, explosion or health hazard remains. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent chronic overexposure from inhalation. This product can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposure to lower concentrations. Exposure to vapors of heated isocyanates can be extremely dangerous. Employee education and training in safe handling of this material is required under OSHA hazard communication standard. Individuals with existing respiratory disease such as chronic bronchitis, emphysema, or asthma should not be exposed to isocyanates. These individuals should be identified through baseline and annual evaluation and removed from further exposure. Medical examination should include medical history, vital capacity, and forced expiratory volume at one second.

SECTION VIII - CONTROL MEASURES

VENTILATION: If needed, use local exhaust ventilation to keep airborne concentrations below the TLV. Follow guidelines in the ACGIH publication "Industrial Ventilation". Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

RESPIRATORY PROTECTION: If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full-face piece or an air supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

PROTECTIVE CLOTHING: Gloves determined to be impervious under the conditions of use should be worn always when working with this product. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Wash contaminated clothing before re-wearing. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

EYE PROTECTION: Chemical tight goggles and full-face shield.

OTHER PROTECTIVE EQUIPMENT AND MEASURES: Unhindered access to safety shower and eye wash stations. As a general hygienic practice, wash hands and face after use. Showers and cleaning of clothes are recommended. Follow all label instructions. Educate and train employees in safe use of product.

SECTION IX - REGULATORY INFORMATION

DOT PROPER SHIPPING NAME: Paint, 3, UN 1263, PG II. Flammable Liquid.

STATE REGULATIONS: CALIFORNIA: As per requirements of the Safe Drinking Water & Toxic Enforcement Act of CA, 1985 (Proposition 65), the public is warned that materials used in this product may create an exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. This warning required by Section 25249.6 of the California Health and Safety Code.

TOXIC SUBSTANCE CONTROL ACT: All chemicals comprising this product are listed on the TSCA inventory.

USER'S RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions, in addition to those described herein, are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER: The information 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 which exist. Final determination of suitability of the chemical is the sole responsibility of the user. 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 the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: TURBO-LINER 1110 Part-B

SECTION I - MANUFACTURER IDENTIFICATION

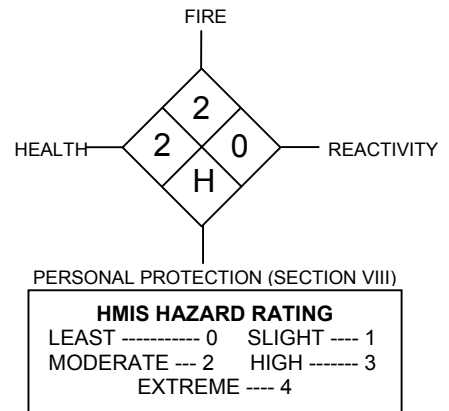
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SECTION II - HAZARDOUS INGREDIENTS/SARA III INFORMATION

HAZARDOUS COMPONENTS	OCCUPATIONAL EXPOSURE LIMITS				VAPOR PRESSURE	
	CAS NUMBER	OSHA PEL	ACGIH TLV	MFG TLV	mm	Hg @ TEMP
1-METHOXY-2-PROPANOL-ACETATE	108-65-6	N/E	N/E		3.7	20°C (68°F)

* No toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 150°C (300°F)

SPECIFIC GRAVITY: (H²O=1): 1.41

VAPOR DENSITY: N/A

EVAPORATION RATE: Slower than ether

SOLUBILITY IN WATER: Pigmented clear insoluble, PMA-20%

APPEARANCE AND ODOR: Thin liquid, fruity, Ester-like

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 50°C (122°F)

METHOD USED: Setaflash

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 1.3%

Upper: 13.1%

EXTINGUISHING MEDIA: Dry chemical, alcohol foam, carbon dioxide, water spray.

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH approved self-contained breathing apparatus in positive pressure mode with full-face piece. Boots, gloves (neoprene), goggles, and full protective clothing are also required. Excessive pressure or temperature may cause explosive rupture of containers. Use water spray to keep fire-exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Do not reseal contaminated containers as pressure buildup may rupture them.

SECTION V - REACTIVITY DATA

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Heat, high temperature, open flame, sparks, and moisture.

INCOMPATIBILITY (MATERIALS TO AVOID): This product will react with isocyanates and strong oxidizing agents.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Combustion products: carbon dioxide, carbon monoxide and thermal decomposition products.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VI - HEALTH HAZARD DATA

SKIN CONTACT: Some components used in this material are reported to be severely irritating in rabbit dermal irritation studies and will probably irritate human skin. Skin sensitization and irritation may develop after repeated and/or prolonged contact with human skin.

EYE CONTACT: Some components used in this material are reported to induce chemical burns in rabbit eye studies; a similar degree of eye injury may develop after contact with human eyes.

SKIN ABSORPTION: Systemically toxic concentrations of this product will probably not be absorbed through human skin.

INGESTION: Irritation or chemical burns of the mouth, pharynx, esophagus and stomach can develop following ingestion.

INHALATION: Vapors can irritate eyes, nose and respiratory passages. Severe overexposure may induce respiratory sensitization with asthma like symptoms. Symptoms include chronic cough, tightness of chest with difficulty in breathing. These symptoms may be immediate or delayed up to several hours after exposure. There are reports that chronic exposures may result in permanent decreases in lung function.

HEALTH HAZARDS: ACUTE: Exposure may cause mucous membrane and respiratory tract irritation, tightness of chest, headache, shortness of breath, and a dry cough. At concentrations exceeding current occupational limits and for sensitized individuals at levels less than or greater than current occupational limits, asthma-like symptoms may occur. These symptoms may include coughing, wheezing, and shortness of breath. Central nervous system (CVS) depression may occur. **CHRONIC:** Repeated exposure above current occupational limits may cause an allergic sensitization of the respiratory tract. This is characterized by an asthma-like response upon re-exposure to the chemical. The symptoms may include coughing, wheezing, shortness of breath and chest tightness.

CARCINOGENICITY: NTP: No IARC Monographs: No OSHA Regulated: No

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Cardiovascular disease, asthma or asthmatic bronchitis, allergic disease, chronic respiratory disease, sinusitis, headache and dizziness.

EMERGENCY AND FIRST AID PROCEDURES: EYE CONTACT: Immediately flush eyes with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Have eyes examined and treated by medical personnel. **INHALATION:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel. **SKIN CONTACT:** Wash material off the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention. Wash contaminated clothing and decontaminate footwear before reuse. **INGESTION:** Do not induce vomiting. Give 1 or 2 glasses of water to drink and refer person to medical personnel. Never give anything by mouth to an unconscious person.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container and remove from work area. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

WASTE DISPOSAL METHOD: Dispose of in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in tightly sealed containers to protect from atmospheric moisture. Store in a cool dry area. The material is combustible; the combustion products may be hazardous. Do not expose this material to open flames, spark or other sources of ignition. Use proper grounding and bonding procedures during liquid transfer for as described in National Fire Protection Association Document NFPA77.

OTHER PRECAUTIONS: Prevent skin and eye contact, observe TLV limitations. Avoid breathing vapors. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product that caused the sensitization.

SECTION VIII - CONTROL MEASURES

VENTILATION: if needed, use local exhaust ventilation to keep airborne concentrations below the TLV. Follow guidelines in the ACGIH publication "Industrial Ventilation". Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

RESPIRATORY PROTECTION: If airborne concentrations exceed or are expected to exceed the TLV, MSHA/NIOSH approved organic cartridge vapor respirator is necessary. Observe OSHA regulations for respirator use.

PROTECTIVE CLOTHING: Gloves determined to be impervious under the conditions of use should be worn always when working with this product. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Wash

contaminated clothing before re-wearing. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

EYE PROTECTION: Chemical tight goggles and full-face shield.

OTHER PROTECTIVE EQUIPMENT AND MEASURES: Unhindered access to safety shower and eye wash stations. As a general hygienic practice, wash hands and face after use. Showers and cleaning of clothes are recommended.

SECTION IX - REGULATORY INFORMATION
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DOT PROPER SHIPPING NAME: Not regulated.

STATE REGULATIONS: CALIFORNIA: As per requirements of the Safe Drinking Water & Toxic Enforcement Act of CA, USA 1985 (Proposition 65), the public is warned that materials used in this product may create an exposure to chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

TSCA (TOXIC SUBSTANCE CONTROL ACT): All chemicals comprising this product are listed on the TSCA inventory.

USER'S RESPONSIBILITY: A bulletin such as this cannot be expected to cover all possible individual situations. As the user has the responsibility to provide a safe workplace, all aspects of an individual operation should be examined to determine if, or where, precautions, in addition to those described herein, are required. Any health hazard and safety information herein should be passed on to your customers or employees, as the case may be.

DISCLAIMER: The information 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 which exist. Final determination of suitability of the chemical is the sole responsibility of the user. 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 the chemical to which the information refers. It is the responsibility of the user to comply with all applicable federal, state and local laws and regulations.