



Tnemec Company, Inc.
 123 West 23rd Avenue, Kansas City, MO 64116-3064
 Emergency Telephone: 800-535-5053 (INFOTRAC)
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Material Safety Data Sheet (MSDS)

For coatings, resins and related materials, approved by the U.S. Department of Labor as essentially similar to form OSHA-20, meets requirements of CFR 29 Part 1910.1200, OSHA'S hazard communication standard.
 NPCA 1-84

PREPARED DATE: 07/17/2003 Series: F090-0097A Product Class: POLYMERIC DIISOCYANATE SERIES 090 TNEME ZINC REDDISH Page 1 of 3

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS#	% By Wt.	VAPOR PRESS. MMHG @ 68 °F	OCCUPATIONAL EXPOSURE LIMITS					
				ACGIH			OSHA		
				TLV - TWA	TLV - STEL	TLV - C	PEL -TWA	PEL - STEL	PEL - C
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	.10		0000.100 MG/M3			0000.050 MG/M3		
XYLENE**	1330-20-7	33.84	5.100	0100.000 PPM	0150.000 PPM		0100.000 PPM		
IRON OXIDE FUME	1309-37-1	1-5		0005.000 MG/M3			0010.000 MG/M3		
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	3.07		0000.100 MG/M3			0000.050 MG/M3		
MICA (RESPIRABLE DUST)	12001-26-2	1-5		0003.000 MG/M3			0003.000 MG/M3		
AMORPHOUS SILICA	7631-86-9	1-5		0010.000 MG/M3			0006.000 MG/M3		
DIPHENYLMETHANE DIISOCYANATE (MDI) MONOMER**	101-68-8	8.91		0000.005 PPM					0000.020 PPM
ETHYL BENZENE**	100-41-4	8.45	6.000	0100.000 PPM	0125.000 PPM		0100.000 PPM		
DIPHENYLMETHANE DIISOCYANATE (MDI) POLYMER		31-40							

** SARA Reportable Product

This product contains one or more reported carcinogens or suspected carcinogens which are noted NTP, IARC, or OSHA-Z in the other limits recommended column. This substance contains a material classified as a hazardous air pollutant. This product contains pigment dusts which may be released when subjected to abrasive blasting, sanding, or grinding. Contains isocyanate monomer. If subject to spray application, engineering and administrative controls must be instituted to maintain an exposure level below .005ppm. If these controls are not adequate, the use of an air-supplied respirator is mandatory.

SECTION 3 - HEALTH HAZARD INFORMATION

EMERGENCY OVERVIEW: POTENTIAL HEALTH EFFECTS: EYE: Severe irritation. Redness, tearing, blurred vision. SKIN: Moderate irritation, drying of skin, defatting and possible dermatitis. Allergic skin responses. Discoloration. INHALATION - OVEREXPOSURE TO SOLVENT VAPORS OR SPRAY MIST: Nasal and respiratory irritation, anesthetic effects, dizziness, possible unconsciousness and asphyxiation, stupor, weakness, fatigue, nausea, and headache. INHALATION - OVEREXPOSURE TO FREE PIGMENT DUST: Coughing, wheezing, shortness of breath, restricted nasal passages, lung injury. INGESTION: Gastrointestinal irritation, nausea, vomiting, diarrhea, death, aspiration into the lungs which can be fatal. CHRONIC EFFECTS: Prolonged contact or repeated exposure to isocyanate concentrations greater than the recommended TLV may result in permanent respiratory and skin sensitization. Once diagnosed as being sensitized to isocyanates, no further exposure can be permitted. Prolonged inhalation of dusts containing crystalline silica may result in the development of a lung disease known as silicosis. NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the vapors may be harmful or fatal. Based on an International Agency for Research on Cancer (IARC) conclusion that there is "sufficient evidence in experimental animals for the carcinogenicity of ethyl benzene and inadequate evidence of carcinogenicity in humans, IARC's overall evaluation is that ethyl benzene is possibly carcinogenic to humans" (Group 2B). This product contains crystalline silica, which is considered a cancer hazard by inhalation of respirable dust. The International Agency for Research on Cancer (IARC) concluded that respirable crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1B). TARGET ORGANS: Can cause eye damage. Can cause skin irritation. Can cause lung damage. Can be corrosive to respiratory tract. Can cause liver damage. Can be corrosive to gastrointestinal tract. Can cause kidney damage. Can cause nervous system effects. Can cause cancer. Risk of cancer depends on duration and level of exposure. Can cause respiratory tract sensitization. Can cause skin sensitization. OTHER: This product when mixed with other components acquires the hazards of all components. PRIMARY ROUTES OF ENTRY: Dermal and Inhalation. PROPOSITION 65: Pigments and/or other raw materials present in this product contain trace amounts of a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Flush immediately with large amounts of clean water under low pressure for at least 15 minutes. Consult a physician. **SKIN CONTACT:** Wash affected area with soap and water. Remove contaminated clothing. Dispose of or launder accordingly. Consult a physician if skin irritation persists. **INHALATION:** Remove affected individual to fresh air. Treat symptomatically. If breathing is difficult, administer oxygen. If breathing has stopped give artificial respiration. Consult a physician. **INGESTION:** Drink 1 or 2 glasses of water to dilute. Do not induce vomiting. Consult a physician or poison control center **IMMEDIATELY.** Treat symptomatically. **NOTE TO PHYSICIAN:** Exposure to isocyanate products may aggravate persons with asthmatic type conditions, chronic bronchitis, other chronic respiratory diseases, skin eczema, or skin sensitization.

SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION	FLASHPOINT	EXPLOSION LEVEL LOW	EXPLOSION LEVEL HIGH	FLAMMABILITY LIMITS LOWER	FLAMMABILITY LIMITS HIGHER
	78.0 °F	1.0	-N/A	-N/A	-N/A

EXTINGUISHING MEDIA: Foam, carbon dioxide, and dry chemical. **FIRE-FIGHTING PROCEDURES AND EQUIPMENTS:** Keep away from heat, open flames, sparks, and areas where static charge may be generated. Do not apply to hot surfaces due to possible fire and explosion risk. For closed containers, pressure build-up and possible explosion might occur due to extreme heat exposure. Solvent vapors are heavier than air and may travel considerable distance to a source of ignition and flash back. Small traces of HCN may be evolved under fire conditions. Water may be used to cool unruptured containers. Wear self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to prevent inhalation of hazardous decomposition products. Use appropriate extinguishing media to control fire. Water may cause violent frothing if sprayed directly into containers of burning liquid.

SECTION 6 - SPILL OR LEAK PROCEDURES

CLEAN-UP: Remove all sources of ignition. Spills may be collected with inert, absorbent material for proper disposal. Use non-sparking tools, protective gloves, goggles and clothing, adequate ventilation, avoid the breathing of vapors and use respiratory protective devices. Transfer absorbent material to suitable containers for proper disposal. Remove containers to a safe place and cover loosely until carbon dioxide has finished evolving.

SECTION 7 - SPECIAL PRECAUTIONS

HANDLING AND STORAGE: Store in dry area. Keep closures tight and upright to prevent leakage. Do not store in high temperature areas or near fire or open flame. Refer to product data sheet for recommended storage temperatures. **SPECIAL COMMENTS:** Prevent prolonged breathing of airborne contaminants such as vapor, spray mists, or dusts. Prevent contact with skin and eyes. Do not take internally. Keep out of reach of children. Do not reuse or alter containers without proper industrial cleaning. Do not weld or flame cut empty, uncleaned containers due to potential fire and explosion hazard. Consult product data sheet for proper application instructions.

SECTION 8 - SAFE HANDLING AND USE INFORMATION

HYGIENIC PRACTICES: Wash hands and other contaminated skin areas with warm soap and water before eating. **EYE PROTECTION:** Use chemical resistant splash type goggles. **RESPIRATORY PROTECTION:** Particulate, chemical cartridge, air purifying half-mask respirators can be used within certain limitations; consult the respirator manufacturer for specific uses and limitations. Where airborne contaminant concentrations are unknown, the use of a NIOSH/MSHA approved fresh-air supplied respirator is mandatory. Respiratory protective devices must be used when engineering and administration controls are not adequate to maintain Threshold Limit Values (TLV) and Permissible Exposure Limits (PEL) of airborne contaminants below the listed values for those hazardous ingredients identified in Section II of this MSDS. Observe OSHA regulations for respirator use (CFR 29, 1910.134) whenever a respirator is used. Where the isocyanate concentration exceeds the TLV or is unknown, or where there is spray application, the use of a NIOSH/MSHA approved fresh-air supplied respirator is mandatory. **OTHER PROTECTION:** Use Chemical resistant gloves. Use protective cream where skin contact is likely. Use chemical resistant coveralls or apron to protect against skin and clothing contamination. **VENTILATION:** Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH's Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product. Heavier than air solvent vapors should be removed from lower levels of work area due to potential explosion hazard and all ignition sources (non-explosion proof equipment) should be eliminated if flammable mixtures will be encountered.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

VAPOR PRESSURE	VAPOR DENSITY	LOWER BOILING RANGE	HIGHER BOILING RANGE	FORMULA WEIGHT BY VOLUME	VOC IN LBS PER GALLON	EVAPORATION RATE	%VOLATILE BY WEIGHT
6.00	-N/A	275.0 °F	288.0 °F	8.9615 LB/GL	3.793	9.400 (Ether = 1)	42.328

SECTION 10 - STABILITY AND REACTIVITY

INCOMPATIBILITIES: Strong oxidizing agents. Water, alcohols, amines, strong bases, metal components, surface active materials. **DECOMPOSITION:** Carbon monoxide, carbon dioxide, hydrocarbon fragments Nitrogen monoxide, nitrogen dioxide Trace amounts of HCN. **CONDITIONS TO AVOID:** Heat, sparks, open flames. Amine compounds under uncontrolled conditions. **POLYMERIZATION:** Will not occur. **STABILITY:** Stable.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose of in accordance with Federal, state, and local regulations regarding pollution. **OTHER:**

SECTION 16 - HMIS INFORMATION

Health: 3

Flammability: 3

Reactivity: 2

This is a condensed MSDS, providing safety and health information pertinent to the complete product series. Physical constants such as Wt./Gal., VOC content and chemical constituents will vary with color. Safety and health information may also vary with color. Certain colors may contain Carbon Black and Crystalline Silica, which have been identified as reported or suspected carcinogens. Prolonged inhalation of respirable dusts containing Crystalline Silica may result in the development of a lung disease known as silicosis. For a complete, color-specific MSDS, please contact your local Tnemec representative listed at www.tnemec.com.

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910. To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials 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.



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PREPARED DATE: 07/17/2003 Series: F090-0097B Product Class: ZINC DUST SERIES 090 TNEME-ZINC ZINC DUS Page 1 of 2

SECTION 2 - HAZARDOUS INGREDIENTS

INGREDIENTS	CAS#	% By Wt.	VAPOR PRESS. MMHG @ 68 °F	OCCUPATIONAL EXPOSURE LIMITS					
				ACGIH			OSHA		
				TLV - TWA	TLV - STEL	TLV - C	PEL - TWA	PEL - STEL	PEL - C
ZINC OXIDE (TOTAL DUST)**	1314-13-2	3.00		0010.000			0010.000		
ZINC (TOTAL DUST)**	7440-66-6	97.00		0010.000			0015.000		
				MG/M3			MG/M3		
				MG/M3			MG/M3		

** SARA Reportable Product

This product contains no reported carcinogens or suspected carcinogens. This product contains pigment dusts which may be released when subjected to abrasive blasting, sanding, or grinding.

SECTION 3 - HEALTH HAZARD INFORMATION

EMERGENCY OVERVIEW: POTENTIAL HEALTH EFFECTS: EYE: Redness, tearing, blurred vision. SKIN: INHALATION - OVEREXPOSURE TO SOLVENT VAPORS OR SPRAY MIST: INHALATION - OVEREXPOSURE TO FREE PIGMENT DUST: Coughing, wheezing, shortness of breath, restricted nasal passages, lung injury. Inhalation of metallic zinc dust may result in symptoms known as metal fume fever. Symptoms include chills, fever, muscular pain, nausea and vomiting. INGESTION: Gastrointestinal irritation. CHRONIC EFFECTS: TARGET ORGANS: Can cause eye irritation. Can cause skin irritation. Can cause respiratory tract irritation. Can cause gastrointestinal tract irritation. Can cause nervous system effects. OTHER: This product when mixed with other components acquires the hazards of all components. PRIMARY ROUTES OF ENTRY: Inhalation. PROPOSITION 65: Pigments and/or other raw materials present in this product contain trace amounts of a chemical or chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

SECTION 4 - FIRST AID MEASURES

EYE CONTACT: Flush immediately with large amounts of clean water under low pressure for at least 15 minutes. Consult a physician. SKIN CONTACT: Wash affected area with soap and water. Remove contaminated clothing. Dispose of or launder accordingly. Consult a physician if skin irritation persists. INHALATION: Remove affected individual to fresh air. Treat symptomatically. If breathing is difficult, administer oxygen. If breathing has stopped give artificial respiration. Consult a physician. INGESTION: NOTE TO PHYSICIAN:

SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION	FLASHPOINT	EXPLOSION LEVEL LOW	EXPLOSION LEVEL HIGH	FLAMMABILITY LIMITS LOWER	FLAMMABILITY LIMITS HIGHER
	998.0 °F	-N/A	-N/A	-N/A	-N/A

EXTINGUISHING MEDIA: Do not use water; use dry chemical. FIRE-FIGHTING PROCEDURES AND EQUIPMENTS: Dry dust forms explosive mixtures in air. Zinc dust in contact with water forms hydrogen gas which in a confined space with air or oxygen may form an explosive concentration. Do not spread material. Once ignited, zinc dust may burn readily in air. Use appropriate extinguishing media to control fire. DO NOT USE WATER. Wear self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode to prevent inhalation of hazardous decomposition products.

SECTION 6 - SPILL OR LEAK PROCEDURES

CLEAN-UP: Avoid breathing dust. Use a dust mask or respirator. Avoid contact with water. Prohibit smoking. Eliminate all ignition sources and avoid dusting. Shovel into a container for disposal.

SECTION 7 - SPECIAL PRECAUTIONS

HANDLING AND STORAGE: Store in dry area. Keep closures tight and upright to prevent leakage. Do not store in high temperature areas or near fire or open flame. Refer to product data sheet for recommended storage temperatures. SPECIAL COMMENTS:

SECTION 8 - SAFE HANDLING AND USE INFORMATION

HYGIENIC PRACTICES: Wash hands and other contaminated skin areas with warm soap and water before eating. EYE PROTECTION: Usually not necessary. Dust tight goggles in dusty environments. RESPIRATORY PROTECTION: Respiratory protective devices must be used when engineering and administration controls are not adequate to maintain Threshold Limit Values (TLV) and Permissible Exposure Limits (PEL) of airborne contaminants below the listed values for those hazardous ingredients identified in Section II of this MSDS. Observe OSHA regulations for respirator use (CFR 29, 1910.134) whenever a respirator is used. A dust mask or a particulate respirator approved by NIOSH/MSHA is recommended. OTHER PROTECTION: Use chemical resistant coveralls or apron to protect against skin and clothing contamination. VENTILATION: Sufficient ventilation, in volume and pattern, should be provided through both local and general exhaust to keep the air contaminant concentration below current applicable OSHA Permissible Exposure Limits (PEL) and ACGIH's Threshold Limit Values (TLV). Appropriate ventilation should be employed to remove hazardous decomposition products formed during welding or flame cutting operations of surfaces coated with this product.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

VAPOR PRESSURE	VAPOR DENSITY	LOWER BOILING RANGE	HIGHER BOILING RANGE	FORMULA WEIGHT BY VOLUME	VOC IN LBS PER GALLON	EVAPORATION RATE	%VOLATILE BY WEIGHT
-N/A	-N/A	-N/A °F	-N/A °F	58.7993 LB/GL	.000	.000 (Ether = 1)	.000

SECTION 10 - STABILITY AND REACTIVITY

INCOMPATIBILITIES: Acids. DECOMPOSITION: Zinc oxide fume CONDITIONS TO AVOID: Heat, sparks, open flames. POLYMERIZATION: Will not occur. STABILITY: Stable.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Dispose of in accordance with Federal, state, and local regulations regarding pollution.

SECTION 16 - HMIS INFORMATION

Health: 2 Flammability: 1 Reactivity: 1

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