

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: Nukote PA, Polyaspartic Polyurea Side-A ISO

SECTION I - COMPANY IDENTIFICATION

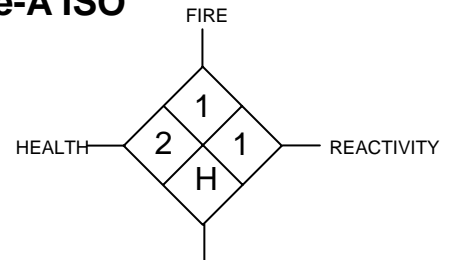
COMPANY NAME: Nukote Coating Systems

ADDRESS: Suite 7H, Aihe Mansion, No. 629 Lingling Road, Shanghai 200030, China
704 228th Avenue NE, No. 736, Sammamish, WA 98074, USA

INFORMATION PHONE: (China) 021-54249811, (USA) 425-702-1973

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300
Outside USA and Canada, call CHEMTREC collect: 703-527-3887

DATE REVISED: October 27, 2004



PERSONAL PROTECTION (SECTION VIII)

HMIS HAZARD RATING
LEAST ----- 0 SLIGHT ---- 1
MODERATE --- 2 HIGH ----- 3
EXTREME ---- 4

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
HOMOPOLYMER OF HDI	28182-81-2	N/E	N/E	0.5 mg/m ³	neg.	20°C (68°F)
ISOPHORONE DIISOCYANATE	4098-71-9	0.005	0.005	N/E	<0.01	20°C (68°F)

* Indicates toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.
Information concerning non-hazardous ingredients is considered a Trade Secret

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: >239°C (460°F)

SPECIFIC GRAVITY: (H₂O=1): 1.167

V.O.C. (Combined Side-A & Side-B): 12 g/l (0.1 lb/gal)

VAPOR DENSITY: Heavier than air

EVAPORATION RATE: Slower than ether

SOLUBILITY IN WATER: Reacts with water

APPEARANCE AND ODOR: Thin clear liquid, mild chemical odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >130°C (266°F)

METHOD USED: TCC

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: 1.8

Upper: 7.5

EXTINGUISHING MEDIA: Dry chemical, foam, and carbon dioxide. If water is used, use very large quantities of cold water. 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: Open flame, 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 because of contact with very small amounts of liquid material or because of exposure to vapor. Animal tests have indicated that respiratory sensitization can result from skin contact with IPDI. 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 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: IPDI 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). Because 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. Fever, nonproductive cough, wheezing, chills, and shortness of breath characterize this syndrome. 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) depression may also result; unconsciousness and death may occur in extreme cases.

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. Trained personnel familiar with the hazards of the chemicals used should perform all operations. 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 sparks and flame, store in containers above ground and surrounded by dikes to contain spills or leaks. Keep containers closed when not in use. Do not pressurize containers to empty them.

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: Not regulated.

STATE REGULATIONS: CALIFORNIA – None.

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 and current as of the date of this MSDS. 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: Nukote PA, Polyaspartic Polyurea Side-B RESIN

SECTION I - COMPANY IDENTIFICATION

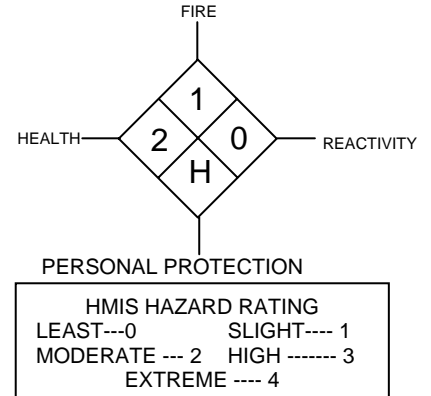
COMPANY NAME: Nukote Coating Systems

ADDRESS: Suite 7H, Aihe Mansion, No. 629 Lingling Road, Shanghai 200030, China
704 228th Avenue NE, No. 736, Sammamish, WA 98074, USA

INFORMATION PHONE: (China) 021-54249811, (USA) 425-702-1973

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300
Outside USA and Canada, call CHEMTREC collect: 703-527-3887

DATE REVISED: October 27, 2004



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
ALIPHATIC DIAMINES	154279-60-4	N/E	N/E	N/E	<1	20°C (68°F)
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	0.1 mg/m ³	0.1 mg/m ³			

* No toxic chemical(s) subject to the reporting requirements of Section 313 of Title III and of 40 CFR 372.
Information concerning non-hazardous ingredients is considered a Trade Secret

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT: 308°C (586°F)

SPECIFIC GRAVITY: (H₂O=1): 1.13 - 1.3

V.O.C. (Combined Side-A & Side-B): 12 g/l (0.1 lb/gal)

VAPOR DENSITY: Heavier than air

EVAPORATION RATE: Slower than ether

SOLUBILITY IN WATER: Insoluble

APPEARANCE AND ODOR: Pigmented liquid, ammonia-like odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: >94°C (200°F)

METHOD USED: TCC

FLAMMABLE LIMITS IN AIR BY VOLUME: Lower: N/E

Upper: N/E

EXTINGUISHING MEDIA: Dry chemical, foam, carbon dioxide, water spray (fog).

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: None.

SECTION V - REACTIVITY DATA

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Open flame, and moisture. Contact with incompatible materials in a closed system will cause liberation of toxic vapors buildup of pressure.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids and isocyanates.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Toxic levels of ammonia, combustion products of nitrogen, carbon monoxide, carbon dioxide, irritating aldehydes and ketones may be formed on burning in a limited air supply.

HAZARDOUS POLYMERIZATION: Will not occur.

SECTION VI - HEALTH HAZARD DATA

SKIN CONTACT: Causes severe irritation with pain, severe excess redness and swelling with chemical burns.

EYE CONTACT: Causes irritation experienced as pain, with excess blinking and tear production, and as seen as extreme redness and swelling of the eye and chemical burns of the eye.

SKIN ABSORPTION: Product may be absorbed through skin and cause nausea, headache, and general discomfort.

INHALATION: Vapors 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.

INGESTION: Causes burning of mouth, throat, and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness, and collapse. Aspiration may occur during swallowing or vomiting, resulting in lung damage.

HEALTH HAZARDS: ACUTE: Exposure may cause skin and eye irritation, respiratory tract irritation. Chemical burns may result due to overexposure. Affects of exposure may be delayed. May produce temporary and reversible hazy or blurred vision. Symptoms disappear when exposure is terminated.

CHRONIC: Repeated skin contact may cause a persistent irritation or dermatitis. Repeated inhalation may cause lung damage.

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

Inhalation of crystalline silica can cause cancer based on animal data and IARC concludes sufficient evidence in humans (Group 1). Prolonged and repeated overexposure to free crystalline silica dust above the TLV level may cause scarring of the lungs with cough and shortness of breath. Silicosis may result from breathing crystalline silica. Silica and other fillers are encapsulated and not expected to be released from product under normal conditions of use. IARC classifies carbon black as a category 2B carcinogen (known animal carcinogen, possible human carcinogen) based on inhalation studies. Because this product is a free-flowing liquid or paste, dust inhalation is not an expected route of exposure. Sanding cured product can result in exposure to carbon black dusting.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Skin contact may aggravate an existing dermatitis (skin condition). Overexposure to vapor, dust or mist may aggravate existing respiratory conditions, such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease.

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, but do not seal, and remove from work area. Residues from spill cleanup 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: 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: Store in tightly sealed containers to protect from atmospheric moisture. Store in a cool dry area. Do not expose this material to open flames, spark or other sources of ignition.

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. Individuals with existing respiratory disease such as chronic bronchitis, emphysema, or asthma should not be exposed. 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.

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 type goggles with full-face shield must be worn. Do not wear contact lenses.

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

DOT PROPER SHIPPING NAME: Not regulated.

STATE REGULATIONS: CALIFORNIA - None.

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 and current as of the date of this MSDS. 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.