

1. Identification

Product identifier	Nukote MI PPB, Side A
Other means of identification	None.
Recommended use	Coating.
Recommended restrictions	-
Manufacturer/Importer/Supplier/Distributor information	
Supplier	
Company name	Nukote Coating Systems International
Address	2051 Reliance Parkway
	Bedford, TX 76051
Telephone	832-770-7100
Email	SDS@nukoteglobal.com
Emergency Phone Number	Chemtrec:800-424-9300 (account: CCN1217) OR International:703-527-3887 (account:CCN1217)

2. Hazard(s) identification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2
	Sensitization, respiratory	Category 1
	Sensitization, skin	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure (inhalation)	Category 2 (respiratory tract)

OSHA defined hazards Not classified.

Label elements



Signal word Danger

Hazard statement Harmful if inhaled. Causes skin irritation. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. Suspected of causing cancer. May cause respiratory irritation. May cause damage to organs (respiratory tract) through prolonged or repeated exposure by inhalation.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapors. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation wear respiratory protection.

Response If exposed or concerned: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a poison center/doctor.

Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Polymethylene polyphenyl isocyanate	9016-87-9	30 - 56
4,4'-Methylene diphenyl diisocyanate	101-68-8	22 - 41
Polyurethane prepolymer	68092-58-0	8 - 14
Diisocyanate methylenediphenyl	26447-40-5	7 - 13

Composition comments The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret. All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. For more detailed chemical composition, refer to the certificate of analysis.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If experiencing respiratory symptoms: Call a poison center or doctor/physician.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Dry chemical. Foam. Carbon dioxide (CO2).
Unsuitable extinguishing media	Water. If water is used, use large amounts as the reaction between hot Isocyanates and water can be vigorous.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed. Reaction between water and hot isocyanate may be vigorous.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Keep unnecessary personnel away. Use water spray to cool unopened containers. Move containers from fire area if you can do so without risk. Use water spray to reduce vapors or divert vapor cloud drift. Caution should be exercised when using water or foam as frothing may occur, especially if directed onto containers of hot or burning material. Control contaminated fire water to minimize release to the environment.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards Vapors may travel considerable distance to a source of ignition and flash back. Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Containers may burst if overheated.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Isolate area. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Stop the flow of material, if this is without risk. 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). Treat the spill area with the decontamination solution, using about 10 parts of the 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. Slowly stir the isocyanate waste into the decontamination solution described above. 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 of in compliance with all relevant local, state, and federal laws and regulations regarding treatment.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

Environmental precautions Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide adequate ventilation. Do not breathe mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Persons susceptible to allergic reactions should not handle this product. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Store in tightly closed container. Store in a well-ventilated place. Protect from direct sunlight. Protect from moisture. Protect against physical damage. Store away from incompatible materials (see Section 10 of the SDS). Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

Use explosion-proof ventilation equipment. Take precautionary measures against static discharges. Ground/bond container and equipment. Containers, even those that have been emptied, can contain explosive vapors. Do not cut, drill, grind, weld or perform similar operations on or near containers.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	Ceiling	0.2 mg/m ³
		0.02 ppm
Diisocyanate methylenediphenyl (CAS 26447-40-5)	Ceiling	0.2 mg/m ³
		0.02 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	TWA	0.005 ppm
Diisocyanate methylenediphenyl (CAS 26447-40-5)	TWA	0.005 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	Ceiling	0.2 mg/m3
		0.02 ppm
	TWA	0.05 mg/m3 0.005 ppm
Diisocyanate methylenediphenyl (CAS 26447-40-5)	Ceiling	0.2 mg/m3
		0.02 ppm
	TWA	0.05 mg/m3 0.005 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses, sealed eyewear, unvented tight fitting goggles or face shield depending on hazard of task. In addition to goggles, wear a face shield where a splash to the face is reasonably possible.

Skin protection**Hand protection**

Wear appropriate chemical resistant gloves. Nitrile, neoprene, PVC or rubber gloves are recommended. Use disposable gloves protecting against isocyanates along with cotton gloves closest to the skin. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Frequent change is advisable. Contaminated gloves should be replaced. Suitable gloves can be recommended by the glove supplier.

Skin protection**Other**

Wear appropriate chemical resistant clothing. Use of rubber boots and an impervious apron, rain gear or chemical resistant coveralls is recommended. Impervious body suit, protective clothing should be made of a natural rubber, neoprene, nitrile rubber or PVC.

Respiratory protection

Wear positive pressure self-contained breathing apparatus (SCBA).

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing must not be allowed out of the workplace.

9. Physical and chemical properties**Appearance**

Physical state Liquid.

Form Amber liquid.

Color Amber.

Odor Aromatic.

Odor threshold Not available.

pH Not available.

Melting point/freezing point	Not available.
Initial boiling point and boiling range	392 °F (200 °C)
Flash point	302.0 °F (150.0 °C)
Evaporation rate	Slower than ether.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Heavier than air.
Relative density	1.23 (H2O=1)
Solubility(ies)	
Solubility (water)	Reacts with water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	10.24 lb/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
VOC	0 lb/gal

10. Stability and reactivity

Reactivity	This product will react with any material containing active hydrogens, such as water, alcohol, ammonia, amines, alkalis and acids, the reaction with water is slow under 50°C, but is accelerated at higher temperature and in the presence of alkalis, tertiary amines, and metal compounds. Reacts violently with strong oxidizers.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Will not occur under normal conditions but under high temperatures in the presence of alkalis, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of carbon dioxide gas may rupture closed containers.
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Moisture. Contact with incompatible materials. Protect against direct sunlight. Generation of gas during decomposition can cause pressure in closed systems.
Incompatible materials	Active hydrogen compounds. Water, moisture. Alcohols. Ammonia. Amines. Alkalis. Metal compounds. Strong oxidizing agents.
Hazardous decomposition products	During combustion: Carbon dioxide (CO ₂). Carbon monoxide (CO). Nitrogen oxides (NO _x). Trace amounts of: Hydrogen cyanide. Unidentified organic compounds.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Harmful if inhaled. May cause damage to organs through prolonged or repeated exposure by inhalation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin contact	Causes skin irritation. May cause an allergic skin reaction. 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.
Eye contact	Causes serious eye irritation.
Ingestion	May cause discomfort if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Coughing. Difficulty in breathing. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

Information on toxicological effects

Acute toxicity Harmful if inhaled.

Components	Species	Test Results
------------	---------	--------------

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)

Acute**Inhalation**

Aerosol

LC50	Rat	0.369 mg/l, 4 Hours
------	-----	---------------------

Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

Acute**Dermal**

LD50	Rabbit	> 10000 mg/kg
------	--------	---------------

Inhalation

Mist

LC50	Rat	> 490 mg/m ³ , 4 Hours
------	-----	-----------------------------------

Oral

LD50	Rat	> 10000 mg/kg
------	-----	---------------

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization

Respiratory sensitization May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8) 3 Not classifiable as to carcinogenicity to humans.

Diisocyanate methylenediphenyl (CAS 26447-40-5) 3 Not classifiable as to carcinogenicity to humans.

Polymethylene polyphenyl isocyanate (CAS 9016-87-9) 3 Not classifiable as to carcinogenicity to humans.

NTP Report on Carcinogens

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure May cause damage to organs (respiratory tract) through prolonged or repeated exposure by inhalation.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful. May cause damage to organs through prolonged or repeated exposure. Persons already sensitized to diisocyanates may develop allergic reactions when using this product.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability In the aquatic and terrestrial environment, material reacts with water forming predominantly insoluble polyureas which appear to be stable. In the atmospheric environment, material is expected to have a short tropospheric half-life, based on calculations and by analogy with related diisocyanates. 10-day Window: Not applicable Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 302C or Equivalent.

Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	This product contains one or more substances identified as hazardous air pollutants (HAPs) per the US Federal Clean Air Act (see section 15).

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. When this product as supplied is to be discarded as waste, it may meet the definition of a RCRA waste under 40 CFR 261.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal. DO NOT pressurize, cut, heat, or weld containers; they may explode and cause injury or death. Empty product containers may contain product residue. DO NOT reuse empty containers without commercial cleaning or reconditioning. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

TSCA Chemical Action Plans, Chemicals of Concern

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	Methylene Diphenyl Diisocyanate (MDI) And Related Compounds Action Plan [RIN 2070-ZA15]
Diisocyanate methylenediphenyl (CAS 26447-40-5)	Methylene Diphenyl Diisocyanate (MDI) And Related Compounds Action Plan [RIN 2070-ZA15]
Polymethylene polyphenyl isocyanate (CAS 9016-87-9)	Methylene Diphenyl Diisocyanate (MDI) And Related Compounds Action Plan [RIN 2070-ZA15]

CERCLA Hazardous Substance List (40 CFR 302.4)

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	Listed.
Diisocyanate methylenediphenyl (CAS 26447-40-5)	Listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA)

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories	Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitization Carcinogenicity Specific target organ toxicity (single or repeated exposure)
-------------------------------------	--

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
4,4'-Methylene diphenyl diisocyanate	101-68-8	22 - 41
Diisocyanate methylenediphenyl	26447-40-5	7 - 13
Polymethylene polyphenyl isocyanate	9016-87-9	30 - 56

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)

US. New Jersey Worker and Community Right-to-Know Act

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)
- Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

US. Pennsylvania Worker and Community Right-to-Know Law

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)

US. Rhode Island RTK

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

- 4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)
- Diisocyanate methylenediphenyl (CAS 26447-40-5)
- Polymethylene polyphenyl isocyanate (CAS 9016-87-9)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	11-June-2020
Revision date	29-August-2019
Version #	02
HMIS® ratings	Health: 2* Flammability: 1 Physical hazard: 0

NFPA ratings



Disclaimer

NuKote Coating Systems cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.