



SAFETY DATA SHEET

1. Identification

Product identifier	Nukote HAR, A-Side
Other means of identification	None.
Recommended use of the chemical and restrictions on use	
Recommended use	Coating.
Restrictions on use	None known.

Details of manufacturer or importer

Supplier	Nukote Coating Systems International
Company name	Nukote Distributors Pty Ltd
Address	P.O. Box 275 Wickham NSW 2293 Australia
Telephone	02 4911 2000
Emergency telephone	1800 039 008 (Chemwatch)

2. Hazard(s) identification

Classification of the hazardous chemical

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

Label elements, including precautionary statements

Hazard symbol(s)



Health hazard

Exclamation mark

Signal word

Danger

Hazard statement(s)

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. Causes damage to organs through prolonged or repeated exposure.

Precautionary statement(s)

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe mist/vapours. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should 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 soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash 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 CENTRE/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.
Supplemental information	None.
Other hazards which do not result in classification	None known.

3. Composition/information on ingredients

Mixture

Identity of chemical ingredients	CAS number and other unique identifiers	Concentration of ingredients
4,4'-Methylene diphenyl diisocyanate	101-68-8	64 - 100
Propylene carbonate	108-32-7	4 - 7

Composition comments All concentrations are in percent by weight.

4. First-aid measures

Description of necessary 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. If swallowed, seek medical advice immediately and show this container or label. 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.
Personal protection for first-aid responders	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. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.
Symptoms caused by exposure	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.

Medical attention and special treatment Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media Dry chemical powder. Foam. Carbon dioxide (CO₂). Sand. Earth.

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

Vapours may travel considerable distance to a source of ignition and flash back. In a fire, this product may build up pressure and rupture a sealed container. Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them. During fire, gases hazardous to health may be formed such as: Carbon oxides. Nitrogen Oxides. Traces of hydrogen cyanide. Unidentified organic compounds.

Special protective equipment and precautions for fire fighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Keep unnecessary personnel away. Cool containers exposed to flames with water until well after the fire is out. Move containers from fire area if you can do so without risk. Use water spray to reduce vapours or divert vapour 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.
Hazchem code	2X
General fire hazards	Vapours may travel considerable distance to a source of ignition and flash back. Due to reaction with water producing CO ₂ -gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Containers may burst if overheated. Reacts violently with water.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist/vapours. 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.

For emergency responders Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

Methods and materials for containment and cleaning up ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). 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 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 hazardous 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.

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. Do not breathe mist/vapours. Do not eat, drink or smoke when using the product. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Persons susceptible to allergic reactions should not handle this product. Remove contaminated clothing and protective equipment before entering eating areas. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Mechanical ventilation or local exhaust ventilation is required. Use non-sparking hand tools and explosion-proof electrical equipment. Take precautionary measures against static discharges. Do not pressurize, cut, weld, braze, solder, drill, or grind on containers. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Ground container and transfer equipment to eliminate static electric sparks. Keep container(s) tightly closed and properly labeled. Store in a cool, dry, well-ventilated place. Protect from heat and direct sunlight. Store away from incompatible materials (see section 10 of the SDS). Protect against physical damage. Keep container tightly sealed when not in use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure controls and personal protection

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Australia. National Workplace OELs (Workplace Exposure Standards for Airborne Contaminants, Appendix A)

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	STEL	0.07 mg/m3
	TWA	0.02 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	TWA	0.005 ppm

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	STEL	0.07 mg/m3
	TWA	0.02 mg/m3

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value	Form
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)	TWA	0.05 mg/m3	Inhalable fraction.
Propylene carbonate (CAS 108-32-7)	TWA	8.5 mg/m3	
		2 ppm	

Biological limit values

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

Appropriate engineering controls

Explosion-proof general and local exhaust ventilation. 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, for example personal protective equipment (PPE)

Eye/face protection When working with liquids wear splash-proof chemical goggles and face shield unless full facepiece respiratory protection is worn.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves. Nitrile, neoprene, PVC or rubber gloves are recommended. 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. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Contaminated gloves should be replaced. Other suitable gloves can be recommended by the glove supplier.

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

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), wear a NIOSH-approved (or equivalent) full-facepiece airline respirator in the positive pressure mode with emergency escape provisions or a positive pressure self-contained breathing apparatus (SCBA). Air purifying (cartridge type) respirators are not approved for protection against isocyanates. Check with respiratory protective equipment suppliers.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

Hygiene measures

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 should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Nukote HAR, A-Side

954551 Version #: 01 Revision date: - Issue date: 05-June-2020

SDS Australia

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Physical state	Liquid.
Form	Clear liquid.
Colour	Clear.
Odour	Mild aromatic.
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	150 °C (302 °F)
Flash point	93.3 °C (200.0 °F)
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.
Vapour pressure	Not available.
Vapour density	Heavier than air.
Relative density	1.16 (H ₂ O=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 physical and chemical parameters	
Density	9.68 lb/gal
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.
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 temperatures and pressures.
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	Avoid temperatures exceeding the flash point. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Moisture. Protect against direct sunlight. Contact with incompatible materials in a closed system will cause liberation of carbon dioxide and buildup of pressure. 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 oxidising agents.
Hazardous decomposition products	Carbon monoxide. Carbon dioxide. Nitrogen oxides. Trace amounts of: Hydrogen cyanide. Unidentified organic compounds.

11. Toxicological information

Information on possible routes of exposure

Inhalation	Fatal if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Causes damage to organs through prolonged or repeated exposure by inhalation.
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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.
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.
Ingestion	May be harmful if swallowed.
Symptoms related to exposure	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.

Acute toxicity Fatal if inhaled. May be harmful if swallowed.

Components	Species	Test Results
4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8)		
Acute		
Inhalation		
<i>Aerosol</i>		
LC50	Rat	0.369 mg/l, 4 Hours
Propylene carbonate (CAS 108-32-7)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 5 mg/l
Oral		
LD50	Rat	> 5000 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/irritation Causes serious eye irritation.

Respiratory or skin sensitisation

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

Skin sensitisation May cause an allergic skin reaction. Persons already sensitised to diisocyanates may develop allergic reactions when using this product.

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.

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 Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful. Causes damage to organs through prolonged or repeated exposure. Persons already sensitised 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 on bioaccumulation.
Mobility in soil	This product is miscible in water.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal methods	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.
Residual waste	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 pressurise, 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

ADG

Not regulated as dangerous goods.

RID

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

Safety, health and environmental regulations

National regulations This Safety Data Sheet was prepared in accordance with Australia Model Code of Practice for the preparation of Safety Data Sheets for Hazardous Chemicals (23/12/2011).

Australia Medicines & Poisons Appendix A

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix B

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix D

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix E

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix F

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix G

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix H

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix I

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix J

Poisons schedule number not allocated.

Australia Medicines & Poisons Appendix K

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 10

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 2

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 3

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 4

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 5

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 6

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

Australia Medicines & Poisons Schedule 7

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 8

Poisons schedule number not allocated.

Australia Medicines & Poisons Schedule 9

Poisons schedule number not allocated.

Australia National Pollutant Inventory (NPI): Threshold quantity

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8) 10 TONNES/YR Threshold Category: 1

High Volume Industrial Chemicals (HVIC)

4,4'-Methylene diphenyl diisocyanate (CAS 101-68-8) 1000 - 9999 TONNES See the regulation for additional information.

Importation of Ozone Depleting Substances (Customs(Prohibited imports) Regulations 1956, Schedule 10)

Not listed.

National Pollutant Inventory (NPI) substance reporting list

Not listed.

Prohibited Carcinogenic Substances

Not regulated.

Prohibited Substances (National Model Regulation for the control of Workplace Hazardous Substances, Schedule 2 NOHSC:1005 (1994) as amended)

Not listed.

Restricted Importation of Organochlorine Chemicals (Customs(Prohibited Imports) Regulations 1956, Schedule 9)

Not listed.

Restricted Carcinogenic Substances

Not regulated.

International regulations**Stockholm Convention**

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto Protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

Issue date 05-June-2020

Revision date -

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.