SAFETY DATA SHEET
GRIPTOP HB HARDENER

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name GRIPTOP HB HARDENER

Internal identification GRIPTOPHBH/8

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Component of polyurethane floor coating system

Uses advised against No specific uses advised against are identified.

1.3. Details of the supplier of the safety data sheet

Supplier

Don Construction Products Ltd.,
Hawthorn House
Helions Bumpstead Road
Haverhill
Suffolk
CB9 7AA
Tel: 01538 361799 Mon-Fri 08:30 - 17:00 (excl bank holidays)
Fax: 01538 361899
E-Mail: info.uk@dcp-int.com

1.4. Emergency telephone number

Emergency telephone 01538 361799 Mon-Fri 8.30am - 5.00pm (excluding Bank Holidays)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Eye Irrit. 2 - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Carc. 2 - H351 STOT SE 3 - H335 STOT RE 2 - H373

Environmental hazards Not Classified

Classification (67/548/EEC or 1999/45/EC) Xn;R20,R48/20. Carc. Cat. 3;R40. R42/43. Xi;R36/37/38.

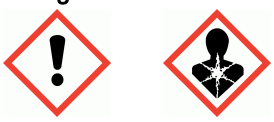
Human health See Section 11 for additional information on health hazards.

Environmental The product will harden into a solid mass in contact with water and moisture. The resultant material is not biodegradable.

2.2. Label elements

GRIPTOP HB HARDENER

Pictogram



Signal word	Danger
Hazard statements	H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H332 Harmful if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation. H351 Suspected of causing cancer. H373 May cause damage to organs through prolonged or repeated exposure.
Precautionary statements	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P284 [In case of inadequate ventilation] wear respiratory protection. P302+P352 IF ON SKIN: Wash with plenty of water. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P313 Get medical advice/ attention.
Contains	DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES, DIPHENYLMETHANE-4,4'-DI-ISOCYANATE, DIPHENYLMETHANE-2,4'-DI-ISOCYANATE, DIPHENYLMETHANE-2,2'-DI-ISOCYANATE
Supplementary precautionary statements	P260 Do not breathe vapour/ spray. P262 Do not get in eyes, on skin, or on clothing. P271 Use only outdoors or in a well-ventilated area. P321 Specific treatment (see medical advice on this label). P403+P233 Store in a well-ventilated place. Keep container tightly closed. P501 Dispose of contents/ container in accordance with local regulations.

2.3. Other hazards

SECTION 3: Composition/information on ingredients

3.2. Mixtures

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES **60-100%**

CAS number: 9016-87-9

Classification

Acute Tox. 2 - H330
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Resp. Sens. 1 - H334
Skin Sens. 1 - H317
Carc. 2 - H351
STOT SE 3 - H335
STOT RE 2 - H373

Classification (67/548/EEC or 1999/45/EC)

Xn;R20,R48/20. Carc. Cat. 3;R40. Xi;R36/37/38. R42/43.

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DIPHENYLMETHANE-4,4'-DI-ISOCYANATE **10-30%**

CAS number: 101-68-8 EC number: 202-966-0

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Resp. Sens. 1 - H334
Skin Sens. 1 - H317
Carc. 2 - H351
STOT SE 3 - H335
STOT RE 2 - H373

Classification (67/548/EEC or 1999/45/EC)
Xn;R20,R48/20. Carc. Cat. 3;R40. Xi;R36/37/38. R42/43.

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE **1-10%**

CAS number: 5873-54-1 EC number: 227-534-9

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Resp. Sens. 1 - H334
Skin Sens. 1 - H317
Carc. 2 - H351
STOT SE 3 - H335
STOT RE 2 - H373

Classification (67/548/EEC or 1999/45/EC)
Carc. Cat. 3;R40 Xn;R20,R48/20 Xi;R36/37/38 R42/43

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE **1-5%**

CAS number: 2536-05-2 EC number: 219-799-4

Classification
Acute Tox. 4 - H302
Acute Tox. 4 - H332
Skin Irrit. 2 - H315
Eye Irrit. 2 - H319
Resp. Sens. 1 - H334
Skin Sens. 1 - H317
Carc. 2 - H351
STOT SE 3 - H335
STOT RE 2 - H373

Classification (67/548/EEC or 1999/45/EC)
Carc. Cat. 3;R40 Xn;R20,R48/20 Xi;R36/37/38 R42/43

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Composition comments Polyisocyanate pre-polymer

SECTION 4: First aid measures

4.1. Description of first aid measures

General information Remove affected person from source of contamination.

Inhalation Move affected person to fresh air at once. Get medical attention.

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Ingestion Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if irritation persists after washing.

Eye contact Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

General information The severity of the symptoms described will vary dependent on the concentration and the length of exposure.

Inhalation Harmful if inhaled. Vapours may cause drowsiness and dizziness. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.

Ingestion May cause discomfort if swallowed.

Skin contact Skin irritation. May cause an allergic skin reaction.

Eye contact Irritation of eyes and mucous membranes.

4.3. Indication of any immediate medical attention and special treatment needed

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with foam, carbon dioxide or dry powder. Larger fires: Water spray.

5.2. Special hazards arising from the substance or mixture

Specific hazards Oxides of carbon. Oxides of nitrogen. Hydrogen cyanide (HCN).

Hazardous combustion products Oxides of carbon. Oxides of nitrogen. When heated, vapours/gases hazardous to health may be formed.

5.3. Advice for firefighters

Protective actions during firefighting No specific firefighting precautions known.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. Use suitable respiratory protection if ventilation is inadequate. Avoid contact with skin and eyes.

6.2. Environmental precautions

Environmental precautions Avoid discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Contain spillage with sand, earth or other suitable non-combustible material. Containers with collected spillage must be properly labelled with correct contents and hazard symbol. Do not close container tightly. Risk of excess pressure build-up.

6.4. Reference to other sections

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Reference to other sections For personal protection, see Section 8. See Section 11 for additional information on health hazards. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid inhalation of vapours. Provide adequate ventilation.

Advice on general occupational hygiene Do not eat, drink or smoke when using this product. Good personal hygiene procedures should be implemented.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep separate from food, feedstuffs, fertilisers and other sensitive material. Store in tightly-closed, original container in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Occupational exposure limits

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m3(Sen)
Short-term exposure limit (15-minute): WEL 0.07 mg/m3(Sen)

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m3(Sen)
Short-term exposure limit (15-minute): WEL 0.07 mg/m3(Sen)
Sen

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m3(Sen)
Short-term exposure limit (15-minute): WEL 0.07 mg/m3(Sen)

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Long-term exposure limit (8-hour TWA): WEL 0.02 mg/m3(Sen)
Short-term exposure limit (15-minute): WEL 0.07 mg/m3(Sen)

WEL = Workplace Exposure Limit
Sen = Capable of causing occupational asthma.

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE (CAS: 101-68-8)

DNEL

Workers - Dermal; Short term systemic effects: 50 mg/kg
Workers - Inhalation; Short term systemic effects: 0.1 mg/m³
Workers - Dermal; Short term local effects: 28.7 mg/cm²
Workers - Inhalation; Short term local effects: 0.1 mg/m³
Workers - Inhalation; Long term systemic effects: 0.05 mg/m³
Workers - Inhalation; Long term local effects: 0.05 mg/m³

PNEC

- Fresh water; >1 mg/l
- Marine water; >0.1 mg/l
- Soil; >1 mg/kg
- STP; >1 mg/l

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE (CAS: 5873-54-1)

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DNEL	Workers - Dermal; Short term systemic effects: 50 mg/kg Workers - Inhalation; Short term systemic effects: 0.1 mg/m³ Workers - Dermal; Short term local effects: 28.7 mg/cm² Workers - Inhalation; Short term local effects: 0.1 mg/m³ Workers - Inhalation; Long term systemic effects: 0.05 mg/m³ Workers - Inhalation; Long term local effects: 0.05 mg/m³
PNEC	- Fresh water; >1 mg/l - Marine water; >0.1 mg/l - Soil; >1 mg/kg - STP; >1 mg/l

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE (CAS: 2536-05-2)

DNEL	Workers - Dermal; Short term systemic effects: 50 mg/kg Workers - Inhalation; Short term systemic effects: 0.1 mg/m³ Workers - Dermal; Short term local effects: 28.7 mg/cm² Workers - Inhalation; Short term local effects: 0.1 mg/m³ Workers - Inhalation; Long term systemic effects: 0.05 mg/m³ Workers - Inhalation; Long term local effects: 0.05 mg/m³
PNEC	- Fresh water; >1 mg/l - Marine water; >0.1 mg/l - Soil; >1 mg/kg - STP; >1 mg/l

8.2. Exposure controls

Protective equipment

Appropriate engineering controls	Provide adequate general and local exhaust ventilation. Avoid inhalation of vapours. Observe any occupational exposure limits for the product or ingredients.
Personal protection	Always check applicability with your supplier of protective equipment.
Eye/face protection	If there is a risk of splashing, wear chemical resistant goggles or visor approved to BS EN166.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Nitrile gloves to BSEN374 are recommended. Break through times can vary depending on thickness, use and source. Change gloves regularly.
Other skin and body protection	Wear suitable protective clothing as protection against splashing or contamination. Wear apron or protective clothing in case of contact.
Hygiene measures	Use engineering controls to reduce air contamination to permissible exposure level. Provide eyewash station. Remove contaminated clothing and wash the skin thoroughly with soap and water after work. Do not eat, drink or smoke when using this product.
Respiratory protection	In the case of hypersensitivity of the respiratory tract (eg asthmatics and those who suffer from chronic bronchitis) it is inadviseable to work with this product. In case of inadequate ventilation use a respirator suitable for organic vapours. Consult respirator manufacturer for specific advice.
Environmental exposure controls	Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

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SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Dark brown.
Odour	Musty
Odour threshold	Not determined.
pH	Not applicable.
Melting point	Not applicable.
Initial boiling point and range	>300°C @ 1013 hPa
Flash point	>200°C
Evaporation rate	Not applicable.
Evaporation factor	Not applicable.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	Not applicable.
Other flammability	Not applicable.
Vapour pressure	<0.00001 mbar @ °C
Vapour density	Not determined.
Relative density	1.24 @ 20°C
Bulk density	Not determined.
Solubility(ies)	Insoluble in water.
Partition coefficient	Not applicable.
Auto-ignition temperature	>500°C
Decomposition Temperature	Not applicable.
Viscosity	130 cP @ 20°C
Explosive properties	Not applicable.
Explosive under the influence of a flame	Not considered to be explosive.
Oxidising properties	Not known.
Comments	Information given is applicable to the product as supplied.

9.2. Other information

Other information	None.
Refractive index	Not determined.
Particle size	Not applicable.
Molecular weight	Not determined.
Volatility	Not determined.

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Saturation concentration	Not determined.
Critical temperature	Not determined.
Volatile organic compound	Not determined.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	The product will harden into a solid mass in contact with water and moisture.

10.2. Chemical stability

Stability	Stable under the prescribed storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur. No potentially hazardous reactions known.

10.4. Conditions to avoid

Conditions to avoid	Water, moisture.

10.5. Incompatible materials

Materials to avoid	Amines. Alcohols, glycols. Reacts with water forming carbon dioxide. Risk of bursting owing to increased pressure in closed containers.

10.6. Hazardous decomposition products

Hazardous decomposition products	Oxides of carbon. Oxides of nitrogen.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Toxicological effects	No information available.

Acute toxicity - oral

Notes (oral LD_{50})	No specific test data are available.

Acute toxicity - dermal

Notes (dermal LD_{50})	No specific test data are available.

Acute toxicity - inhalation

Notes (inhalation LC_{50})	No specific test data are available.
ATE inhalation (vapours mg/l)	11.02
ATE inhalation (dusts/mists mg/l)	1.5

Skin corrosion/irritation

Skin corrosion/irritation	Irritating to skin.
Animal data	No specific test data are available.
Human skin model test	No specific test data are available.
Extreme pH	No specific test data are available.

Serious eye damage/irritation

Serious eye damage/irritation	Irritation of eyes is assumed.

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Respiratory sensitisation

Respiratory sensitisation Sensitising.

Skin sensitisation

Skin sensitisation Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro No specific test data are available.

Genotoxicity - in vivo No specific test data are available.

Carcinogenicity

Carcinogenicity Suspected of causing cancer.

Target organ for carcinogenicity No specific target organs known.

IARC carcinogenicity Not listed.

Reproductive toxicity

Reproductive toxicity - fertility No specific test data are available.

Reproductive toxicity - development Not considered to be toxic to the reproductive system.

Specific target organ toxicity - single exposure

STOT - single exposure No specific test data are available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

General information The product contains small quantities of isocyanate. May cause respiratory allergy. May cause respiratory system irritation.

Inhalation Harmful by inhalation. Vapours irritate the respiratory system. May cause coughing and difficulties in breathing. May cause sensitisation by inhalation.

Ingestion May cause discomfort if swallowed.

Skin contact Irritating to skin. May cause sensitisation by skin contact.

Eye contact Irritation of eyes and mucous membranes.

Acute and chronic health hazards Prolonged exposure to the preparation may cause serious health effects. Frequent inhalation of vapours may cause respiratory allergy. Suspected of causing cancer.

Route of entry Inhalation Skin and/or eye contact

Target organs Eyes Respiratory system, lungs Skin

Medical symptoms Skin irritation. Irritation of eyes and mucous membranes. Gas or vapour in high concentrations may irritate the respiratory system. Symptoms following overexposure may include the following: Headache. Fatigue. Nausea, vomiting. Prolonged or repeated exposure may cause the following adverse effects: Allergic rash. General respiratory distress, unproductive cough. Difficulty in breathing.

Medical considerations Skin disorders and allergies. Pre-existing eye problems. Chronic respiratory and obstructive airway diseases.

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

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Acute toxicity - oral	
Acute toxicity oral (LD_{50} mg/kg)	10,000.0
Species	Rat
ATE oral (mg/kg)	10,000.0
Acute toxicity - dermal	
Acute toxicity dermal (LD_{50} mg/kg)	9,400.0
Species	Rabbit
ATE dermal (mg/kg)	9,400.0
Acute toxicity - inhalation	
Acute toxicity inhalation (LC_{50} vapours mg/l)	0.31
Species	Rat
Acute toxicity inhalation (LC_{50} dust/mist mg/l)	0.31
Species	Rat
ATE inhalation (dusts/mists mg/l)	0.31
Skin corrosion/irritation	
Skin corrosion/irritation	Based on available data the classification criteria are not met.
Animal data	Slightly irritating.
Germ cell mutagenicity	
Genotoxicity - in vitro	Ames test: Negative.
Carcinogenicity	
Carcinogenicity	Dose level: 0-0.2, 1-6 mg/m³, Inhalation, Rat
Target organ for carcinogenicity	Respiratory system, lungs
Reproductive toxicity	
Reproductive toxicity - fertility	No specific test data are available.
Reproductive toxicity - development	Teratogenicity: - NOAEL: 12 mg/m³, Inhalation, Rat Maternal toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat Developmental toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat
Specific target organ toxicity - single exposure	
STOT - single exposure	, Inhalation, A single exposure may cause the following adverse effects: Asthma, pulmonary sensitisation.
Target organs	Respiratory tract
Specific target organ toxicity - repeated exposure	
STOT - repeated exposure	, Inhalation, High concentrations may cause severe lung damage.

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Target organs	Respiratory tract

Aspiration hazard

Aspiration hazard	Not relevant.

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	2,000.0
Species	Rat
ATE oral (mg/kg)	2,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	9,400.0
Species	Rat
ATE dermal (mg/kg)	9,400.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} dust/mist mg/l)	0.368
Species	Rat
ATE inhalation (dusts/mists mg/l)	1.5

Skin corrosion/irritation

Skin corrosion/irritation	Irritating to skin.
Animal data	Irritating.

Respiratory sensitisation

Respiratory sensitisation	Guinea pig: Sensitising. There is evidence that the product can cause respiratory hypersensitivity.

Skin sensitisation

Skin sensitisation	Buehler test - Guinea pig: Not sensitising. Local Lymph Node Assay (LLNA) - Mouse: Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	Ames test: Negative.

Carcinogenicity

Carcinogenicity	Dose level: 0-0.2, 1-6 mg/m³, Inhalation, Rat

Reproductive toxicity

Reproductive toxicity - fertility	No specific test data are available.
Reproductive toxicity - development	Teratogenicity: - NOAEL: 12 mg/m³, Inhalation, Rat Maternal toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat Developmental toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat

Specific target organ toxicity - single exposure

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STOT - single exposure	A single exposure may cause the following adverse effects: Asthma, pulmonary sensitisation.
Target organs	Respiratory tract

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	High concentrations may cause severe lung damage.
Target organs	Respiratory tract

Aspiration hazard

Aspiration hazard	Not relevant.

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	2,000.0
Species	Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	9,400.0
Species	Rat
ATE dermal (mg/kg)	9,400.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} dust/mist mg/l)	0.387
Species	Rat
ATE inhalation (dusts/mists mg/l)	1.5

Skin corrosion/irritation

Skin corrosion/irritation	Irritating to skin.

Respiratory sensitisation

Respiratory sensitisation	Guinea pig: Sensitising.

Skin sensitisation

Skin sensitisation	Buehler test - Guinea pig: Not sensitising. Local Lymph Node Assay (LLNA) - Mouse: Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	Ames test: Negative.

Carcinogenicity

Carcinogenicity	Dose level: 0-0.2, 1-6 mg/m³, Inhalation, Rat

Reproductive toxicity

Reproductive toxicity - fertility	No specific test data are available.

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Reproductive toxicity - development	Teratogenicity: - NOAEL: 12 mg/m³, Inhalation, Rat Maternal toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat Developmental toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat

Specific target organ toxicity - single exposure

STOT - single exposure	A single exposure may cause the following adverse effects: Asthma, pulmonary sensitisation.
Target organs	Respiratory tract

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	High concentrations may cause severe lung damage.
Target organs	Respiratory tract

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	2,000.0
Species	Rat
ATE oral (mg/kg)	2,000.0

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	9,400.0
Species	Rat
ATE dermal (mg/kg)	9,400.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} dust/mist mg/l)	0.527
Species	Rat
ATE inhalation (dusts/mists mg/l)	1.5

Skin corrosion/irritation

Skin corrosion/irritation	May be slightly irritating to skin.
Animal data	Slightly irritating.

Respiratory sensitisation

Respiratory sensitisation	Guinea pig: Sensitising.

Skin sensitisation

Skin sensitisation	Local Lymph Node Assay (LLNA) - Mouse: Sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	Ames test: Negative.

Carcinogenicity

Carcinogenicity	Dose level: 0-0.2, 1-6 mg/m³, Inhalation, Rat

Reproductive toxicity

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Reproductive toxicity - fertility	No specific test data are available.
Reproductive toxicity - development	Teratogenicity: - NOAEL: 12 mg/m³, Inhalation, Rat Maternal toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat Developmental toxicity: - NOAEL: 4 mg/m³, Inhalation, Rat

Specific target organ toxicity - single exposure

STOT - single exposure	A single exposure may cause the following adverse effects: Asthma, pulmonary sensitisation.
Target organs	Respiratory tract

Specific target organ toxicity - repeated exposure

STOT - repeated exposure	High concentrations may cause severe lung damage.
Target organs	Respiratory tract

Aspiration hazard

Aspiration hazard	Not relevant.

SECTION 12: Ecological Information

Ecotoxicity The product should not be allowed to enter drains, sewers or watercourses.

12.1. Toxicity

Toxicity	Not measured. Do not allow to enter waterways or drains
Acute toxicity - fish	Not determined
Acute toxicity - aquatic invertebrates	Not determined.
Acute toxicity - aquatic plants	Not determined.
Acute toxicity - microorganisms	Not determined.
Acute toxicity - terrestrial	Not determined.
Chronic toxicity - fish early life stage	Not determined.
Short term toxicity - embryo and sac fry stages	Not determined.
Chronic toxicity - aquatic invertebrates	Not determined.

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

Acute toxicity - fish	LC_{50}, 96 hours: >1000 mg/l, Brachydanio rerio (Zebra Fish)
Acute toxicity - aquatic invertebrates	EC_{50}, 24 hours: >1000 mg/l, Daphnia magna
Acute toxicity - aquatic plants	, 72 hours: >1640 mg/l, Scenedesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: >100 mg/l, Activated sludge

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Acute toxicity - terrestrial	NOEC, 14 days: >1000 mg/kg, Eisenia Fetida (Earthworm)
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: >10 mg/l, Daphnia magna

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Acute toxicity - fish	LC_{50}, 96 hours: >1000 mg/l, Brachydanio rerio (Zebra Fish)
Acute toxicity - aquatic invertebrates	EC_{50}, 24 hours: >1000 mg/l, Daphnia magna
Acute toxicity - aquatic plants	, 72 hours: >1640 mg/l, Scenedesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: >100 mg/l, Activated sludge
Acute toxicity - terrestrial	NOEC, 14 days: >1000 mg/kg, Eisenia Fetida (Earthworm)
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: >10 mg/l, Daphnia magna

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Acute toxicity - fish	LC_{50}, 96 hours: >1000 mg/l, Brachydanio rerio (Zebra Fish)
Acute toxicity - aquatic invertebrates	EC_{50}, 24 hours: >1000 mg/l, Daphnia magna
Acute toxicity - aquatic plants	, 72 hours: >1640 mg/l, Scenedesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: >100 mg/l, Activated sludge
Acute toxicity - terrestrial	NOEC, 14 days: >1000 mg/kg, Eisenia Fetida (Earthworm)
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: >10 mg/l, Daphnia magna

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Acute toxicity - fish	LC_{50}, 96 hours: >1000 mg/l, Brachydanio rerio (Zebra Fish)
Acute toxicity - aquatic invertebrates	EC_{50}, 24 hours: >1000 mg/l, Daphnia magna
Acute toxicity - aquatic plants	, 72 hours: >1640 mg/l, Scenedesmus subspicatus
Acute toxicity - microorganisms	EC_{50}, 3 hours: >100 mg/l, Activated sludge
Acute toxicity - terrestrial	NOEC, 14 days: >1000 mg/kg, Eisenia Fetida (Earthworm)
Chronic toxicity - aquatic invertebrates	NOEC, 21 days: >10 mg/l, Daphnia magna

12.2. Persistence and degradability

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Persistence and degradability The product reacts with water to form a solid, insoluble reaction product which is not biodegradable.

Phototransformation Not determined.

Stability (hydrolysis) Not determined.

Biodegradation Not readily biodegradable.

Biological oxygen demand Not determined.

Chemical oxygen demand Not determined.

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

Persistence and degradability Not readily biodegradable.

Stability (hydrolysis) Reacts with water.

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Persistence and degradability Not inherently biodegradable.

Stability (hydrolysis) Reacts with water.

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Persistence and degradability Not inherently biodegradable.

Stability (hydrolysis) Reacts with water.

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Persistence and degradability Not inherently biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not applicable.

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

Bioaccumulative potential BCF: < 14, Cyprinus carpio (Common carp)

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Bioaccumulative potential BCF: 200, Cyprinus carpio (Common carp)

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Bioaccumulative potential BCF: 200, Cyprinus carpio (Common carp)

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Bioaccumulative potential BCF: 200, Cyprinus carpio (Common carp)

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12.4. Mobility in soil

Mobility The product is non-volatile.

Adsorption/desorption coefficient Not determined.

Henry's law constant Not determined.

Surface tension Not determined.

DIPHENYLMETHANE-4,4'-DI-ISOCYANATE

Henry's law constant 0.0229 Pa m³/mol @ °C

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Henry's law constant 0.0229 Pa m³/mol @ °C

DIPHENYLMETHANE-2,2'-DI-ISOCYANATE

Henry's law constant 0.0229 Pa m³/mol @ °C

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

DIPHENYLMETHANEDIISOCYANATE - ISOMERS & HOMOLOGUES

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

DIPHENYLMETHANE-2,4'-DI-ISOCYANATE

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

Disposal methods Should be disposed of as hazardous waste via a licensed waste operator.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

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14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

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

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations	Control of Substances Hazardous to Health Regulations 2002 (as amended).
Guidance	Workplace Exposure Limits EH40. Safety Data Sheets for Substances and Preparations.
Authorisations (Title VII Regulation 1907/2006)	No specific authorisations are known for this product.
Restrictions (Title VIII Regulation 1907/2006)	No specific restrictions on use are known for this product.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

General information	Don Construction Products Ltd. Technical Datasheet.
Key literature references and sources for data	Health and Safety Executive Guidance Note EH40 (amended annually). Workplace Exposure Limits. Type of Regulated Paint under the Air Pollution Control (Volatile Organic Compounds) Regulation of Hong Kong (Floor Coating). VOC content (mixed with resin) not exceeding 2g/litre.
Revision comments	Section 1 update
Revision date	01/03/2017
Revision	8
Supersedes date	31/05/2016
SDS status	Approved.

GRIPTOP HB HARDENER

Risk phrases in full

R20 Harmful by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.
R40 Limited evidence of a carcinogenic effect.
R42/43 May cause sensitisation by inhalation and skin contact.
R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Hazard statements in full

H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure.