Flowcrete
for the world at your feet

SAFETY DATA SHEET

Revision 1 Date Issued: January 2014

1. Identification of the substance/preparation and company

Product Name: **Flowfresh Primer Hardener B**

Application: Isocyanate component of a 3 pack polyurethane resin floor primer.
Mixed product is applied by trowel.
Polyisocyanate based on diphenylmethane diisocyanate.

Manufacturer:
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2. Composition/information on constituents

Chemical Name	EINECS No.	CAS No.	% by weight	Symbols and Risk Phrases
4,4'-diphenylmethane-diisocyanate	202-966-0	101-68-8	30 - 60	Xn; R20; R36/37/38;R42/43
2,4'-diphenylmethane-diisocyanate	227-534-9	5873-87-9	12 - 25	Xn; R20; R36/37/38;R42/43
diphenylmethane-diisocyanate isomers and homologues	-	9016-87-9	25 - 50	Xn; R20; R36/37/38;R42/43

See section 16 Additional information, for full text regarding symbols and Risk phrases.

3. Hazards Identification

Harmful by inhalation. This hazard is most likely to arise when materials are heated, sprayed, used in a confined unventilated space or if correct handling procedures are not followed.

Irritating to eyes, respiratory system and skin. In mild cases the affected person may experience slight irritation of the eyes, nose and throat, possibly combined with dryness of the throat. In more severe cases the person may suffer acute bronchial irritation and difficulty in breathing.

May cause sensitisation by inhalation and skin contact. Repeated and /or prolonged exposure may cause an allergic reaction/sensitisation. Once sensitised, an individual may produce an allergic reaction every time they are in contact with isocyanates. Individuals who have developed sensitivity may experience wheezing, tightness of the chest and shortness of breath. A hyper-reactive response to even minimal concentrations of isocyanate may develop in sensitised persons.

When the base is mixed with the hardener an exothermic reaction starts (i.e. heat is generated).
If the mix is not applied within 20 - 30 minutes some smoking may occur.

4. First Aid measures

Inhalation : Remove affected person from exposure, keep them warm and at rest. Obtain immediate medical attention. Delayed appearance of the complaints (difficulty in breathing, coughing, asthma) are possible following severe exposure.

Skin contact : Wash with soap and plenty of water or a suitable skin cleanser as soon as possible.
If irritation persists, seek medical advice.

Eye Contact : Hold eyelids apart and carefully and thoroughly flush with plenty of water for at least 15 minutes.
Seek medical advice.

Ingestion : If the person is conscious, wash out mouth with water. Do not swallow mouth wash.
Do not induce vomiting unless under medical supervision. Seek immediate medical attention.

5. Fire-fighting measures

Suitable extinguishing media : Carbon dioxide (CO_2), foam, dry powder.
Water spray should be used for larger fires.

Un-Suitable extinguishing media : High volume water jet.

Special exposure hazards : Burning produces carbon oxides, hydrogen cyanide, nitrogen oxides and isocyanate vapour.

Special protective equipment : Wear self-contained breathing apparatus and protective suit.

Additional information : Reaction between water and hot isocyanate may be vigorous.
Do not allow contaminated extinguishing water to enter the soil, drains, sewers or water courses.

6. Accidental release measures

Personal precautions : Use personal protective equipment as detailed in Section 8.
Ensure adequate ventilation.
If a major spillage (an area greater than 2 square metres), clear the area of non-essential personnel.

Environmental precautions : Prevent further leakage or spillage and prevent entry into drains, sewers and water courses. The reaction with water produces carbon dioxide and insoluble material which could cause the drains to block. If any enters drains, flush away with copious amounts of water.

It is an offence to discharge effluent down the drain without prior consent from the appropriate authority. Check where the drain chosen for disposal goes. If it goes to a watercourse, check that disposal of the spillage will comply with the Environmental Agency or SEPA consent. If it goes to the sewer, check the consent issued by the sewerage authority.

If washing the spillage to drain will breach a consent condition, dispose of in another way. Make sure the disposal site is licensed to accept this type of waste.

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, sawdust) wetted out with water to expedite the process.
Leave the material to react for 30 minutes.
Shovel into suitable open-top containers, do not close container for at least 24 hours (because of evolution of carbon dioxide) and keep damp in a safe, well ventilated area.
Dispose in accordance with Section 13.
Wash the area with plenty of water.

7. Handling and storage

Handling : Ensure adequate ventilation or provide exhaust ventilation in work area.

If sprayed, exhaust ventilation is required and all other personnel to be excluded from area.
In all areas where isocyanate aerosols and/or vapour concentrations are produced, exhaust ventilation must be provided in such a way that the MEL (see section 8) is not exceeded. The air should be drawn away from the personnel handling the product.

Use personal protective equipment as detailed in Section 8.
Handle and open container with care. Avoid skin and eye contact.

Storage : Store in a dry, cool, well-ventilated place. Keep container tightly closed.
Do not allow to freeze as some crystallisation will occur.
Maintain store between temperatures 5 - 35 °C.

8. Exposure controls/personal protection

Maximum Exposure Limit (MEL) : Isocyanates, all (expressed as –NCO)
0.02 mg/m^3 8 hour Time Weighted Average (TWA)
0.07 mg/m^3 15 minute Short Term Exposure Limit (STEL)

Engineering measures to reduce exposure : Ensure adequate ventilation, especially in confined areas. If sprayed, exhaust ventilation is required.

Personal protective equipment :

Respiratory protection : Required in insufficiently ventilated working areas (especially during mixing and always if sprayed). An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter respirator.
In the case of hypersensitivity of the respiratory tract (e.g. asthmatics and those who suffer from chronic bronchitis) it is inadvisable to work with the product.

Eye protection : Goggles or full face mask.

Hand protection : Impermeable gloves (nitrile butadiene rubber [NBR], Butyl rubber [IIR], Fluorinated rubber [FKM], polyvinyl chloride [PVC], polychloroprene [CR]) . Isocyanates can harden gloves and increase the risk of their splitting. Check regularly for degradation and replace as necessary.

Skin and body protection : Protective suit and heavy duty work shoes.

Protective measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. When using do not eat, drink or smoke.

9. Physical and chemical properties

Appearance	:	brown liquid.	Viscosity	:	45 - 95 mPa's at 25 °C
Odour	:	Earthy, musty	Relative Density	:	1.24 at 20 °C
Boiling Point	:	> 300 °C, decomposes/polymerises	Water solubility	:	Insoluble, reacts to produce carbon dioxide and polyurea solid.
Flashpoint	:	> 180°C	Ignition temperature	:	>600 °C
Vapour pressure	:	<0.0001 mbar at 20 °C (100Pa = 1 mbar)	Vapour Density	:	8.5

10. Stability and reactivity

Material is stable when stored and handled correctly.
When the base is mixed with the hardener an exothermic reaction starts (i.e. heat is generated).
If the mix is not applied within 20 – 30 minutes some smoking may occur.

Conditions to avoid : Avoid high temperatures. Do not allow to freeze.

Materials to avoid : Exothermic reaction with amines, alcohols, bases and acids. Reacts with water forming carbon dioxide and polyurea solid.

Hazardous decomposition products : No hazardous decomposition products when stored and handled correctly. Thermal decomposition – polymerises at >300 °C with evolution of carbon dioxide.

11. Toxicological information

Acute oral toxicity : LD_{50} Oral (rat) : >5,000 mg/kg

Inhalation : LC_{50} inhalation (rat) ca. 490 mg as aerosol/m^3, 4 hrs exposure.
Concentration of saturated vapour: 0.09 mg/m^3 at 25 ^oC

Irritation : Over exposure, especially when spraying without the necessary precautions, entails the risk of concentration dependant irritating effects on eyes, nose, throat and respiratory tract.
In mild cases the affected person may experience slight irritation of the eyes, nose and throat, possibly combined with dryness of the throat. In more severe cases the person may suffer acute bronchial irritation and difficulty in breathing.

Skin : Prolonged contact with the skin may cause tanning and irritant effects.
LD_{50} Dermal (rabbit) > 5,000 mg/kg

Sensitisation : Repeated and /or prolonged exposure, especially at levels above the MEL, may cause an allergic reaction/respiratory sensitisation. Once sensitised, an individual may produce an allergic reaction every time they are in contact with isocyanates. Individuals who have developed sensitivity may experience wheezing, tightness of the chest and shortness of breath. A hyper-reactive response to even minimal concentrations of isocyanate may develop in sensitised persons.
The onset of respiratory symptoms (difficulty in breathing, coughing, asthma) may be delayed for several hours after exposure.
Repeated and/or prolonged skin contact may cause skin sensitisation. Animal studies have shown respiratory sensitisation can be induced by skin contact with known respiratory sensitisers, including isocyanates.
Animal studies have shown that respiratory sensitisation can be induced by skin contact with known respiratory sensitisers including diisocyanates.

Long term toxicity : Animal testing has shown no long term adverse effects at or below the MEL.
Chronic pulmonary irritation observed at high concentrations. There are reports that chronic exposure by inhalation may result in decreases in lung function.

Carcinogenicity : It is currently proposed that the classification for diphenylmethane diisocyanate be changed to carcinogenic, category 3, when it is in the form of respirable aerosol e.g. when sprayed.

Mutagenicity : There is no substantial evidence of mutagenic potential.

Reproductive toxicity : No birth defects seen in animal (rat) studies.
Fetotoxicity was observed at doses that were extremely toxic (including lethal) to the mother.
Fetotoxicity was not observed at doses that were not maternally toxic.

12. Ecological information

Ecotoxicity : Observed ecotoxicity to fish, bacteria and invertebrates is low/very low and to worms and plants is very low.

Brachydanio rerio	LC_0 : > 1000 mg/l	96 hour test
Daphnia	EC_{50} : > 1000 mg/l	48 hour test
E Coli toxicity	EC_{50} : > 100 mg/l	48 hour test

Mobility : Reacts with water to produce carbon dioxide and polyurea solid.

Persistence and degradability : The polyurea produced on contact with water is insoluble, inert and non-biodegradable.
In air the predominant degradation process is predicted to be a relatively rapid OH radical attack, by calculation and by analogy with related isocyanates.

Bioaccumulative potential : Not expected to be bioaccumulative.
In a pond study with gross contamination, there was no evidence of bioaccumulation.

Additional ecological information : It is unlikely that significant environmental exposure in the air or water will arise.

13. Disposal considerations

Unused Product/waste from cleaning etc. : Dispose of in accordance with local and national regulations.
Do not empty into drains, sewers or water courses.
May be incinerated in a suitable facility provided local regulations are observed.
EC Waste Catalogue (EWC) code: 08 05 01 [Waste products from the Manufacture, Formulation, Supply and Use (MFSU) of paint and varnish. Waste isocyanates.]

Contaminated packaging : Fill used containers with water and a little detergent, allow to stand for at least 24 hours. Dispose of as non-hazardous waste in accordance with local and national regulations after removing/invalidating the warning label.

Untreated contaminated packaging to be disposed of as for unused product.

14. Transport information

Not classified as hazardous for transport.

Other information:
Not dangerous cargo. Irritating to skin and mucous membranes. Avoid temperatures below 0 ºC. Avoid heat above +50 ºC. Keep dry. Keep away from foodstuffs, acids and alkalis.

15. Regulatory information

Classification according to EEC directive:
Symbols:

Harmful

R-phrases

R20	:	Harmful by inhalation.
R36/37/38	:	Irritating to eyes, respiratory system and skin.
R42/43	:	May cause sensitisation by inhalation and skin contact.

S-phrases :

S23	:	Do not breathe vapour/spray.
S38	:	In case of insufficient ventilation, wear suitable respiratory equipment.
S45	:	In case of accident or if you feel unwell, seek medical advice immediately (show this label where possible).
S36/37/39	:	Wear suitable protective clothing, gloves and eye/face protection.
S60	:	This material and/or its container must be disposed of as hazardous waste.

Special provisions statement : Contains isocyanates. See information supplied by the manufacturer.

Hazardous component(s) which must be listed on the label : Diphenyl methane diisocyanate, isomers and homologues

TRGS 905 classification (German regulations)
Diphenylmethane-4, 4'-diisocyanate CAS No. 101-68-8 (in the form of respirable aerosols, measured as the alveolar aerosol content) - Carcinogenic, category 3 (Deviation from the legal classification as per Annex 1 of Directive 67/548/EEC)

EC Directives: Dangerous Substances Directive, 67/548/EEC & adaptations.
Dangerous Preparations Directive, 1999/45/EC.
Safety Data Sheets Directive, 91/155/EEC and adaptations.

Statutory Instruments:	Chemicals (Hazard Information & Packaging for Supply) Regs 2002. Control of Substances Hazardous to Health Regs 2002. Environmental Protection (Duty of Care) Regs. 1991.
Codes of Practice	Waste Management. The Duty of Care. Approved classification and labelling guide (Fifth edition). L131. The compilation of safety data sheets (Third edition).
Guidance Notes	Occupational Exposure Limits EH40 CHIP for Everyone HSG(108)

16. Other Information

This safety data sheet has been prepared in accordance with CHIP3. The text in each section has changed and the section order/ headings used are in line with the requirements of CHIP3.
The provision of Safety data sheets comes under Regulation 6 of CHIP (CHIP is the recognised abbreviation for the Chemicals, Hazard Information and Packaging Regulations). This is in addition to the Health and Safety at Work Act 1974.

Users of our products should take appropriate measures to ensure working practices are in accordance with the Control of Substances Hazardous to Health Regulations (COSHH).

This data sheet does not replace the obligation of the user to provide their own assessment of workplace risk as required by other Health & Safety legislation.

EC Directive relating to the classification, packaging and labelling of dangerous substances and preparations – Classification(s) and Risk (R) phrase(s) referred to in this document:-

Xn	:	Harmful
R20	:	Harmful by inhalation.
R36/37/38	:	Irritating to eyes, respiratory system and skin.
R42/43	:	May cause sensitisation by inhalation and skin contact.

Training Advice

Applicators need to be trained in:-
Handling and hygiene associated with use of industrial chemicals.
Correct mixing and application of the product.
Correct cleaning and disposal methods.

Restrictions on Use

The product is intended for use by appropriately trained applicators in industrial situations. It is not suitable for use in home DIY applications, especially because of its hazardous nature and the protective measures required.

Notes

The European Committee of Paint, Printing Ink and Artist's Colours Manufacturers' Associations (CEPE) provides the following information on coatings containing isocyanates:-
"Ready-to-use paints containing isocyanates may have an irritant effect on mucous membranes – especially on breathing organs – and cause hypersensitivity reactions. Inhalation of vapour or spray mist may cause sensitisation. When handling paints containing isocyanates all precautions required for solvent-containing paints must be followed. Vapour and spray mist in particular should not be inhaled. Persons who are allergic, asthmatic or prone to respiratory ailments should not work with isocyanate-containing paints."

Do not use organic solvents for skin cleansing, it will lead to defatting of the skin, skin irritation and/or dermatitis.
Some solvents can be absorbed through the skin.
Beware of cross contamination where different products are in use in the same location.
Take into account the Manual Handling regulations when dealing with the mixed product.

This safety data sheet is based on our present knowledge and experience and is intended to serve as a guide for safe handling of the product regarding to health and environmental aspects.