

MATERIAL SAFETY DATA SHEET

PRODUCT - FORBO 1K-PUR 60 Series Adhesives – Balcotan

The products listed have been assessed in accordance with the CHIP2 Regulations 1994. The information contained in this safety data sheet does not constitute the users own assessment of workplace risks as required by other Health and Safety and COSHH 1994 directives, regulations and legislation.

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1 PRODUCT INFORMATION AND COMPANY IDENTIFICATION

- 1.1 Trade name Forbo 1K- PUR 60100, 60101 Balcotan and Swiftbond 146682
- 1.2 Information about the producer/supplier
 - 1.2.1 Importing Company Melco Bonding Supplies, Hillview, Park Road, Nailsworth Gloucestershire GL6 0HZ. Telephone/Fax: 01453 833985

2 COMPOSITION/INFORMATION ON INGREDIENTS

- 2.1 Chemical characteristics (Ingredient)
 - 2.1.1 CAS # Name according to EEC-Directive
 - 2.1.2 Identification # ---
 - 2.1.3 Additional Information ---
 - 2.2 Chemical characteristics (Composition)
 - 2.2.1 Description Prepolymer based on diphenylmethanediisocyanate
 - 2.2.2 Hazardous ingredients Diphenylmethane-4,4'-diisocyanate and Isomeres
 - 2.2.3 CAS# NAME ACCORDING TO EEC-DIRECTIVE CONTENT(%) LETTER CODE
- R-SENTENCES
101-68-8 Diphenylmethane-4,4'-di-isocyanate and Isomeres 47.5 Xn 20,36/37/38,42

2.2.4 Additional information None

3 POSSIBLE HAZARDS

3.1 Critical hazards to humans and environment (Possible R-Sentences) Harmful by inhalation

Irritating to eyes, respiratory system and skin

May cause sensitisation by inhalation

This product is classified as weak water pollutant

4 FIRST AID MEASURES

4.1 General advice None

4.2 After inhalation Fresh air, keep warm, rest, seek medical advice

4.3 After skin contact Remove mechanically, soak up, wash off with water and soap, use barrier cream

4.4 After eye contact Rinse immediately, carefully and thoroughly with plenty of water, seek medical advice

4.5 If swallowed Do not provoke vomiting, seek medical advice

4.6 Advice to the doctor None

5 FIRE FIGHTING MEASURES

5.1 Extinguishing media CO2 foam, fire extinguishing dust, in cases of large fire - water jet

5.2 Unsuitable fire fighting media Water in small quantities

5.3 Hazardous decomposition products and toxic gas emissions In case of fire, formation of carbon monoxide, nitric oxide, vapour of isocyanates and traces of HCN

5.4 Personal protection equipment during fire fighting Respiratory equipment with independent air supply is required

6 ACCIDENTAL RELEASE MEASURES

6.1 Protection of humans Not applicable

6.2 Protection of environment Do not empty into drains

6.3 Procedures for recovery and cleaning Cover with wet, liquid binding material (sand, sawdust, chemical-binder such as calcium silicate hydrate) and after approx. 1 hour pour into rubbish bins. Do not seal bins. Keep bins wet and leave in a safe place in the open for at least 10 days

6.4 Additional information Comply with the Control of Pollution Act 1980

7 HANDLING AND STORAGE

7.1 Handling 7.1.1 Information for safe handling Provide good ventilation in workplaces. Avoid contact with skin and eyes

7.1.2 Information on fire and explosion prevention Not applicable

7.2 Storage 7.2.1 Requirements for storage rooms and containers Keep containers tightly sealed and dry. Protect from heating over 60°C, also from cooling under 0°C. Protect from damp

7.2.2 Mix product storage information Keep away from foodstuffs, drink and animal feed

7.2.3 Additional information Not applicable

7.2.4 Storage classification Not applicable

8 EXPOSURE CONTROLS

8.1 Additional information on the layout of technical plants Not applicable

8.2 Product components and workplace control parameters 8.2.1 CAS # NAME KIND
VALUE UNITY

101-68-8 Diphenylmethane 4,4'-diisocyanate MAC 0.005(0.05) ppm (mg/m³)

8.2.2 Additional information None

8.3 Personal protection equipment 8.3.1 Protection measures Keep away from food, drink and animal foodstuffs. Wash hands thoroughly after handling. Keep working clothes separate. Immediately remove all contaminated clothes

8.3.2 Breathing apparatus In insufficiently ventilated areas and in case of spraying wear suitable respiratory equipment. We recommend a fresh air mask, or for short term use, a combination filter A2-P2.. Use in well ventilated areas. N.B. ALL isocyanates may cause respiratory sensitisation by inhalation. In case of hypersensitivity of the respiratory tracts, ie asthma, chronic bronchitis, the handling of the product is not recommended

8.3.3 Hands Disposable gloves and/or barrier cream

8.3.4 Eyes Safety glasses or face protection

8.3.5 Body Use well fitting protective clothes

8.4 General occupational exposure limits for isocyanate 8 hrs TWA @ 0.02mg/m³ vapour pressure

15 minutes TWA @ 0.07mg/m³ vapour pressure

9 PHYSICAL AND TECHNICAL PROPERTIES

9.1 Physical appearance 9.1.1 Form Liquid

9.1.2 Colour Honey coloured brown

9.1.3 Odour Characteristic

9.2 Safety data VALUE UNITY METHOD (67/548/EC)

9.2.1 Changes in physical state

Point of solidification <-10 °C

Boiling point >190 °C

9.2.2 Flash point >200 °C DIN 57794

9.2.3 Inflammability (solid/gaseous) ---

9.2.4 Ignition temperature >250 °C DIN 57794

9.2.5 Auto ignition None

9.2.6 Fire promotion properties None

9.2.7 Explosion hazards None

9.2.8 Explosion limits Limits not determined, no danger of fire or explosion

9.2.9 Vapour pressure <0.01

Less than 0.01 mg/m³. Quantity so small as to be unmeasurable, effectively no trace hPa (at 20°C)

- 9.2.10 Specific gravity 1.08 g/ml (at 20°C)
- 9.2.11 Solubility Insoluble in water
- 9.2.12 pH value Not applicable
- 9.2.13 Coefficient of distribution in n-Octanol/Water Not tested
- 9.2.14 Viscosity kind Approx. 3,000 mPa.s (at 20°C)
- 9.2.15 Solvent separation test Not tested
- 9.2.16 Solvent content Not applicable

9.3 Further information From 250°C up, thermal decomposition.

10 STABILITY AND REACTIVITY

- 10.1 Conditions to avoid Rise in pressure in unopened containers, danger of bursting
- 10.2 Materials to avoid Exothermic reaction with amines, alcohols. In contact with water CO₂ is formed. Incompatible with copper and its alloys
- 10.3 Hazardous decomposition products None if stored and handled properly. From 250°C upwards toxic gases are formed as CO₂, Nitric Oxide, and traces of HCN
- 10.4 Further information From 250°C up, thermal decomposition takes place.

11 TOXICOLOGICAL INFORMATION

- 11.1 Acute toxicity, Data of one component (or the composition) 11.1.1 Relevant classification of LD/LC50-values LD50 oral rat: approx. 5g/kg
LD50 spray 4 hours: approx. 0.4 g/m³
 - 11.1.2 Specific symptoms in animal test ---
 - 11.1.3 Primary irritation Eyes: burn, flood of tears, irritation and reddening
Skin: irritation, reddening, tanning effect
Respiratory organs: Irritating mucous membrane of nose, throat and lungs; dryness of throat, pressure on the chest, irritation of the throat, trouble in breathing and asthma attacks possible
 - 11.1.4 Sensitivity Sensitisation by inhalation possible
- 11.2 Subacute to chronic toxicity 11.2.1 Examination ---
 - 11.2.2 Result Not applicable
- 11.3 Experience on humans Experiences on humans are not available
- 11.4 Further information None

12 ECOLOGICAL INFORMATION

- 12.1 Information of biodegradability 12.1.1 Procedure Not tested
 - 12.1.2 Analytical procedure Not tested
 - 12.1.3 Degree of biodegradation Not tested
 - 12.1.4 Classification Not applicable
 - 12.1.5 Evaluation Not applicable
 - 12.1.6 Additional information None
- 12.2 Behaviour in environmental fate 12.2.1 Component Composition
 - 12.2.2 Mobility and Bio-accumulation potential A biological accumulation is nearly impossible
 - 12.2.3 Additional information None

12.3 Ecological toxicity effects 12.3.1 Aquatic toxicity Not tested
12.3.2 Notes Not applicable
12.3.3 Behaviour in sewage facilities Not tested
12.3.4 Notes Not applicable
12.3.5 Interference with aeration of communal activated sludge EC20 =mg/l according to ISO 8192B Not tested
12.3.6 Other information The endangering of ground and water is minimal, since the substances can not be dissolved in water, the isocyanate reacts quickly with water to a harmless substance, the additives diffuse very slowly out of the reacted product, they do not mix with water and at the same time they are biologically decomposable

12.4 Additional ecological information 12.4.1 CSB -value ---mg/g Not tested
12.4.2 BSB5-value ---mg/g Not tested
12.4.3 AOX-advice Not tested
12.4.4 Material for EEC Directive 76/484 EEC None
12.4.5 General information Do not allow to penetrate water courses, ground water or ground

13 DISPOSAL INFORMATION

13.1 Product 13.1.1 Recommendation Subject to local authority regulations, the remains may be disposed of by incineration

13.1.2 Waste code, Waste name, Waste Disposal Documentation 559 Adhesives

13.2 Contaminated containers 13.2.1 Recommendations For disposal the containers must be completely empty. The residues that adhere to the side of the container must be converted with a reusable aqueous decontamination solution (mixture of isopropanol-ammonia water) into a chemically safe and not soluble compound and therefore made harmless. Pour out the solution, remove all labels. The container can then be recycled

13.2.2 Cleaning Media Mixture of isopropanol- ammonia- water

14 TRANSPORT INFORMATION

14.1 Land Transportation ADR/RID and GGVS/GGVE 14.1.1 Class Digit/Letter Cl 6.1 ciph 19C

14.1.2 Warn Table (Number) 60

14.1.3 UN# 2489

14.1.5 Product identification Mixture of diphenylmethanediisocyanate

14.1.6 Notes None

14.2 Inland Waterway transportation ADN 14.2.1 Class Digit/Letter Cl 6.1

14.2.2 Category ---

14.2.3 Product identification Mixture of diphenylmethanediisocyanate

14.2.4 Notes None

14.3 Ocean Transportation IMDG 14.3.1 Class Cl 6.1 page 6140

14.3.2 UN# 2489

14.3.3 Packing group III

14.3.4 EMS# 6.1-02

14.3.5 MFAG 370

14.3.6 Marine pollutant No

14.3.7 Technical identification Mixture of diphenylmethanediisocyanate

14.4 Air transportation ICAO-T1 and ICAO-DGR 14.4.1 Class CL 3 page 125

14.4.2 UN/ID # 2489

14.4.3 Packing group ---

14.4.4 Technical identification Mixture of diphenylmethanediisocyanate

14.4.5 Notes None

14.5 Further information Harmful, irritating to skin and mucous membrane. Protect from wetness. Keep away from food, drink and animal feed

15. REGULATORY INFORMATION

15.1 Labelling according to EEC directives 15.1.1 Letter code and hazard labels Symbol Xn Harmful

15.1.2 Hazardous components to be labelled Contains Diphenylmethane-4,4' -diisocyanate and isomers

15.1.3 R-Sentences R20 Harmful by inhalation R36/37/38 Irritating to eyes, respiratory system and skin, R42/43 May cause sensitisation by inhalation

15.1.4 S-Sentences S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28 After contact with skin, wash immediately with plenty of water. S38 In case of insufficient ventilation, wear suitable respiratory equipment. S45 In case of accident or you feel unwell, seek medical advice immediately (show the label where possible)

15.1.5 Preparation advice according to 89/379/EEC Contains isocyanates, observe producers instructions

15.2 German Advice 15.2.1 Additional classification according to the German Hazardous Substances Regulations No additional classification

15.2.2 Notes on limitation for employees Diphenylmethane-4,4'-diisocyanate: MAC-Value:0.005 ppm (8 h-mean). Peak category I ie to exceed for a short time (5min) up to twice the MAC- Value (0.01 PPM) 8 times per shift is permitted. A sensitisation is possible. Carcinogenic in accordance with category 111B, ie substances with founded suspicion of carcinogenic potential

15.2.3 Hazard Regularity ---

15.2.4 Classification acc to VbF Is not subject to VbF

15.2.5 Air: technical advice Diphenylmethane-4,4'-diisocyanate has to be treated as dust. Maximum permitted emission:

Mass of current > 0.5kg/h - 50g/m³

Mass of current < 0.5kg/h - 150mg/m³

15.2.6 Water hazard class (Own classification) 1 weakly hazardous

15.2.7 Additional advice,limitations, inhibitions None

16 ADDITIONAL NOTES

Further information This information is based on current knowledge and covers the product as supplied