

Division:

Water Proofing

www.arcandgrey.com



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لمقاولات البناء (ش ذ م م)

ARC & GREY

BUILDING CONTRACTING LLC

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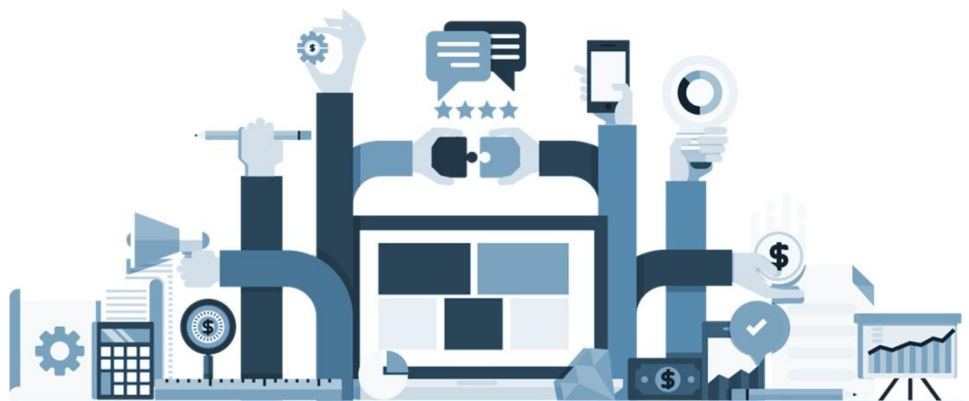
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We cater to a wide range of clients ranging from Main contractors, independent builders domestic & commercial customers. A&G is an expert team with a wealth of experience in the flooring and construction industry working on numerous major contracts in UAE. Our capabilities range from specialized floor screeding solutions for complex constructions, Villas, hotels, schools, hospitals, Industrial warehouse , commercial buildings to individual apartments .



BUILDING CONTRACTING LLC



WHY CHOOSE ARC & GREY



When you choose Arc & Grey Building Contracting L.L.C
Services, you are guaranteed to get excellent site
supervision and quality control in timely manner.
Our services aim to fulfil the specific requirements of
the client, with whom we would expect to be a
responsible and equivalent partner. Our reputation is one
where we are considered to be reliable partners in
completing



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Our Services

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Division: Water Proofing

WHO WE ARE

We are based in Dubai, we specialize in Roof Combo waterproofing system in buildings, and we have a wealth of experience and specialist knowledge of installing waterproofing systems to comply with the environmental, health & safety regulatory bodies of UAE.

Our professional and experienced teams are dedicated to providing you with impeccable execution of work, highly – Quality customer service and guaranteed satisfaction we have an envious record of timely execution of all projects handled till date.



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COMPANY POLICY

The company is committed to providing a quality service to its clients which accurately interprets their requirement and satisfies their expectations in an innovative, economic and efficient manner.

Our Vision

Our vision is to contribute towards the continual improvements of the essential structures in people's lives. Our vision is to implement environmental-friendly activities leading to sustainable economic development.

Our Mission

We help people creating building that are energy efficient and healthier for people to live in them, by protecting building against penetration of heat and moisture. While doing this, we intent to bring for our customers value, good working environment for our employees and ultimately attractive returns for our owners.

Fix A Roof HSE POLICIES:-

It is our intent to demonstrate an on-going and determined commitment to improving health & Safety at work throughout our Organization.

We will ensure the health and safety at work of all our employees and any other people who may be affected by our work activities. We are committed to follow the UAE legislation in all our activities

We are committee to lead the industry by promoting best practice and exceeding the guidance of the Health and Safety authority and other regulatory bodies of UAE.



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HSE OBJECTIVES:-

Ensuring safe working practices by all the members of the Organization.

Providing a safe and healthy working environment to all the employees.

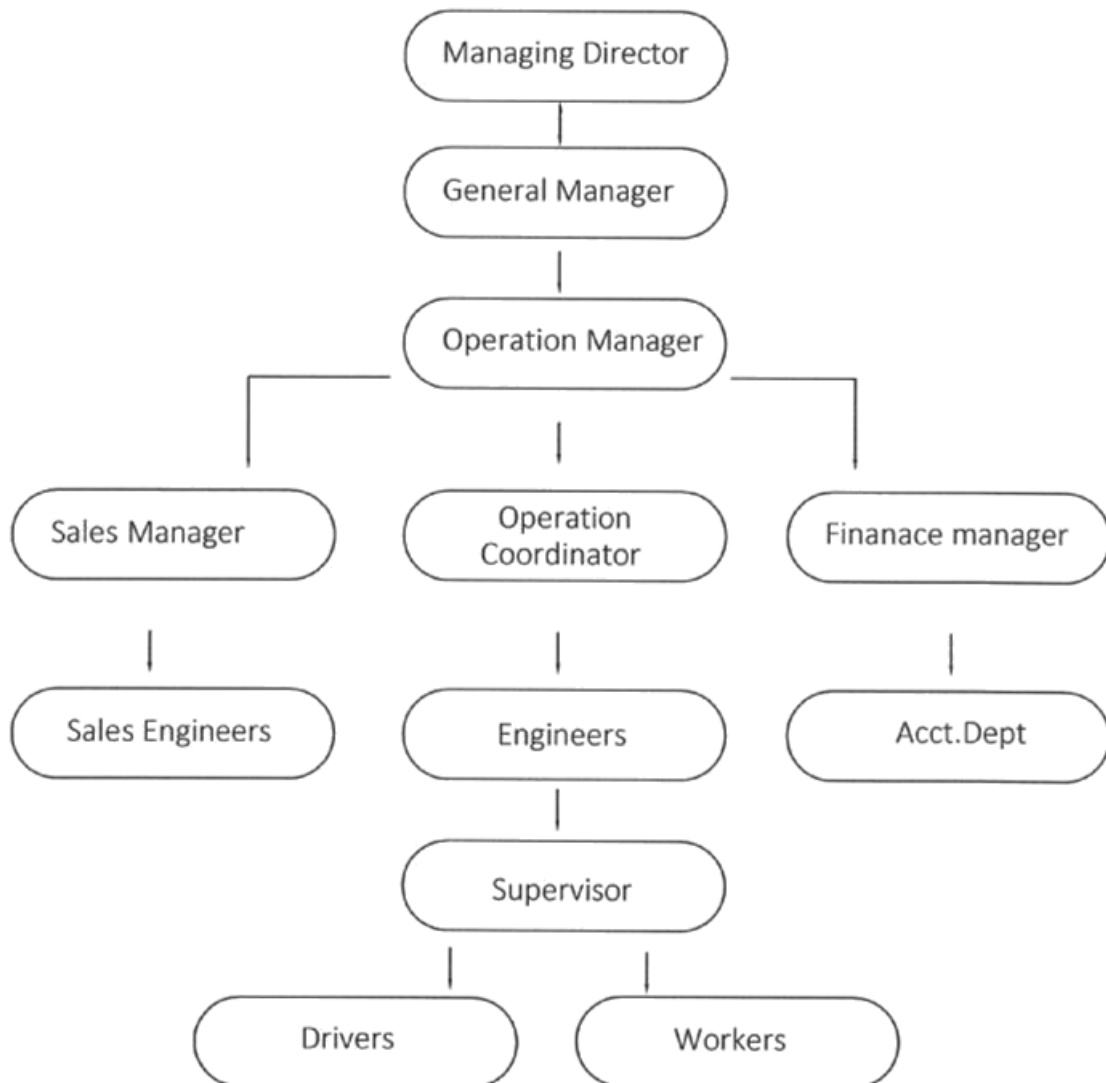
Providing adequate HSE training for the staff in each field to increase the competency, ability and awareness of the employees

Conducting HSE awareness trainings and discussion sessions on a regular basis.



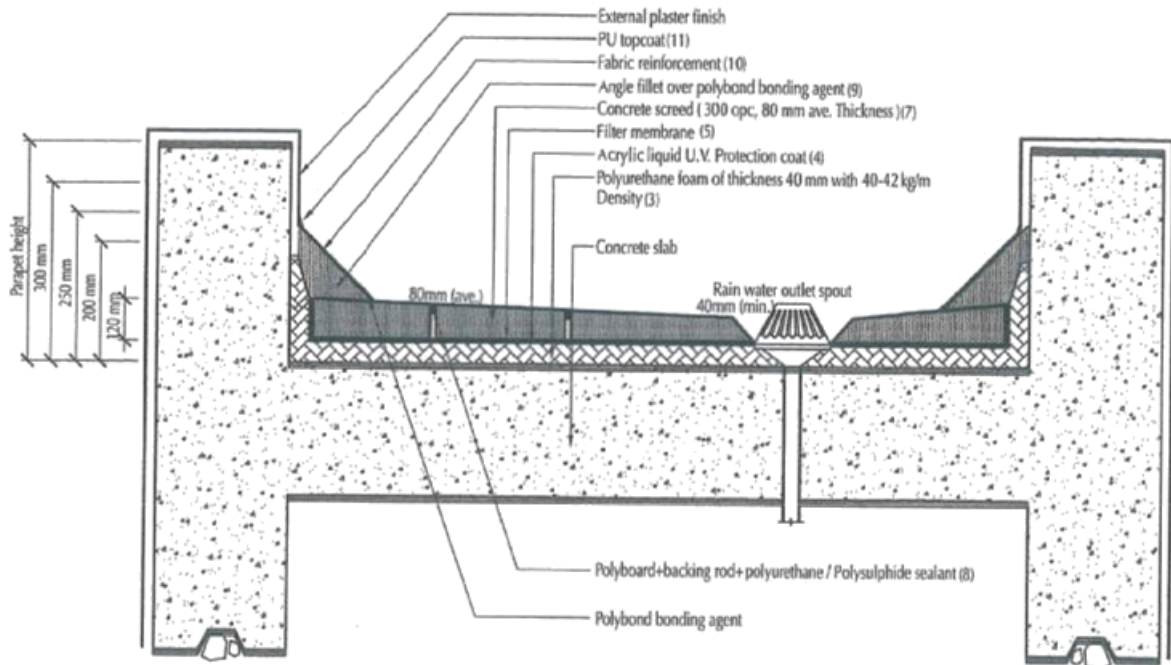
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ORGANISATION CHART



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TYPICAL SECTION OF COMBO ROO SYSTEM



METHODOLOGY OF COMBO ROOF SYSTEM

- Step 1 : Cleaning of the roof area.
- Step 2 : Covering the parapet wall (75 cm height) and other utilities fixed on the roof to avoid the risk of over spray.
- Step 3 : Spray apply polyurethane foam of average thickness 40mm with density 40-42 kg/m³.
- Step 4 : Brush apply U.V. Resistant protective coating above entire P.U. Foam sprayed area.
- Step 5 : Loosely lay geotextile separation and protective layer 100 gsm with an overlap of 20 cm.
- Step 6 : Fix ridges in panels (slope 1:100 - 1:150) using speccell boards and cement sand mortar.
- Step 7 : Lay protective screed concrete 20 n/mm to slope (1:100 - 1:150).
- step 8 : Fix backing rod and heavy duty polyurethane joint sealant to all construction joints in screed.
- Step 9 : Fix angle fillets along the parapet, mechanical duct openings and pre-utility upstands.
- Step 10 : Fix Canvas cloth as reinforcement all over the angle fillet and other upstands.
- Step 11 : Apply final coat of polyurethane/Cementitious protective coating above screed and angle fillet.



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Benefits of Combo Roof System

- Joint free system.
- 3 layers of waterproofing.
- Speedy process.
- Easy to detect the leakages.
- Leakage exactly above could be the point of failure.
- Spray insulation layer ensures complete protection against any possible heat transmission .
- Concrete Finish . (possible to handle minor construction activities)
- Hassle free for main contractor.
- 25 years guarantee.



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Green roof system

Highlights of green roof system

- ✚ SOLAR REFELCTIVE INDEX (SRI) ≥ 78 .
- ✚ THERMAL TRANSMITTANCE (U VALUE) $U = 0.3 \text{ W/m}^2\text{K}$.
- ✚ EASY REPAIR & MAINTENANCE.
- ✚ 100% GUARANTEED WATER PROOFING.
- ✚ 25 YEAR WARRANTY.



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WET AREA WATER PROOFING SYSTEM

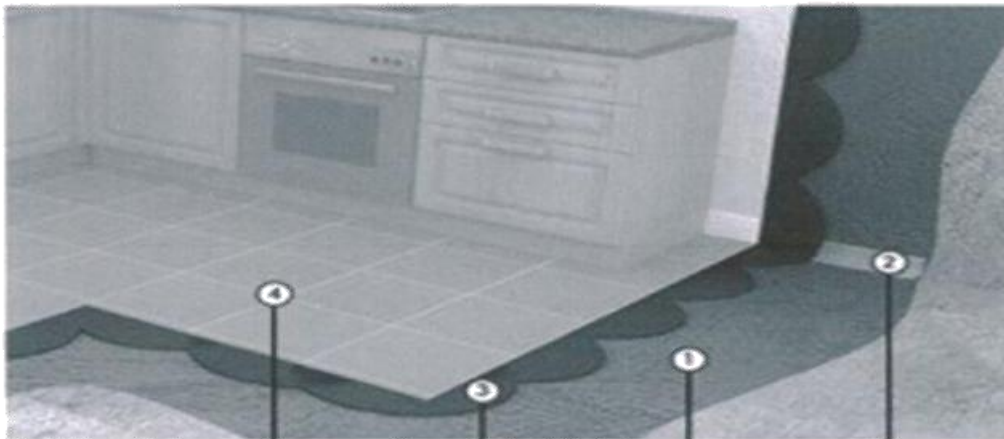
Wet areas are defined as areas within a building that are supplied with water. They require special consideration in new homes and renovations because of the high level of moisture they are subjected to and the risk that poorly lined wet areas can have on other rooms in the home.

Wet areas in a home include: Bathrooms, Ensuites, Showers, Laundries, Kitchen and Balconies.

In all cases, a waterproofing system needs to be applied under tiling (the wet area) in order to protect the concrete and prevent any water leakage. Starting with the clause that a right waterproofing and protection of the concrete will assure a longer last of the structure ,our waterproofing systems are composed of materials that comply the more restrictive requirements for durability and reliability.



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CE 37

CM 16

CL 51

CI 252



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GRP LINING SYSTEM:

GRP lining is a hose relining method in which the in liner used is a seamless glass fibre fabric hose. GRP lining can be used to rehabilitate sewers with damage such as root penetration, deposits, socket offset, cracks and pipe fractures.



Once the existing pipe has been cleaned and inspected by a camera, it is prepared for rehabilitation with milling and smoothing robots. A winch then pulls the folded in liner hose into the existing pipe through a shaft. When subjected to compressed air the in liner unfolds and applies itself to the inside wall of the existing pipe. The curing method is selected according to site conditions-using either ultraviolet light or a mixture of air and steam. Unsaturated polyester resins or vinyl ester resins are used, depending on the level of exposure to chemicals. The curing process is continuously monitored and recorded with the help of automated devices.



POLYTHANE P

Liquid applied waterproofing and protective coating based on hybrid polyurethane.

POLYTHANE P is a liquid applied waterproofing and protective coating for concrete structures based on a hybrid Polyurethane. The Polyurethane is modified with specially selected polymers to form a tough, flexible and durable coating. It is completely free from coal tar and other hazardous ingredients.

CHARACTERISTICS

- ▶ Forms a highly elastomeric, tough and resilient membrane.
- ▶ Environmentally friendly. Low VOC
- ▶ Coal tar free.
- ▶ Single component. Easy to apply.
- ▶ High tensile strength & elongation
- ▶ Excellent crack bridging properties.
- ▶ Excellent UV resistance, weatherability & color retention properties
- ▶ Excellent resistance to water and vapour.
- ▶ High resistance against chlorides, sulphates, bacteria, oil and common fuels.

FIELDS OF APPLICATION

- ▶ Waterproofing of wet areas like bathrooms, toilets, public showers & kitchens.
- ▶ Waterproofing of roofs, terraces, balconies, domes, aluminium sandwich panels and corrugated sheets.
- ▶ Protective and decorative coating on exposed concrete surfaces (both vertically and horizontally).

APPLICATION INSTRUCTIONS

Surface Preparation

All the surfaces must be cleaned and made free of dust, dirt, moss, oil, grease and other loose particles. This can be achieved by grit/sand/shot blasting. As a minimum, vigorous wire brushing should be employed. All pin holes and surface defects shall be repaired with a suitable POLYCRETE® concrete repair mortar.

Priming

POLYTHANE P does not require priming and can directly be applied onto the concrete surface. In case of highly porous surface, a priming coat is recommended to seal the pores and stabilize the surface. The primer coat can be produced on site

by diluting POLYTHANE P 1 to 1 with water. Apply the primer coat @ 5m²/L and allow to dry.

Mixing

POLYTHANE P is a single component product but mix the contents of the pail thoroughly prior to application to remove any sediment. A slow speed drill and suitable paddle mixer shall be used to avoid the formation of air bubbles.

Application

The coating can be applied with a brush, roller or airless spray and shall be applied in a minimum of 2 coats. The 1st coat shall be allowed to dry completely before the 2nd coat is applied. The 2nd coat shall be applied cross wise to the first coat.

The coating will achieve its full strength after a curing period of 7 days.

Corner Detailing

It is recommended to reinforced all corners with Ceresit CL 252 sealing strip. The sealing strip shall be embedded into the first coat whilst it is still wet and covered fully with the second coat.

COVERAGE

1.4 lt/m² for 800 microns DFT in 2 coats.

CLEANING & DISPOSAL

Clean all the tools with water after use. Hardened materials can be removed mechanically only. Allow the waste to cure. Seal it into a suitable container and bury in landfill. Use licensed waste disposal contractor and consult the local authorities when disposing.

STORAGE & SHELF LIFE

Store under cover, out of direct sunlight and protect from extreme temperatures. In tropical climate the product must be stored in air - conditioned environment (<25°C).



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The shelf life is up to 12 months in unopened conditions if stored as per the recommendations.

SUPPLY

POLYTHANE P	20L pail
Ceresit CL 252 Sealing Strip	120mm x 50m roll

*Refer to website for TDS

HEALTH AND SAFETY

As with all construction chemicals products caution should always be exercised. Protective clothing such as gloves and goggles shall be worn. Treat any splashes to the skin or eyes with fresh water immediately. Should any of the products be accidentally swallowed, do not induce vomiting, but call for medical assistance immediately.

TECHNICAL SPECIFICATION

PROPERTIES	VALUES	TEST STANDARDS
Color	Grey/White/Black	-
Form	Viscous liquid	-
Density, [g/cc]	1.22±0.02	ASTM D 1475
Solid content, [%]	63±3	ASTM D 1644
VOC, [g/L]	<20	ASTM D 3960 / D 2369
Tensile strength, [N/mm ²]	>2*	ASTM D 412
Elongation, [%]	>500*	ASTM D 412
Shore A Hardness	50-60	ASTM D 2240
Hydrostatic pressure @ 5bar (50m)	No leakage*	BS EN 12390
Crack bridging, [mm]	1.5*	ASTM C 836
Low temperature flexibility, [°C]	-15*	UEAtc
Chemical resistance	chlorides, sulphates, oil, bacteria and common fuels	ASTM D 543
Solar reflective index (SRI) (White)	>80	ASTM E 1980
Solar reflectance	>75	EN 410
Emissivity	<1	EN673
Re-coat interval, [hrs]	6	-
Full cure, [days]	7	-
Application temperature, [°C]	5 to 35	-
Service temperature, [°C]	-20 to 70	-

All values given are subject to 5-10% tolerance

* Values achieved with 800 microns thickness

POLYTHANE P is tested in accordance with ASTM, BS EN & UEAtc standards



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SAFETY DATA SHEET

according to Regulation (EU) No. 1907/2006

112000015446

Version 2.0

Revision Date 01.12.2010

Print Date 02.12.2010

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name : **DESMODUR 44 V 20 L**

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

Use : Di-/polyisocyanate components for the production of polyurethanes

Details of the supplier of the safety data sheet:

Bayer MaterialScience AG
BMS-IO-S&T-PSRA-PSI Product Safety
51368 Leverkusen

Tel.: +49 214 30 25026

Fax: +49 214 30 50035

Email: productsafety@bayerbms.com

Emergency telephone number: Im Notfall: +49 214 30 99300 (Sicherheitszentrale Bayer)

2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

Classification (1272/2008/CE):

Acute toxicity, Inhalative, Category 4 (H332)
Skin irritation, Category 2 (H315)
Eye irritation, Category 2 (H319)
Sensitization of the respiratory airways, Category 1 (H334)
Sensitization of the skin, Category 1 (H317)
Carcinogenicity, Category 2 (H351)
Specific target organ toxicity (single exposure), Category 3 (H335)
Specific target organ toxicity (repeated exposure), Category 2 (H373)

Classification (67/548/EEC, 1999/45/EC):

Harmful by inhalation.
May cause sensitization by inhalation and skin contact.
Irritating to eyes, respiratory system and skin.
Limited evidence of a carcinogenic effect.
Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Label elements

Hazardous components which must be listed on the label

diphenyl methane diisocyanate, isomers and homologues
Identification no.: 9016-87-9



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Labelling (1272/2008/CE):



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:

- P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
- P280 Wear protective gloves/ eye protection/ face protection.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
- P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Labelling (67/548/EEC, 1999/45/EC):

Labelling in accordance with Annex I of directive 67/548/EEC and its amendments and adaptations:

Xn Harmful

diphenyl methane diisocyanate, isomers and homologues

R-phrases(s)

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

S-phrases(s)

- S23 Do not breathe vapour.
- S24 Avoid contact with skin.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S37 Wear suitable gloves.
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S60 This material and its container must be disposed of as hazardous waste.

Other hazards



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Persons who suffer from hypersensitivity of the respiratory tract (e.g. asthmatics and chronic bronchitis sufferers) should avoid handling this product. Symptoms affecting the respiratory tract can also occur several hours after overexposure. Dust, vapors and aerosols are the primary risk to the respiratory tract.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Type of product: Substance

diphenylmethane-diisocyanate, isomers and homologues

Hazardous components

diphenylmethane-diisocyanate, isomers and homologues

Concentration [wt.-%]: ≤ 100

CAS-No.: 9016-87-9

Classification (1272/2008/CE): Acute Tox. 4 Inhalative H332 Skin Irrit. 2 H315 Eye Irrit. 2 H319 Sens. Resp. 1 H334 Skin Sens. 1 H317 Carc. 2 H351 STOT SE 3 H335 STOT RE 2 Inhalative H373

Classification (67/548/EEC): Carc. Cat. 3 R40 Xn R20 R42/43 R48/20 Xi R36/37/38

Specific threshold concentration

Xn	R42	0,1 - < 1 %
Xn	R40, R42/43	1 - < 5 %
Xn	R36/37/38, R40, R42/43	5 - < 10 %
Xn	R36/37/38, R40, R42/43, R48/20	10 - < 25 %
Xn	R20, R36/37/38, R40, R42/43, R48/20	≥ 25 %

4. FIRST AID MEASURES

Description of first aid measures

General advice: Soiled, soaked clothing and shoes must be immediately removed, decontaminated and disposed of.

If inhaled: Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required.

In case of skin contact: In the event of contact with the skin, preferably wash with a cleanser based on polyethylene glycol or with plenty of warm water and soap. Consult a doctor in the event of a skin reaction.

In case of eye contact: Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist.

If swallowed: DO NOT induce the patient to vomit, medical advice is required.

Most important symptoms and effects, both acute and delayed



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Notes to physician: The product irritates the respiratory tract and may trigger sensitisation of the skin and respiratory tract. Treatment of acute irritation or bronchial constriction is primarily symptomatic. Extended medical treatment may be required depending on the degree of exposure and the severity of the symptoms.

5. Fire-fighting measures

Suitable extinguishing media: Carbon dioxide (CO₂), Foam, extinguishing powder, in cases of larger fires, water spray should be used.

Unsuitable extinguishing media: High volume water jet

Special hazards arising from the substance or mixture:

Burning releases carbon monoxide, carbon dioxide, oxides of nitrogen, isocyanate vapors and traces of hydrogen cyanide. In the event of fire and/or explosion do not breathe fumes.

Fire in vicinity poses risk of pressure build-up and rupture. Containers at risk from fire should be cooled with water and, if possible, removed from the danger area.

Advice for fire-fighters:

During fire-fighting respirator with independent air-supply and airtight garment is required.

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Put on protective equipment (see chapter 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away.

Environment related measures: Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up: Remove mechanically; cover the remainder with wet, absorbent material (e.g. sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. one hour transfer to waste container and do not seal (evolution of CO₂!). Keep damp in a safe ventilated area for several days.

Reference to other sections: For further disposal measures see chapter 13.

7. HANDLING AND STORAGE

Precautions for safe handling:

Provide sufficient air exchange and/or exhaust in work rooms.

In all workplaces or parts of the plant where high concentrations of isocyanate aerosols and/or



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vapors may be generated (e.g. during pressure release, mold venting or when cleaning mixing heads with an air blast), appropriately located exhaust ventilation must be provided in order to prevent occupational exposure limits from being exceeded. The air should be drawn away from the personnel handling the product. The efficiency of the exhaust equipment should be periodically checked. The threshold limit values noted in Chapter 8 must be monitored.

The personal protective measures described in Chapter 8 must be observed. Contact with skin and eyes and inhalation of vapors must be avoided under all circumstances.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at the end of workday. Keep working clothes separately. Take off all contaminated clothing immediately. Decontaminate, destroy and dispose of soiled protective clothing (see Section 13)

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed and dry. Further information on the storage conditions which must be observed to preserve quality can be found in our product information sheet.

Storage temperature regarding personal safety: max. 50 °C.

VCI storage class (VCI = German Association of the Chemical Industry): 10

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
diphenylmethane-4,4'-diisocyanate	101-68-8	TRGS 900		0,05 mg/m3	=2=	Y
diphenylmethane-4,4'-diisocyanate	101-68-8	TRGS 900	STEL FAC		1	Substance listed with both Peak factor and STEL factor. The Peak factor is supplied with the AGW values.
diphenylmethane-4,4'-diisocyanate	101-68-8	TRGS 900	STEL CL			Category I: substances for which the localized effect has an assigned OEL respiratory passages.

The product may contain traces of phenylisocyanate.

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
Phenyl isocyanate	103-71-9	TRGS 900		0,01 ppm 0,05 mg/m3		



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Phenyl isocyanate	103-71-9	TRGS 900	STEL CL		Category I: substances for which the localized effect has an assigned OEL respiratory passages.
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Exposure controls

Respiratory protection:

Respiratory protection required in insufficiently ventilated working areas and during spraying. An air-fed mask, or for short periods of work, a combination of charcoal filter and particulate filter is recommended.

Hand protection:

Suitable materials for safety gloves; EN 374-3:

Polychloroprene - CR: thickness $\geq 0,5\text{mm}$; breakthrough time $\geq 480\text{min}$.

Nitrile rubber - NBR: thickness $\geq 0,35\text{mm}$; breakthrough time $\geq 480\text{min}$.

Butyl rubber - IIR: thickness $\geq 0,5\text{mm}$; breakthrough time $\geq 480\text{min}$.

Fluorinated rubber - FKM: thickness $\geq 0,4\text{mm}$; breakthrough time $\geq 480\text{min}$.

Recommendation: contaminated gloves should be disposed of.

Eye protection:

Wear eye/face protection.

Skin and body protection:

Wear suitable protective clothing.

Safety precautions for handling freshly molded polyurethane parts: see section 16

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance:	liquid	
Colour:	brown	
Odour:	earthy, musty	
Odour Threshold:	not established	
pH:	not applicable	
Pour point:	$< 0\text{ }^{\circ}\text{C}$	ISO 3016
Boiling point/boiling range:	$> 300\text{ }^{\circ}\text{C}$ at 1.013 hPa	DIN 53171
Flash point:	$> 200\text{ }^{\circ}\text{C}$	
Evaporation rate:	not established	
Flammability (solid, gas):	not applicable	
Burning number:	not applicable	
Vapour pressure:	1 hPa at $20\text{ }^{\circ}\text{C}$	EG A4
	12 hPa at $50\text{ }^{\circ}\text{C}$	EG A4
	17 hPa at $55\text{ }^{\circ}\text{C}$	EG A4
	Diphenyl-methane-diisocyanate (MDI) $< 0,00001\text{hPa}$	



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Vapour density:	not established	
Density:	1,23 g/cm ³ at 20 °C	DIN 51757
Miscibility with water:	immiscible at 15 °C	
Surface tension:	not established	
Partition coefficient (n-octanol/water):	not established	
Autoignition temperature:	not applicable	
Ignition temperature:	> 500 °C	DIN 51794
Decomposition temperature:	not established	
Viscosity, dynamic:	>= 200 mPa.s at 20 °C	DIN 53019
Explosive properties:	not established	
Dust explosion class:	not applicable	
Oxidising properties:	not established	
Other information:	The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.	

10. STABILITY AND REACTIVITY

Chemical stability: Polymerises at about 200 °C with evolution of CO₂.

Possibility of hazardous reactions: Exothermic reaction with amines and alcohols; reacts with water forming CO₂; in closed containers, risk of bursting owing to increase of pressure.

Hazardous decomposition products: No hazardous decomposition products when stored and handled correctly.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity, oral:

diphenylmethane-diisocyanate, isomers and homologues

LD50 rat: > 2.000 mg/kg

Toxicological studies of a comparable product.

Acute toxicity, inhalation:

diphenylmethane-diisocyanate, isomers and homologues

LC50 rat: 490 mg/m³, 4 h

Test substance: as aerosol

Concentration of the saturated vapor of 4,4-MDI at 25 °C: 0,09 mg/m³

Primary skin irritation:



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SAFETY DATA SHEET

112000015446

according to Regulation (EU) No. 1907/2006

DESMODUR 44 V 20 L

Version 2.0

Revision Date 01.12.2010

Print Date 02.12.2010

diphenylmethane-diisocyanate, isomers and homologues
rabbit
Result: irritating
Method: OECD Test Guideline 404
Toxicological studies of a comparable product.

Primary mucosae irritation:

diphenylmethane-diisocyanate, isomers and homologues
rabbit
Result: non-irritant
Method: OECD Test Guideline 405
Toxicological studies of a comparable product.

Sensitisation:

diphenylmethane-diisocyanate, isomers and homologues
Result: May cause sensitization by inhalation and skin contact.

Subacute, subchronic and prolonged toxicity:

diphenylmethane-diisocyanate, isomers and homologues
Long-term inhalation study of tech. diphenylmethane diisocyanate (PMDI) carried out using mechanically produced, inhalable PMDI aerosols. Aerodynamic diameter: 95 % below 5 µm
Concentrations: 0,2 ; 1,0 and 6,0 mg/m³ - Animal groups: 120 rats in each (60 female, 60 male)

Results after clinical and histopathological examination of the animals: 0,2 mg aerosols/m³: No irritation of the respiratory tract or lungs - "no effect level" (NOEL).

1,0 mg aerosols/m³: Slight irritation of and inflammatory changes to the nose, respiratory tract and lungs. No lung tumours.

6,0 mg aerosols/m³: More severe irritation of and chronic inflammatory changes to the nose, respiratory tract and lungs. Accumulation of a yellow substance in the lungs.

8 benign (statistically increased) and 1 malignant (statistically insignificant) lung tumours were found.

The overall increased incidence of lung tumours only in the group which received the highest concentration is closely attributed to the chronic irritation of and the inflammatory changes to the respiratory organs and to the accumulation of the yellow substance in the lungs of the animals .

Additional information:

diphenylmethane-diisocyanate, isomers and homologues
Special properties/effects: Over-exposure entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible.
Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.

12. ECOLOGICAL INFORMATION

Do not allow to escape into waterways, wastewater or soil.

Toxicity



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Acute Fish toxicity:

diphenylmethane-diisocyanate, isomers and homologues

LC0 > 1.000 mg/l

Species: Danio rerio (zebra fish)

Exposure duration: 96 h

Method: OECD Test Guideline 203

Acute toxicity for daphnia:

diphenylmethane-diisocyanate, isomers and homologues

EC50 > 1.000 mg/l

Species: Daphnia magna (Water flea)

Exposure duration: 24 h

Method: OECD Test Guideline 202

Acute bacterial toxicity:

diphenylmethane-diisocyanate, isomers and homologues

EC50 > 100 mg/l

Tested on: activated sludge Duration of test: 3 h

Method: OECD Test Guideline 209

Persistence and degradability

Biodegradability:

diphenylmethane-diisocyanate, isomers and homologues

Biodegradation: 0 %, 28 d, i.e. not degradable

Method: OECD Test Guideline 302 C

Additional information on ecotoxicology:

The product reacts with water at the interface forming CO₂ and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with applicable international, national and local laws, ordinances and statutes.

For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

Waste treatment methods

After final product withdrawal, all residues must be removed from containers (drip-free, powder-free or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing take-back scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

None disposal into waste water.



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14. TRANSPORT INFORMATION

ADR/RID Not dangerous goods

ADN Not dangerous goods

ADNR (tanker only) Not dangerous goods

IATA Not dangerous goods

IMDG Not dangerous goods

Special precautions for user : Not dangerous cargo.
Irritating to skin and eyes. Avoid temperatures below 0 °C.
Avoid heat above +50 °C. Keep dry.
Keep away from foodstuffs, acids and alkalis.

15. REGULATORY INFORMATION

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

TA Luft List (Germany):

Type: Organic Substances

portion Class 1: 100 %

Water contaminating class (Germany): 1 slightly water endangering
(in accordance with Annex 4 to the Directive on Water-Hazardous Substances)

Any existing national regulations on the handling of isocyanates must be observed.

16. OTHER INFORMATION

Full text of hazardous (H) warnings referred to under sections 2 and 3 of the CLP classification (1272/2008/CE).

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 if inhaled.

Full text of R-phrases referred to under sections 2 and 3 of the EU classification (67/548/EEC, 1999/45/EC).



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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 sensitization by inhalation and skin contact.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

For internal US delivery: Under § 172.101, Appendix A, DOT (Department of Transportation) it is requested: MDI Reportable Quantity (RQ): 5000lbs (2270kg).

ISOPA Guidelines for safe loading/unloading, transport and storage of TDI and MDI. ISOPA Order No.: PSC-0005-GUIDL

Safety precautions for handling freshly molded polyurethane parts:

Depending on the production parameters, any uncovered surfaces of polyurethane moldings produced using this raw material may contain traces of substances (e. g. starting and reaction products, catalysts, release agents) with hazardous characteristics. Skin contact with traces of these substances must be avoided. When demolding or otherwise handling freshly molded polyurethane parts, protective textile gloves must be worn as a minimum. Their palm and finger areas should preferably be coated on the outside with nitrilerubber, PVC or polyurethane. Protective gloves should be changed daily. The wearing of protective clothing suited to the conditions normally encountered when handling freshly molded polyurethane parts is recommended.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



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Polyurethanes

VORASTAR™ 7000 Polyurethane Spray Elastomer System for Improved Steel and Concrete Protection in Harsh Environments

VORASTAR™ 7000 polyurethane spray elastomer system is a new, high-performance, two-component polyurea hybrid coating material providing enhanced chemical and moisture resistance in a wide range of industrial and infrastructure applications.

The VORASTAR 7000 polyurethane spray elastomer system is specially designed to be applied as a coating to protect concrete and steel used in the construction of pipelines and holding tanks to protect from chemical degradation, particularly those in high-acid and high-moisture environments. It has excellent mechanical stability and maintains its flexibility and protective qualities in extreme conditions, including temperatures as low as -50 °C. Due to its elastomeric properties, VORASTAR 7000 polyurethane spray elastomer system offers a good balance of strength and elongation, as well as strong abrasion and impact resistance. Its short cure time allows surfaces to quickly return to service after application.

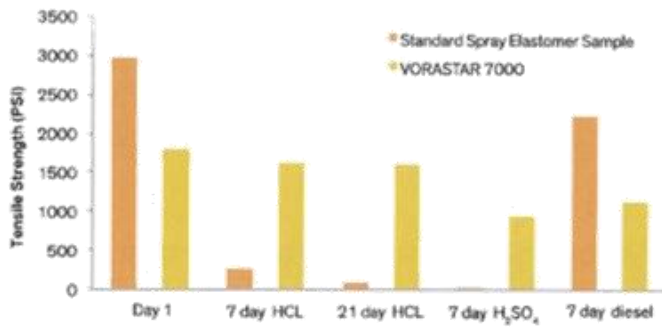
VORASTAR polyurethane spray elastomer system features and benefits include:

- **Low viscosity:** Reduced downtime during application; can be applied with industry standard spray equipment
- **Good mechanical performance:** Provides balance of strength and elongation across a broad temperature range, down to -50 °C
- **Enhanced structural durability:** Improved abrasion, wear and tear resistance
- **Excellent chemical resistance:** Enhanced corrosion protection of concrete containment structures and steel exposed to chemicals

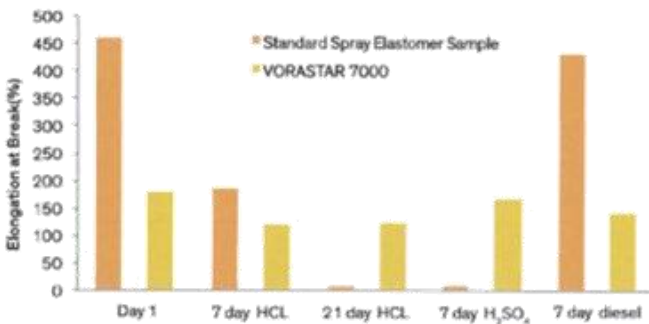


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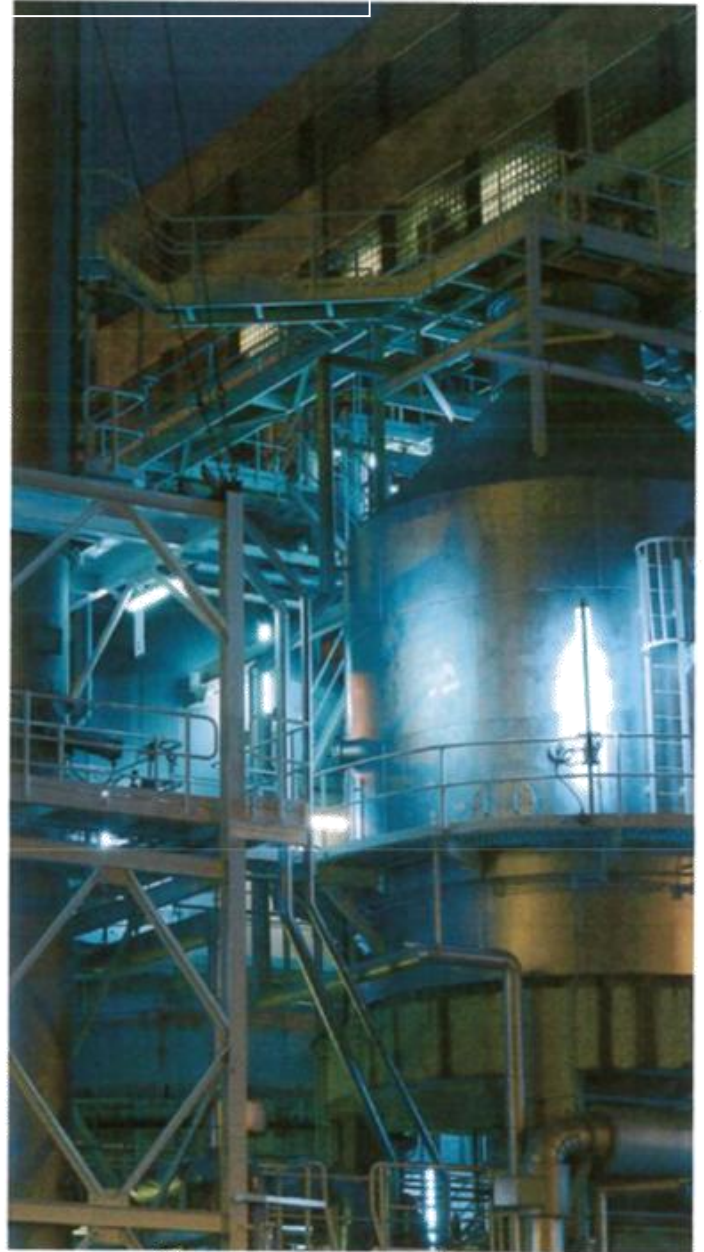
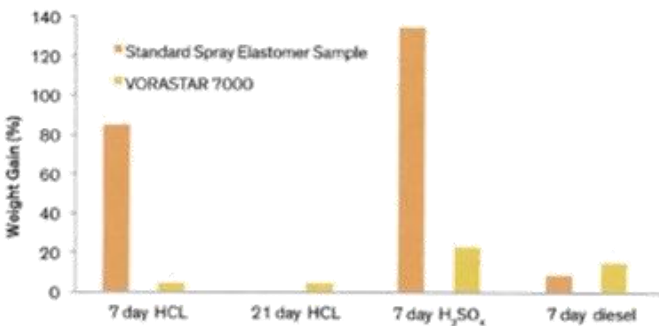
Tensile Strength After Immersion



Elongation After Immersion



Mass Gain After Immersion



The Dow Chemical Company

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Midland, MI 48674

Dow CIG North America

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dowpolyurethanes.com

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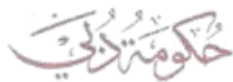
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DUBAI MUNICIPALITY

Dubai Central Laboratory

Engineering Materials Laboratory Section – Structural Unit

TEST REPORT

THERMAL TRANSMISSION PROPERTIES BY HEAT FLOW METER

REPORT NO. : 2016099579 DATE : 18/08/2016

WEB REQUEST NO. : DCL-07082016-0219

REQUEST NO. : 2016064857 SAMPLE NO. : 2016091566

PROJECT NO. : PS15-0047

PROJECT NAME : TESTING SERVICE FOR DOW CHEM IMEA GMBH (DUBAI BR)

CONSULTANT : NO SPECIFIC CONSULTANT

CONTRACTOR : NO SPECIFIC CONTRACTOR

LOCATION : DOW CHEMICAL IMEA GMBH Dubai

SOURCE : WATER SEAL INSULATION MAT.CONT.CO.LLC-SHARJAH

SAMPLE DESCRIPTION : POLYURETHANE RIGID BOARD

SAMPLE TYPE : VORACOR CS 1089 POLYOL

SUPPORT / FACING : NIL

NOM. THICKNESS (mm) : 50 NOM. DENSITY (kg/m³) : 45

Date of Sampling : 02/08/2016 Time : 10:00 Lot No. : NG

Date of Receiving Sample : 08/08/2016 Time : 11:00 Lot Size : NG

Size of Sample : 12 Nos Area No. : - Sender No. : VORACOR CS 1089 Polyol

MEASURED VALUES

TEST / SPECIMEN NO.	THICKNESS (MEASURED)	DENSITY (MEASURED)	MEAN TEMP.	THERMAL CONDUCTIVITY		THERMAL RESISTANCE		AVG. TEMP. GRADIENT	HEAT FLUX	CHANGE IN MASS (%)	DURATION OF TEST
	mm	kg/m ³		W / (m • K)	Btu-in/h•ft ² • F	(m ² •K) / W	°F•h•ft ² / Btu				
2/1	49.1	44.9	35.55	0.0242	0.1676	2.0328	11.5447	424.97	810	-0.026	00:57:22

Uncertainty of measurement for thermal conductivity 0.0010 W/m•K @ 95% confidence level, & factor 2.
Abridged ASTM C 518 Test Report.

SAMPLED BY : Masood Baluch (Mr) TESTED BY : NAZRUL ISLAM

SAMPLES BROUGHT IN BY : Masood Baluch

SAMPLING METHOD : NOT GIVEN

SAMPLING REPORT NO. : -

TEST METHOD : ASTM C518 : 2010

TEST METHOD VARIATION : NIL

REMARKS : THIS REPORT REPRESENTS THE SUBMITTED SAMPLE ONLY.

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Doc Ref : F-EM-2044-3
Issue Date : 31/07/2013

Rev. No. : 7
Page : 2 of 2

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Division: Water Proofing



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Dubai Central Laboratory Engineering Materials Laboratory Section – Structural Unit TEST REPORT

COMPRESSIVE RESISTANCE OF THERMAL INSULATION

REPORT NO.	: 2016099576	DATE	: 18/08/2016
WEB REQUEST NO.	: DCL-07082016-0219		
REQUEST NO.	: 2016064857	SAMPLE NO.	: 2016091566
PROJECT NO.	: PS15-0047		
PROJECT NAME	: TESTING SERVICE FOR DOW CHEM IMEA GMBH (DUBAI BR)		
CONSULTANT	: NO SPECIFIC CONSULTANT		
CONTRACTOR	: NO SPECIFIC CONTRACTOR		
LOCATION	: DOW CHEMICAL IMEA GMBH Dubai		
SOURCE	: WATER SEAL INSULATION MAT.CONT.CO.LLC-SHARJAH		
SAMPLE DESCRIPTION	: POLYURETHANE RIGID BOARD		
SAMPLE TYPE	: VORACOR CS 1089 POLYOL	NOM. THICKNESS (mm) :	50
SUPPORT / FACING	: NIL	NOM. DENSITY (kg/m ³) :	45
Date of Sampling	: 02/08/2016	Time	: 10:00
Date of Receiving Sample	: 08/08/2016	Time	: 11:00
Size of Sample	: 12 Nos	Area No.	: -
		Lot No.	: NG
		Lot Size	: NG
		Sender No.	: VORACOR CS 1089 Polyol

DATE SPECIMEN RECEIVED	08/08/2016
NOM. LENGTH (mm)	150
NOM. WIDTH (mm)	150
NOM. THICKNESS (mm)	50
NOM. DENSITY (kg/m ³)	45
PRE-CONDITION	23±2°C, 50±5% RH, 120h
TEST CONDITION	23±2°C, 50±5% RH
TEST START DATE	09/08/2016

SPECIMEN NO.	1	2	3	4
MEASURED DENSITY (kg/m ³)	44.54	45.04	45.57	42.44
AREA OF SPECIMEN "A" (mm ²)	22425	22951	22952	23102
PRE-LOAD APPLIED (Pa)	250			
CROSSHEAD SPEED (mm/min)	5.0			
DEFORMATION AT YIELD (%)	6.4	6.5	5.7	6.7
LOAD at YIELD "W" (N)	7058.0	7324.4	6970.5	7246.9
COMPRESSIVE RESISTANCE at YIELD (kPa)	314.7	319.1	303.7	313.7
AVG. COMPRESSIVE RESISTANCE at YIELD (kPa)	312.8			

SAMPLED BY	: Masood Baluch (Mfr)	TESTED BY	: NAZRUL ISLAM
SAMPLES BROUGHT IN BY	: Masood Baluch		
SAMPLING METHOD	: NOT GIVEN		
SAMPLING REPORT NO.	: -		
TEST METHOD	: ASTM C165-07 PROCEDURE A		
TEST METHOD VARIATION	: NIL		
REMARKS	: THIS REPORT REPRESENTS THE SUBMITTED SAMPLE ONLY.		

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Rev. No. : 4
Page : 1 of 1



Division: Water Proofing



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DUBAI MUNICIPALITY

Dubai Central Laboratory
Engineering Materials Laboratory Section – Structural Unit
TEST REPORT
THERMAL TRANSMISSION PROPERTIES BY HEAT FLOW METER

REPORT NO. : 2016099579 DATE : 18/08/2016
WEB REQUEST NO. : DCL-07082016-0219
REQUEST NO. : 2016064857 SAMPLE NO. : 2016091566
PROJECT NO. : PS15-0047
PROJECT NAME : TESTING SERVICE FOR DOW CHEM IMEA GMBH (DUBAI BR)
CONSULTANT : NO SPECIFIC CONSULTANT
CONTRACTOR : NO SPECIFIC CONTRACTOR
LOCATION : DOW CHEMICAL IMEA GMBH Dubai
SOURCE : WATER SEAL INSULATION MAT.CONT.CO.LLC-SHARJAH
SAMPLE DESCRIPTION : POLYURETHANE RIGID BOARD
SAMPLE TYPE : VORACOR CS 1089 POLYOL
SUPPORT / FACING : NIL
NOM. THICKNESS (mm) : 50 NOM. DENSITY (kg/m³) : 45

Date of Sampling	: 02/08/2016	Time	: 10:00	Lot No.	: NG
Date of Receiving Sample	: 08/08/2016	Time	: 11:00	Lot Size	: NG
Size of Sample	: 12 Nos	Area No.	: -	Sender No.	: VORACOR CS 1089 Polyol

CALIBRATION DETAILS

TYPE OF MATERIAL USED FOR CALIBRATION	STANDARD REFERENCE MATERIAL 1450C687
R VALUE @ 35°C [(m ² K) / W]	0.7169
DATE OF CERTIFICATION	10/12/2010
SOURCE OF CERTIFICATION	National Institute of Standards & Technology [NIST] - U.S.A.
EXPIRY & CERTIFICATION TEST NUMBER	Refer NIST special publication 260-130

TEST PARAMETERS

DATE SPECIMEN RECEIVED	08/08/2016
TEST START DATE	08/08/2016
NOM. THICKNESS OF SPECIMEN (mm)	50
TEMPERATURE, RH & TIME AT WHICH SPECIMEN CONDITIONED	35±2°C, 80±5% RH, 120 h
DATE OF CALIBRATION	14/08/2016
MEAN TEMP.(SET) °C	35
TEMPERATURE DIFFERENCE (ΔT) °C	20
NO. OF HEAT FLUX TRANSDUCER USED	2
TEST ARRANGEMENT	HORIZONTAL
METERING (TEST) AREA	100mm X 100mm

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Doc Ref : F-EM-2044-3
Issue Date : 31/07/2013

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Rev. No. : 7
Page : 1 of 2



Division: Water Proofing

Provisional Technical Data Sheet



Voracor CS 1089 Polyol Voracor CD 526 Isocyanate

Description

Voracor CS 1089 Polyol is designed for the production of sprayed foams for cavity filling, with an applied density of. The reaction of **Voracor CS 1089 Polyol** and **VORACOR® CD 526 Isocyanate** gives foams with good mechanical properties, dimensional stability and good adhesion to usual substrates. Both high and low-pressure machine can be used during the processing. It is recommended a substrates temperature not lower than 25 C. Voracor CS 1089 Polyol contains 141b as a blowing agent.

Typical Component Properties

	Units	Voracor CS 1089 Polyol	VORACOR CD 526 Isocyanate	Test Method
Hydroxyl Nr	mgKOH/g	320	-	ASTM D 4274d
NCO content	%	-	31.0	ASTM D 5155
Viscosity	mPa.s	250 (20-25 °C)	210 (25 °C)	ASTM D 445
Specific Gravity	-	1.105 (20/20 °C)	1.24 (25/25 °C)	ASTM D 891

Recommended Process Conditions

Both high and low pressure machines can be used.

	Units	Limits
Voracor CS 1089 Polyol	pbw	100
VORACOR CD 526 Isocyanate	pbw	120

Typical Reaction Characteristics⁽³⁾

	Units	Handmix	Test Method
Cream time	s	3-4	Internal Dow Method - SH-PM-02
Gel time	s	12	Internal Dow Method - SH-PM-02
Tack Free Time	s	14	Internal Dow Method - SH-PM-02
Free rise density	Kg/m ³	30 - 32	Internal Dow Method - SH-PM-04

DOW RESTRICTED



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Handling and Storage

	Units	Voracor CS 1089 Polyol	VORACOR CS 1164 Isocyanate
Storage temperature	°C	15 – 25	15-25
Storage stability / Shelf life ⁽⁴⁾	months	3	6

2. Stored in the original sealed drums in a dry place at the recommended temperature

Typical Polymer Properties

These items are provided as general information only

	Units	Values	Test Method
Working ratio Poly/Iso	pbw	100/120	/
Overall applied density	Kg/m ³	42 - 45	ASTM D1622
Closed cell content	%	> 95	ASTM D 2856
Initial thermal conductivity, 23 °C	mW/mK	22	UNI 7891
Compressive strength (thickness direction)	KPa	300	UNI 6350
Dimensional stability (linear changes)			UNI 8069
- 48 hours at -25°C	%	1 max	
- 48 hours at 70°C	%	1 max	

Safety Considerations

Material Safety Data (MSD) sheets are available from The Dow Chemical Company. MSD sheets are provided to help customers satisfy their own handling, safety and disposal needs and those that may be required by locally applicable health and safety regulations. MSD sheets are updated regularly, therefore, please request and review the most current MSD sheet before handling or using any product. These are available from the nearest Dow sales office..

Customer Notice

Dow encourages its customers to review their applications of Dow products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they were not intended or tested, Dow personnel are willing to assist in dealing with ecological and products safety consideration. Your Dow representative can arrange the proper contacts.

Contact information :

For more information about PU Systems products, call The Dow Chemical Company :
<http://www.dow.com/pusystems/index.htm>

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Quality Management System certified by DQS
 against DIN EN ISO 9001
 Reg. No. 055759 QM



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Formulated Systems

PRODUCT INFORMATION

TECHNICAL DATASHEET

4/16/2013

Introduction

HYPERLAST™ EMH 95A is a two component sprayable elastomer which can be applied to a wide variety of substrates at ambient temperature. Its rapid reaction time produces a sprayed film which is touch dry in seconds. The system is designed for use through 1:1 volumetric spray equipment.

HYPERLAST EMH 95A

Component Properties

Polyol Component

Product Reference	HYPERLAST™ EMH 95A Polyol
Appearance	Amber Liquid at 25°C
Viscosity	500 – 800 cps at 25°C
Specific Gravity	1.02 – 1.03 at 25°C

Isocyanate Component

Product Reference	HYPERLAST™ EMH 95A Prepolymer
Appearance	Amber Liquid at 25°C
Viscosity	7 – 13 poise at 25°C
Specific Gravity	1.1 – 1.14 at 25°C

Mixed System

Mixing Ratio	0.91:1 by weight (Polyol : Isocyanate)
Gel Time	0' 5" - 0' 10" (100 gms at 25°C)

These are typical values and should not be construed as specifications.

Cured System – Typical Properties

Property	Test Method	Value	Unit
Shore Hardness	BS EN ISO 868	95	°A
Tensile Strength	BS 903 Pt A2	16	MPa
100% Modulus	BS 903 Pt A2	9	MPa
Elongation at Break	BS 903 Pt A2	250	%
Angle Tear Strength	BS 903 Pt A3	70	N/mm
Crescent Tear Strength	ASTM D624-73	70	N/mm
Density	BS 903 Pt A1	980	Kg/m ³
DIN Abrasion	DIN 53516	220	mm ³ loss

These are typical values and should not be construed as specifications.



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Processing Details

The following information is given as a guide to processing this product. It is recommended that optimum conditions for a specific application are determined experimentally. Our Technical Service Department can offer more detailed advice.

Recommended Processing Temperatures

Polyol Component Refer to our Technical Service Department for temp °C

Isocyanate Component Refer to our Technical Service Department for temp °C

These are typical values and should not be construed as specifications.

Recommended Cure Cycle

24 - 48 hours at room temperature to reach full cure.

Additional Processing Details

This product is designed for use through 1 : 1 volumetric spray equipment. For advice on suitable equipment and optimum procedures for use please contact our Technical Service Department.

Storage and Handling

		Shelf life
Polyol Component	Store in tightly sealed containers at a temperature of 0 - 30°C. Raise to the processing temperature and mix well before use. Avoid contact with moisture.	6 months
Isocyanate Component	Store in tightly sealed containers at a temperature of 15 - 35°C. Avoid contact with moisture. Storage below the recommended minimum temperature may result in freezing of the Isocyanate. If the Isocyanate does not fully melt out when raised to the processing temperature it may be necessary to re-melt at a temperature of 60 - 70°C following the procedures laid down in the information sheet 'Safe Handling - Pure, Modified and Polymeric MDI' Form No. 109-01224X-1009P&M.	6 months

More detailed information on the storage and handling of polyurethane components can be obtained by contacting Dow Technical Service Department.

Packaging

Polyol Component	25 kg, 200 kg
Isocyanate Component	25 kg, 220 kg



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Product Stewardship

The Dow Chemical Company and its subsidiaries ("Dow") has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Dow products— from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Safety Considerations

Safety Data Sheets (SDS) are available from The Dow Chemical Company (Dow). SDS are provided to help customers satisfy their own handling, safety and disposal needs, and those that may be required by locally applicable health and safety regulations. SDS sheets are updated regularly. Therefore, please request and review the most current SDS before handling or using any product. Copies of the SDS are available on request through the nearest Dow Sales office.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to help ensure that Dow products are not used in ways for which they were not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products.

Contact information:

For more information about this product please call The Dow Chemical Company.

North America: 1-800-441-4369
Latin America: (+55) 11-5188-9000
Europe: (+31) 11-567-2626
Asia/Pacific: (+60) 3-7965-5392
<http://www.dowhyperlast.com>

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PRODUCT INFORMATION

TECHNICAL DATASHEET

7/9/2010



Formulated Systems

Introduction

DIPRANE™ SMP 88A FR is a polyester based polyurethane elastomer that can be spray applied to produce a tough elastomeric coating with a high level of flame retardance.

DIPRANE SMP 88A FR

Component Properties

Polyol Component

Product Reference	DIPRANE SMP 88A FR
Appearance	White Liquid at 25 °C
Viscosity	7000 – 9000 cps at 25 °C
Specific Gravity	1.36 – 1.38 at 25 °C

Isocyanate Component

Product Reference	DIPRANE 54 Prepolymer
Appearance	Amber Liquid at 25 °C
Viscosity	6 – 8 poise at 25 °C
Specific Gravity	1.2 – 1.22 at 25 °C

Mixed System

Mixing Ratio	1.95 :1 by weight (Polyol : Isocyanate)
Gel Time	0' 30" - 1' 0" (100 gms at 25 °C)

Cured System – Typical Properties

Property	Test Method	Value	Unit
Sheet Hardness	BS EN ISO 868	85 – 90	°A
Tensile Strength	BS 903 Pt A2	20	MPa
Elongation at Break	BS 903 Pt A2	400	%
Angle tear strength	BS 903 Pt A3	75	N/mm
Flame Retardance	UL 94 (3mm thick)	V0	—
Cold Flex Temperature	BS 2782 Meth 150B	-16	°C



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Processing Details

The following information is given as a guide to processing this product. It is recommended that optimum conditions for a specific application are determined experimentally. Our Technical Service Department can offer more detailed advice.

Recommended Processing Temperatures

Polyol Component	25 – 35 °C
Isocyanate Component	25 – 35 °C

Recommended Cure Cycle

24 hours minimum at ambient temperature to full cure.

Additional Processing Details

Mechanical properties may vary depending on equipment and technique used for spray application.

Storage and Handling

		Shelf life
Polyol Component	Store in tightly sealed containers at a temperature of 0 - 30 °C. Raise to the processing temperature and mix well before use. Avoid contact with moisture.	6 months
Isocyanate Component	Store in tightly sealed containers at a temperature of 15 - 30 °C. Avoid contact with moisture. Storage below the recommended minimum temperature may result in freezing of the Isocyanate. If the Isocyanate does not fully melt out when raised to the processing temperature it may be necessary to re-melt at a temperature of 60 - 70 °C following the procedures laid down in the information sheet 'ISOCYANATES - HAZARDS AND SAFE HANDLING PROCEDURES'.	6 months

More detailed information on the storage and handling of polyurethane components can be obtained by contacting our Technical Service Department.

Packaging

Polyol Component	25 Kgs, 200 Kgs
Isocyanate Component	25 Kgs, 240 Kgs

Safety Considerations Customer should refer to the Dow product Material Safety Data Sheet (MSDS) to understand the hazards of the product and safe handling guidance.

Customer Notice Dow encourages its customers to review their applications of Dow products from the standpoint of human health and environmental quality. For further information about safety considerations for your product/application, please contact your Dow Sales representative.



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Contact Information:

For more information
contact:
www.dowhyperlast.com

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POLYCOAT RBE

Rubberized bitumen emulsion

TDS_Polycoat-RBE_GCC_0116

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POLYCOAT RBE is an emulsified rubber modified bitumen coating, which dries to form a tough, seamless, flexible vapor proof protective coating. POLYCOAT RBE conforms to the requirement of ASTM D 1227 - Type III, class 1

CHARACTERISTICS

- ▶ Cold applied
- ▶ Single component, easy to apply
- ▶ Can be applied on damp substrates
- ▶ Can be applied in closed or confined areas.
- ▶ Water based
- ▶ Good resistance against chloride and sulphate ions
- ▶ Has good adhesion to most building substrates
- ▶ Seamless/joint free
- ▶ Prevents fungal growth

FIELDS OF APPLICATION

Can be used for a wide variety of applications, which includes the following:

- ▶ Protective coating on concrete foundations
- ▶ Curing compound on freshly cast concrete structures
- ▶ Dampproof membrane in sandwich constructions
- ▶ Vapor proof barrier coating for interior & exterior floors & walls

APPLICATION INSTRUCTIONS

The application temperature should be between 5°C to 55°C. Application procedures may vary slightly depending upon site conditions. The general recommended guidelines for the application of the bitumen coating system is as follows:

Surface preparation

The surface shall be cleaned thoroughly of all contaminants like dust, traces of curing compound, oil and grease. Light mechanical grinding/grit blasting/high pressure water jet may be used to clean the surface of all the contaminants depending on the degree of contamination on the surface to be coated. All surface imperfections and protrusions shall be removed and repaired. Structurally unsound and friable concrete must be removed and repaired

with a suitable POLYCRETE® concrete repair mortar.

Priming

It is highly recommended to apply a priming coat prior to the application of the POLYCOAT RBE coating on the substrate. The primer can be prepared in the site by diluting POLYCOAT RBE with 20% water and applying this diluted coat as the primer. For very dry and porous substrates apply two coats of this primer. The primer can be applied to damp or freshly cast concrete surfaces also. However, it should not be applied on waterlogged or flowing water areas. Further coats shall be applied only after the primer coat dries off completely. In case of delay in application of the top coat for more than 24 hours, a fresh coat of primer shall be re-applied.

Foundation Dampproofing

Stir the contents of the drum thoroughly before application to remove all sediments. Depending on the dry film thickness required, apply the rubberized bitumen coating @ 1-4m²/lt./coat. On vertical areas, it is recommended to apply the coating in multiple layers in order to avoid sagging of the heavy bodied coating. Subsequent coats shall be applied only after the previous coat dries off completely and shall be applied at right angles to the previous coat. Clean dry sand may be broadcasted onto the wet coating to provide a key for the subsequent coats and achieve a greater dry film thickness. The coating should be applied and finished up to the DPC level. If a plaster or cement render is to be applied on the bitumen coated surface, clean dry sand shall be broadcasted on to the coating whilst it is still wet. Leave the coating for curing for a minimum period of 48 hours before applying any protection board or backfilling. Care shall be taken to ensure that the first coat is not punctured during the application of the second coat. However, if the coating is damaged, the area can be readily over coated provided the surface preparation is done properly.



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Protection

POLYCOAT RBE coating should be protected from getting damaged due to the ongoing site activities and during backfilling.

Coating can be protected either by a cement sand screed (50mm thick) or by an asphaltic protection board (BITUBOARD*). Alternatively, a 1000 gauge polythene sheet can also be used for protecting the coating in areas where the backfill material is not very coarse.

Note: Curing efficiency of Bitumen based emulsions will not be high as that of Resin based curing compounds

COVERAGE

The coverage varies depending on the type of use:
General Use : 4 m²/lt/coat at required no. of coats

CLEANING

Clean all tools immediately after use with water. Hardened material can be cleaned with a solvent.

STORAGE & SHELF LIFE

The drums must be stored in a covered area, away from direct sunlight, UV and other sources of heat.

The shelf life of the product is up to 12 months if stored as per the recommendations. Excessive exposure to sunlight and UV will result in the deterioration of the product and reduce its shelf life.

HEALTH & SAFETY

As with all bitumen products, caution should always be exercised. Protective clothing such as gloves and goggles should be worn. (See packing for specific instructions). Treat any splashes to the skin or eyes with fresh water immediately. Should any of the products be accidentally swallowed, do not induce vomiting. Call for medical help immediately. Ensure that the container is available for medical attendant to examine any relevant instructions and content details.

TECHNICAL SPECIFICATION

PROPERTIES	VALUES	TEST STANDARDS
Color	Dark Brown	-
Form	Thixotropic Viscous Liquid	-
Density, [g/cc]	1.02±0.02	ASTM D 2939
Solid Content, [%]	60±5 approx	ASTM D 2939
Rubber Content, [%]	> 10	
Elongation, [%]	> 30	ASTM D 412
Drying Time [min]	60	-
Application temp, [°C]	5 to 55	
Service temp, [°C]	-5 to 75	
VOC [g/l]	<50	ASTM D3960/D2369

All values given are subject to 5-10% variation

SUPPLY

POLYCOAT RBE	20L pail & 200L drum
BITUBOARD 3.2 mm	2m x 1m, wt 7.7kg*
6.0 mm	2m x 1m, wt 14.0kg*
WATERTITE TS 15	10m x 50mm, wt 0.60kg*

*Refer to website for TDS

* Approximate weight

Apart from the information given here it is also important to observe the relevant guidelines and regulations of various organisations and trade associations as well as the respective standards. The aforementioned characteristics are based on practical experience and applied testing. Warranted properties and possible uses which go beyond those warranted in this information sheet require our written confirmation. All data given was obtained at an ambient and material temperature of +23°C and 50 % relative air humidity at laboratory conditions unless specified otherwise. Please note that under other climatic conditions hardening can be accelerated or delayed.

The information contained herein, particularly recommendations for the handling and use of our products, is based on our professional experience. As materials and conditions may vary with each intended application, and thus are beyond our sphere of influence, we strongly recommend that in each case sufficient tests are conducted to check the suitability of our products for their intended use. Legal liability cannot be accepted on the basis of the contents of this data sheet or any verbal advice given, unless there is a case of wilful misconduct or gross negligence on our part. This technical data sheet supersedes all previous editions relevant to this product.

Manufactured in G.C.C.



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OXIGEO*

Polyester based Geotextile Membrane

Description

OXIGEO is a needle punched nonwoven geo textile which are versatile in solving many soil and water management problems found in construction, it is UV stable polyester or polypropylene fibers which become a integral part of the fluid and vapor management system. It contains various mechanical, hydraulic and filtering criteria imposed by soil and construction conditions.

Application

- Land reclamation
- Breakwaters
- Harbor
- Marinas
- Membrane protection
- Landfills
- Foundations
- Landscaping
- Bridge supports
- Abutments
- Basal trains
- Asphalt and roofing overlays

Uses:

Drainage:

The ability to convey water and ground water prevents soil saturation, pressure buildup and stagnation. Our nonwovens have excellent permeability to match condition requirements.

Filtration:

The ability to convey water through the plane of the fabric while preventing movements of soil particles. Needle punching creates a fabric structure with a high distribution of pores through the thickness such that water flow remains high while soil particles are retained.



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Reinforcement:

Localized loads are distributed over larger area of sub grade by placing the fabric in tension. Elongation, toughness and good soil adhesion ensure adequate placement and support. When impregnated in paving or roofing applications stresses are relieved and crack propagation is prevented.

Protection

When placed over a membrane our fabric provides a layer of protection from puncture. Vapor and hydraulic pressure is also relieved due to the fabrics permeability. Underneath riprap the sub grade is protected from erosion by controlling water flow and soil piping.

Separation

Two materials are prevented from mixing during installation and subsequent use. Keeping aggregates separate from the base soils maintains the drainage and load bearing characteristics of each layer.

Information

Al Majara polychem industries LLC products are guaranteed against defective materials and are sold subject to standard terms and condition of sale, copies of which are available on request which are reasonable care it's taken compiling this technical data sheet, all recommendations regarding the use of product are made without guarantee since the conditions are use the beyond the company' direct control. It is the customer responsibility to satisfy themselves that each product is fit for the purpose for which they indent to use it.

Refer to material data sheet and further information

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   OXIGEO Series Polyester Geotextiles															
Technical Specifications															
Roll Dimension s (WxL)	Fabric Weight (g/m ²)	Thickness (mm)	Physical properties	Maximum pore size(µm)	Flow rate normal to the plane @ 10 cm head	Permeability coefficient	Water penetration K-value	Hydraulic Properties	Tensile strength (MD/CD)	Grab elongation (MD/CD)	Tensile strength (MD/CD)	Grab elongation (MD/CD)	Tensile strength (MD/CD)	Grab elongation (MD/CD)	Dynamic puncture strength
3x100	100	1.5	OXIGEO-12	140	250	2.5	0.35	OXIGEO-12	100/110	>70	190/220	>70	180/210	175	135
3x100	130	1.7	OXIGEO-14	140	210	2.1	0.35	OXIGEO-14	120/130	>70	260/310	>70	250/300	210	165
3x100	140	1.8	OXIGEO-16	120	180	1.8	0.35	OXIGEO-16	140/150	>70	310/410	>70	300/400	250	185
3x100	150	1.9	OXIGEO-17	106	160	1.6	0.34	OXIGEO-17	150/160	>70	320/420	>70	310/410	265	200
3x100	180	2.3	OXIGEO-20	85	140	1.4	0.33	OXIGEO-20	180/240	>70	420/660	>70	400/640	350	300
3x100	200	2.6	OXIGEO-22	80	125	1.25	0.32	OXIGEO-22	200/300	>70	500/700	>70	440/700	440	310
3x100	250	2.8	OXIGEO-27	80	100	1	0.28	OXIGEO-27	250/400	>70	580/900	>70	550/850	550	370
3x100	300	3.2	OXIGEO-32	75	85	0.85	0.27	OXIGEO-32	300/500	>70	750/1150	>70	720/1100	650	450
3x100	350	3.6	OXIGEO-37	75	75	0.75	0.27	OXIGEO-37	350/550	>70	870/1350	>70	840/1300	780	550
3x100	400	4	OXIGEO-42	75	65	0.65	0.26	OXIGEO-42	400/550	>70	980/1550	>70	950/1600	900	650
3x100	500	4.8	OXIGEO-52	75	52	0.52	0.26	OXIGEO-52	500/850	>70	1200/2900	>70	1150/2850	1100	750
3x100	600	5.4	OXIGEO-62	75	45	0.45	0.26	OXIGEO-62	600/1050	>70	1440/2200	>70	1350/2200	1300	900
MD = Machine Direction, CD= Cross Machine Direction The values reported in the specification sheet are average results obtained in our laboratory and independent test institutes.															



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OXIBOARD BI*

Thermally bonded bitumen board

Description

OXIMAST BI is a multi-layer thermally bonded board, manufactured from selected additives which are bonded together in polymer modified bitumen and then sandwiched between layers of saturated fibre-glass and polyethylene liners. Each board has a polyethylene surface which acts as an anti-stick interleaf while packing..

Uses

OXIBOARD BI has been designed for use as a permanent protection to most waterproofing and dampproofing systems, especially those systems indicated in BS 8102:1990. Oxiboard BI with its high puncture resistance protects the waterproofing membranes from any impact by sharp aggregates during the backfill process and later settlements.

Advantages

- Non bio-degradable.
- Weather, warp and rot proof.
- Tough and durable.
- Improved heat resistance.
- Excellent resistance to chemicals.
- Improved puncture resistance.
- Compatible with most waterproofing systems.

Surface preparation

Ensure that the surface is clean, dry and free from oil, grease, dirt and organic growth. Organic growth such as moss and lichen can be removed using bio-Cleaner.

Cleaning

Clean all tools with white spirit

Properties

Binder : Petroleum Ashphalt

Thickness : 3.2 mm, 4 mm, & 6 mm

Size : 2 m x 1m

Bitumen Content : > 75 %

Application temperature : 5 to 40°C

Softening Point : 140 °C

Water Permeability : Impermeable

Chemical Resistance : Excellent

Note: Properties measured at 25° C. Data quoted typical for this product does not constitute a specification. To obtain performance characteristics stated in this data sheet, the mixing ratio must be maintained.

Instructions for use

Application of membranes should be avoided in case of extreme weather conditions such as sand storms , rain, etc.

The Protection Boards should be laid continuously by fitting all edges firmly. For horizontal surfaces, butt the OXIBOARD BI sheets together. If required, cut the board to fit all intersections and protrusions. On vertical surfaces butt the sheets and hold in place until backfill has been accomplished. OXIBOARD BI can be fixed by torch, double sided adhesive strip or with both cold and hot applied adhesives depending on the type of membrane that has been used. Supports/props can be used to keep the boards in place till the adhesive is strong enough to hold the board. it will absorb the impact of aggregate shock, normal site foot traffic, and protect the waterproofing membrane from penetration by the sharp edges of reinforced steel and aggregate during the backfill process and late settlement.

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OXIBOARD BI*

Storage

Store under cover, out of direct sunlight and protect from extremes of temperature. Failure to comply with the recommended storage conditions may result in premature deterioration of the product or packaging. For specific storage advice consults Oxichemicals Technical Services Department. Do not stack one pallet on top of the other. It is advisable not to remove the shrink-wrap until the time of application. The pallets must be stored on a flat surface.

Safety precautions

Avoid contact with eyes and prolonged contact with skin. During application always wear gloves and appropriate clothing to minimise contact. In case of contact with eyes, immediately flush with plenty of water for at least 15 minutes. Should skin contact occur, wash immediately with soap and water. Seek the advice of a physician should symptoms persist.

Disposal

Do not re-use packing material. To be disposed off as per local rules & regulations.

Information

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OXISEAL PU 1-25LM



**New Generation, Single part Polyurethane Sealant
(Classification According to ISO 11600, as F-25LM)
Thixotropic for Vertical and Horizontal Joints**

Description

sealant that cures with the humidity to form a tough but highly elastic sealant of low modulus. There is a wide temperature application range. It is suitable for vertical and horizontal joints.

Compliance

The product complies with:

ISO-11600 Type F, class: 25LM
DIN-18540-F
ASTM C920

U.S. Federal Specification TT-S-00230C Type II Class A.

Pertinent performance requirements of BS 4254 & TT-S-00227E

Advantages

- Very easy and economic to use.
- It is one component excellent aging resistance
- Over paintable.
- Remains elastic even below negative temperatures.
- Recommended for under water applications
- Good resistance to microorganisms and a variety of chemicals.
- Suitable for drinking water.
- Good adhesion on almost any surface without priming.
- Special Primers is available for almost any substrate.

Recommended for

- General sealing of construction joints
- Water tanks
- Irrigation channels
- Basement walls
- Precast concrete elements
- For concrete, wood, marble, aluminum, steel,
- ceramic, gypsum boards, etc

Limitation

Not recommended for unsound substrates. Although is generally over paintable, test is recommended for paint compatibility. On humid surface, special primers are required.

Application

Recommended application temperature range varies between +5 °C to +40 °C. For cold weather, store the sausages at 20°C, before using. Install round polyethylene joint backing to control the sealant depth.

Tooling is recommended immediately after the application of sealant. For optimum performance, the ratio width to depth should be 2:1 subject to a minimum depth of 10mm.

Priming

No need of primer for most building substrates, like glass, aluminium, sound and clean beton, steel etc. On porous substrate, use PRIMER-PU®. On humid substrates, use AQUADUR® or UNIVERSAL PRIMER-2K 4060®. Generally, field adhesion testing is recommended

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OXISEAL PU 1-25LM



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Precautions

No problem after fully cured.
Ask for MSDS (Material Safety Data Sheet)

Consumption – Coverage rate

Linear meters per 600cc sausage

Width Depth	5mm	10mm	15mm	20mm	25mm
5mm	24	12	4	3	2.4
10mm					1.6
15mm					

Cleaning

Clean tools and equipment first with paper towels and then wipe by using Acetone or Xylene, etc.

Packing

In 600cc sausages.
Under request: 300cc sausages and 300cc cartridges
Standard colours: White, Grey and Beige Other primary RAL colours only under request.

Storage – Shelf life

OXISEAL PU1-25LM* can be kept for minimum 12 months in the original unopened packages at a temperature of 10 - 25°C in dry places.

Information

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Typical Properties

Density @ 20°C – 1.2 gr/cm³ (ASTM D 1475)

Hardness Shore A – Approx .20 (ASTM D 2240)

Service Temperature °C – (40) up to 90

Application Temperature °C – 5 up to 40

Touch free time Hr. – 2

Cure Rate mm/day- Approx 2-3

Elongation @break % - > 900
(ASTM D 412)

Tensile strength @ 50% Elongation kp/cm² – 2
(ASTM D 412)

Tensile strength @ 100% Elongation kp/cm² – 2.5-3
(ASTM D 412)

Resilience % - > 80 (DIN 52458)

Movement accommodation Factor (MAF) % - ±25
(ISO 11660)

QUV accelerated weathering test (4 hr. UV @ 60°C (UVB –Lamps) & 4 hr. COND @ 50°C – Passed (after 1000 hr.) (ASTM G 53)

Toxicity – No restrictions as cured

Slump (Rheological sag in vertical displacement) mm – No slump / sag (BS 4254)

Staining mm – No staining (BS 4254)

Effects of heat ageing – No cracking or chalking
(BS 4254)

Peal strength N – Over 30 N (ASTM C 394)

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POLYSEAL PS+

2 part gun grade polysulphide sealant for wide joints

POLYSEAL PS+ is a two component non slumping, chemically curing sealant for wide joints. It is based on a liquid polysulphide polymer which when mixed with the hardener, cures to form a tough, flexible and non staining rubber like seal. POLYSEAL PS+ is specifically designed to be used as a watertight seal for overhead moderate movement joints and joints with widths greater than 30mm. POLYSEAL PS+ has excellent adhesion to concrete, stone, metals and other common building substrates. The cured sealant has good resistance to most environmental chemicals & resists deterioration on prolonged exposure to UV. The sealant has a Movement Accomodation Factor (MAF) of $\pm 25\%$.

CHARACTERISTICS

- ▶ Highly resilient with excellent recovery characteristics
- ▶ Provides permanent and uniform watertight seal
- ▶ Non-staining
- ▶ Excellent resistance to fatigue and stays flexible throughout its service life—won't become brittle, caulk or crack due to ultra violet exposure
- ▶ Prevents uncontrolled cracking by allowing expansion and contractions during temperature changes
- ▶ Excellent adhesion to most common building substrates
- ▶ Good resistance to ageing. Retains joint soundness once cured
- ▶ Resistance against mild chemicals, hydrocarbon fuels, sea water
- ▶ Non-toxic. Can be used in potable water applications, swimming pools

FIELDS OF APPLICATION

- ▶ Overhead and vertical movement and control joints
- ▶ Joint width between 30mm and 50 mm

APPLICATION INSTRUCTIONS

Joint preparation

The joint surface must be clean, dry and free from oil, loose particles, cement laitance and other contaminants which may affect the adhesion. A thorough wire brushing, grinding, sand blasting or solvent cleaning may be required to expose a clean and sound substrate. The compressible joint filler shall be cut back to expose a uniform joint depth.

Priming

The primer POLYPRIME PS* shall be applied to clean, dry surfaces prior to the installation of backer rod.

The primer POLYPRIME PS* shall be applied to clean, dry surfaces prior to the installation of backer rod.

Back-Up Material

A bond breaking backing rod (POLYROD)* shall be inserted into all movement joints to avoid a three sided adhesion. For static and joints where the depth is not sufficient for the use of the backing rod, a bond breaking tape may be applied to prevent the three side adhesion.

MIXING & APPLICATION

POLYSEAL PS+ is available in a ready to mix container with all the components packed in a single tin. The material shall be mixed thoroughly with a slow speed drill (300-400 rpm) fitted with a flat bladed paddle for 2-3 minutes till a uniform colour and consistency is achieved.

DO NOT PART MIX. Since the base and the curing agent ratio controls the ultimate physical properties like adhesion, durability and strength, one complete kit has to be mixed at a time. The side and base of the container shall be periodically scrapped with a scraper to ensure that the curing agent is properly dispersed and blended in the mix. Load the sealant immediately into the barrel gun by a heavy duty follower plate. Start extruding into the joint firmly by maintaining an even pressure on the trigger off the gun. Vertical joint sealing shall commence from the bottom of the joint and continued to the top. Overhead sealing shall start from one end of the joint. Once the sealant has been installed a suitable rounded tool soaked in a soapy water solution can be used to achieve a smooth hour glass profile. Any masking tape applied should be removed immediately after the sealant is installed.

CLEANING

Remove all excess sealant with a scraper. Any spillage can be cleaned using POLYSOLVENT. Clean



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TDS_Polyseal-PS+_GCC_1115

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all tools and equipments using similar solvent immediately after the tooling. Hardened materials can be removed mechanically only.

LIMITATIONS

POLYSEAL PS+ is not recommended for:

- ▶ Movement joints having MAF > 25%
- ▶ Damp and contaminated surfaces
- ▶ Asphalt pavements
- ▶ Over painting (paint compatibility with sealant shall be checked prior to painting)
- ▶ Joint > 50mm width

JOINT DESIGNS

The width of the joint should be a minimum of 4 times the anticipated movement. Joints with cyclic movement should have a width to depth ratio of 2:1 for butt joints and 1:1 for control and lap joints. The joint depth shall not exceed the width.

COVERAGE

Length of joints in meters filled per 1 L of POLYSEAL PS+

Depth [mm]	Width [mm]				
	20	25	30	40	50
10	5				
15	3.3	2.6	2.2		
20	2.5	2	1.6	1.25	
25		1.6	1.3	1	0.8
30			1.1	0.8	0.66
40				0.6	0.5
50					0.4

Calculation based on theoretical coverage. Actual material consumption at site will vary depending on the wastage.

STANDARDS

POLYSEAL PS+ complies with the requirements of: BS EN ISO 11600:2003 + A1:2011 (formerly BS 4254), BS 5212: Part 1, BS 6920, ASTM C 920, Type M, Grade NS, Class 25 USE T.

STORAGE & SHELF LIFE

Store in a cool, dry place and keep away from all sources of heat and sunlight. In tropical climates, store in air condition rooms. The shelf life is up to 12 months in un-opened conditions and if stored as per recommendations. Excessive exposure to

sunlight, humidity and UV will result in the deterioration of the quality of the product and reduce its shelf life.

HEALTH & SAFETY

As with all construction chemical products caution should be exercised. Contains manganese dioxide. Refer the product MSDS for full details. Which is corrosive and may cause burns to skin if handled without proper protection. Protective clothing such as gloves and goggles should be worn. Treat any splashes to the skin or eyes with fresh water immediately. Should any of the products be accidentally swallowed, do not induce vomiting, but call for medical assistance immediately.

TECHNICAL SPECIFICATION

PROPERTIES	VALUES
Color	Grey
Density, [g/cc]	1.6±0.05
Viscosity	Thixotropic paste
Shrinkage	Negligible
Application life [min]	> 120
Shore 'A' Hardness	20-35
Tack free time [hrs]	5
Adhesion to concrete, [N]	>25
UV Resistance @300 hrs	No Deterioration
Suitability with potable water	Non toxic[BS6920]
Chemical Resistance	pH 2.5 to 11.5 hydrocarbon fuels veg. oil, sea water
Initial cure @ standard condition [hrs]	24
Full cure @standard condition[days]	7
Application Temp, [°C]	+5 to +40
Service Temp, [°C]	-20 to +80

All values given are subject to 5-10% tolerance

SUPPLY

POLYSEAL PS+	2.5L pail
POLYPRIME PS	1L pail
POLYPRIME NP	1L pail
POLYSOLVENT	5L & 20L pails
Ancillaries/Equipments	POLYROD Barrel Gun, Follower Plate

* Refer to website for TDS

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ARC & GREY
BUILDING CONTRACTING LLC

POLYFLEX

Two part acrylic modified cementitious waterproofing coating

POLYFLEX is a two part acrylic modified cementitious coating for protecting concrete structures against water, vapor, ingress of chloride ions, attacks of acidic gases and alkalis. It cures to form a tough flexible coating having excellent waterproofing properties. POLYFLEX is a blend of cement, selected fillers, polymers and graded silica sand which is in the powder form. The liquid contains acrylic co-polymers and wetting agents.

TDS_Polyflex_GCC_1115

CHARACTERISTICS

- ▶ Good flexibility. Thermal co-efficient of expansion similar to that of concrete
- ▶ Good adhesion to both, porous and non porous surfaces
- ▶ Good mechanical properties
- ▶ Suitable for light pedestrian traffic
- ▶ Excellent durability to long term weathering effect and UV
- ▶ Non toxic, therefore suitable for use in potable water applications
- ▶ Resistant to carbon dioxide and chloride ion diffusion. (Forms a film that provides an anti carbonation coating over concrete. A 1mm coating provides anti carbonation cover which is equivalent to over 75 cm of concrete)

FIELDS OF APPLICATION

Used as a waterproofing and protective coating for the following structures:

- ▶ Pile heads
- ▶ Internal lining for potable water reservoirs and other water retaining structures
- ▶ Protection of exposed concrete structures like bridge decks against carbonation and chloride attack
- ▶ Inverted roofs, lift and inspection pits, swimming pools, spillways
- ▶ Backing on marbles and granites to prevent the ingress of moisture
- ▶ General construction waterproofing

APPLICATION INSTRUCTIONS

The application temperature should be between 5°C to 45°C. Application procedures may vary slightly depending upon site conditions. The

general recommended guidelines for the application of the coating system is as follows:

Surface Preparation

The surface must be structurally sound and free of oil, grease, dust and other contaminants which will affect the bonding. Any structural cracks and potholes shall be repaired with a suitable repair mortar from the POLYCRETE® range of repair mortars. The surface to be treated should be pre-saturated with water prior to application. However, any standing water shall be removed prior to application.

Mixing

POLYFLEX is supplied in two pre-measured parts which just requires on site mixing. Do not mix more material than that can be used within the pot life. Part mixing can be carried out by mixing 3 parts of powder with 1 part of liquid (by weight). Pour the liquid into a suitable container and slowly add the powder to the liquid. Mix the contents using a slow speed drill (300-400rpm) fitted to a proprietary paddle mixer till a homogenous, lump free and creamy consistency is achieved. **DO NOT ADD WATER TO DILUTE THE MATERIAL.**

Application

It is recommended to apply POLYFLEX in two coats to provide a minimum thickness of 2mm for heavily trafficked areas and water retaining structures. Each coat shall be applied @ 1.8 kg/m² which will give a dry film thickness of 1mm. The coating can be applied with a stiff brush or by an airless spray of nozzle size of 3-4mm and a pressure of 6-7 bar. After the application of the first coat and whilst the coating is still wet, embed a glass fibre mesh at all corners and other joints for added reinforcement. The second coat shall be applied after the first coat dries off completely (6-8 hours @ 25°C, 50% RH). For general waterproofing and protection against carbonation and alkali attacks, the coating can be applied in 1mm thickness.

Product Guide V7 - Structural Waterproofing



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Division: Water Proofing

TDS_Polyflex_GCC_1115

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PROTECTION

Adequate protection needs to be provided for the coating in the following conditions:

- Areas subjected to mechanical abrasion
- Flowing water areas

Curing

The coating shall be cured immediately after it dries by wet hessian cloth or mist spraying for a minimum period of 72 hours. The coating will achieve its full mechanical properties within 7 days at 25°C and 50% RH.

CLEANING

Clean all tools immediately with water after use. Hardened materials can be removed mechanically only.

COVERAGE

1.8kg per m² per coat for 1mm Dry Film Thickness.

STORAGE & SHELF LIFE

Store under cover, out of direct sunlight and protect from extreme temperatures. It is recommended to keep the powder bags on pallets and not stacked on the floor. The shelf life is up to 12 months when stored as per recommendations and in unopened conditions. Failure to comply with the recommendations will result in premature deterioration of the product and reduce its shelf life.

HEALTH & SAFETY

As with all construction chemical products caution should always be exercised. Protective clothing such as gloves and goggles should be worn. Treat any splashes to the skin or eyes with fresh water immediately. Should any of the products be accidentally swallowed, do not induce vomiting, but call for medical assistance immediately.

TECHNICAL SPECIFICATION

PROPERTIES	VALUES	TEST STANDARDS
Color	Grey/ Off White	-
Mixed density, [g/cc]	1.8±0.02	ASTM D 1475
Pot life [min]	45	-
Tensile strength,* [N/mm ²]	> 8	ASTM D 412
Elongation,* [%]	> 5	ASTM D 412
Adhesion strength, [N/mm ²]	> 0.5	ASTM D 4541
Crack bridging, [mm]	> 0.5	ASTM C 836
Hydrostatic Pressure @5 bar (50m)	No leakage	BS EN 12390 (Part 8)
Hydrostatic negative Pressure @3 bar (30m)	No leakage	BS EN 12390 (Part 8)
Toxicity	Non Toxic	BS 6920
Abrasion resistance,* [mg]	< 75	ASTM D 4060
VOC, [g/L]	< 50	ASTM D 3960/ D 2369
Drying time [hrs]	6-8	-
Full cure [days]	7	-
Application temp, [°C]	5 to 45	-
Service temp, [°C]	-5 to 70	-

All values given are subject to 5-10% tolerance

*Values achieved with fibre mesh reinforcement

SUPPLY

POLYFLEX	20kg Kit (Part A - 15kg bag) (Part B - 5L pail, [wt 5.0kg*])
POLYCRETE	25kg bag

*Refer to website for TDS

* Approximate weight

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ARC & GREY
BUILDING CONTRACTING LLC



POLYTEX

Elastomeric acrylic waterproofing and protective coating

TDS_Polytex_GCC_1115

POLYTEX is a single component, elastomeric, acrylic waterproofing and protective coating. Polytex upon curing forms a tough, flexible and durable coating which is resistant to UV and other weathering agents.

CHARACTERISTICS

- ▶ Single component, easy to apply
- ▶ Protects exposed concrete structures against carbonation and ingress of atmospheric gases and salts
- ▶ Excellent UV resistance
- ▶ Elastomeric- high crack bridging capability
- ▶ Excellent adhesion to most of the substrates
- ▶ Good resistance to dilute acids, alcohol, hydrocarbons, chloride and sulphate ions

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FIELDS OF APPLICATION

Can be used as waterproofing and protective coating for sloped concrete roofs & metal profile roofs

APPLICATION INSTRUCTIONS

Application procedures may vary slightly depending upon site conditions. The general recommended guidelines for the application of the coating is as follows:

Surface Preparation

Concrete Surface:

Clean the surfaces which shall receive the coating of all dust, dirt, moss, oil and grease, loose particles, cement laitance and all other deleterious materials which will affect the adhesion of the coating with the substrate. Cracks and potholes shall be repaired with concrete repair mortar from the POLYCRETE* range.

Metal surface:

Clean the surface of all rust scales. This can be achieved by wire brushing or grit blasting.

Priming

POLYTEX shall be diluted with 20% water and applied as primer coat on the concrete surface to

seal the pores and stabilize the surface. The primer also functions as an adhesion promoter for the top coats. This primer coat can be applied by a brush, roller or airless spray and allowed to dry completely before the application of acrylic coating.

Application

Mix the contents of the drum prior to the application to remove any sediment. POLYTEX can be applied by soft bristled brush, roller or an airless spray. When applying by airless spray then dilute the coating with approximately 5% water to reduce the viscosity of the coating. Apply the first coat of undiluted material at a coverage rate of 1 Lt./m²/coat to get a Dry Film thickness of 0.50 mm. It is important to ensure that each coat has to be cured totally before applying the next coat. The second coat should be applied at right angle to the first at the same coverage rate, to ensure a full unbroken coating to the substrate. For improved strength and flexibility, embed a 65 g/m² non woven geo-textile membrane whilst the first coat is still wet on all corner joints, fillets and pipe penetration joints. Allow the coating to cure fully for 72 hours to achieve its full properties.

Caution: Prolonged water stagnation will cause the coating to become soft and peel off. Adequate protective measures shall be taken when applying in water logging areas.

COVERAGE

1 Lt /m² / coat for 0.5mm Dry Film Thickness. Two coats will give a combined thickness of 1.0mm thickness.

CLEANING & DISPOSAL

Clean all the tools with water after use. Hardened materials can be removed mechanically only. Allow the waste to cure. Seal it into a suitable container and bury in landfill. Use licensed waste disposal contractor and consult the local authorities when disposing.

Product Guide V7 - Structural Waterproofing



Division: Water Proofing

TDS_Polytex_GCC_1115

STORAGE & SHELF LIFE

The pails and drums must be stored in a covered area, away from direct sunlight, UV and other sources of heat. The shelf life of the product is up to 12 months if stored as per recommendations. Excessive exposure to sunlight and UV will result in the deterioration of the quality of the product and reduce its shelf life.

HEALTH & SAFETY

As with all construction chemicals products caution should always be exercised. Protective clothing such as gloves and goggles shall be worn. Treat any splashes to the skin or eyes immediately with fresh water. Should any of the products be accidentally swallowed, do not induce vomiting, but call for medical assistance immediately.

SUPPLY

POLYTEX	20L pail & 200 L drum
POLYCRETE	25kg bag

* Refer web site for TDS

TECHNICAL SPECIFICATION

PROPERTIES	VALUES	TEST STANDARDS
Color	White/Grey	-
Solid Content, [%]	50±2	-
Tensile strength, [N/mm ²]	> 1	ASTM D 638
Elongation @break, [%]	>50	ASTM D 638
UV Resistance @100 [hrs]	Passes	ASTM G 154
Crack bridging ability, [mm]	> 0.5	ASTM C 836
Application temp, [°C]	5 to 45	-
Service temp, [°C]	-5 to 70	-
VOC [g/L]	<50	ASTM D3960/ D 2369

All values given are subject to 5-10% tolerance

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ARC & GREY
BUILDING CONTRACTING LLC

POLYTHERM AC

Highly efficient, energy-saving flexible coating

TDS_Polytherm AC_GCC_1115

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POLYTHERM AC is water-based pure acrylic resin proving efficient thermal protection for the entire structure. POLYTHERM AC is non-toxic, washable & environment friendly forming a seamless membrane that resist many harsh chemicals & bridges hairline cracks.

POLYTHERM AC has high emittance & reflectance as well as a very low conductivity value which reduce thermal shock & heat penetration thereby keeping roofs much cooler in hot summer weather. They offer UV protection & display excellent dirt pick-up resistance and retain their flexibility long after aging.

CHARACTERISTICS

- ▶ Durable & provides high degree heat insulation properties
- ▶ Very high emittance & reflectance properties
- ▶ Excellent dirt pick-up resistance over longer period of time
- ▶ Reduced thermal conductance and heat gain thereby by increasing energy efficiency
- ▶ Outstanding adhesion over a variety of substrates
- ▶ Waterproofing & resistance to blistering
- ▶ Low VOC & non-toxic
- ▶ UV protection
- ▶ Washable

FIELDS OF APPLICATION

- ▶ Roofs, Terraces, balconies, domes, etc.
- ▶ Sandwich panels, corrugated sheets
- ▶ Overcoating on minerals surfaced waterproofing membranes
- ▶ Concrete facades

APPLICATION INSTRUCTIONS

The application temperature should be between 5°C to 45°C. Application procedures may vary slightly depending upon site conditions. The general recommended guidelines for the application of the coating system is as follows:

Surface preparation

All the surfaces must be cleaned and made free of dust, dirt, moss, oil, grease and other loose particles. This can be achieved by grit/sand/shot blasting. As a minimum, vigorous wire brushing should be employed. All pot holes and surface defects shall be repaired with a suitable concrete repair mortar from the POLYCRETE* range.

Product Guide V7 - Structural Waterproofing

Priming

POLYTHERM AC does not require priming and can directly be applied onto the surface. In case of highly porous surface, a priming coat is recommended to seal the pores and stabilize the surface. The primer coat can be produced on site by diluting POLYTHERM AC 1 to 1 with water. Apply the primer coat @ 5m²/L and allow to dry.

Mixing

POLYTHERM AC is a single component product but mix the contents of the pail thoroughly prior to application to remove any sediment. A slow speed drill and suitable paddle mixer shall be used to avoid the formation of bubbles.

Application

Once mixed, POLYTHERM AC should be immediately applied either by brush, roller or industrial sprayer. It is recommended that coating be applied in a minimum of two coats, coating shall be applied 3m²/liter/coat & should not be applied if relative humidity exceeds 95%.

Each subsequent coat shall be applied only after the previous coat dries off completely. After application the coating must be back rolled to reduce surface irregularities and improve bonding. Prior to the application of each coat the surface should be examined for signs of pin-holing, etc. To overcoat, it is imperative that the second coat be applied within the specified overcoating time.

Note: Do not dilute

COVERAGE

POLYTHERM AC:

concrete Roof 0.83L/m² for 500μ DFT

metal Roof 0.67L/m² for 400μ DFT

minimum recommended thickness is 500μ DFT and for metal roof recommended thickness is 400μ DFT this can be achieved in two coats.



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CLEANING & DISPOSAL

Clean all equipment & tools using fresh water & flush mineral spirits through spray equipment to prevent rusting. All disposal practices must be in compliance with all local laws and regulations.

STORAGE & SHELF LIFE

Store in a cool, dry place and keep away from all sources of heat and sunlight. In tropical climates, store in air conditioned rooms. The shelf life is up to 12 months in un-opened condition and if stored as per recommendations. Excessive exposure to sunlight, humidity and UV will result in the deterioration of the quality of the product and reduce its shelf life.

TECHNICAL PROPERTIES

PROPERTIES	VALUES	TEST STANDARDS
Drying Time (at 25°C & 50% humidity) To set To Recoat	45 min	
Solids content, [%]	63±2	ASTMD1644, D2396
Tensile Strength, initial, RT (22°C) [Mpa]	1.8	ASTMD2370
Elongation, initial, RT (22°C), [%]	> 200%	ASTMD2370
Tensile Strength, G156 1000hrs, RT (22°C), [Mpa]	2.7	ASTMD2370
Elongation, G156 1000hrs, RT (22°C), [%]	> 170%	ASTMD2370
G156, WOM 1,000 hours	Pass	ASTMD4798
Water Swelling Resistance, [%]	< 8%	ASTMD471
Adhesion (Dry) – Concrete, Steel & Polyurethane Form, [PLI]	> 3 PLI*	ASTMC794, D903
Adhesion (wet)- Concrete, Steel & Polyurethane Form, [PLI]	> 2 PLI	ASTMC794, D903
Tear Resistance, [lbf/in]	> 95	ASTMD624
Water Vapor Transmission, [perms]	11.6 perms	
Water Vapor Transmission Rate, [g/(h·m²)]	3.51	
Water Vapor Transmission [sd (m) Vapordiff equ air thickness]	0.296	
Dirt Pick up Resistance, [%]	97% (with UV) 71% (without UV)	DOW
Solar Reflectivity, [%]	86%	C1549
Emissivity, [%]	90%	C1471
VOC, [g/L]	≤50	ASTMD 3960/ D2369

All values given are subject to 5-10% tolerance

*Applied on concrete and steel with primer

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ARC & GREY
BUILDING CONTRACTING LLC

POLYTHANE PR

Fast curing polyurea based waterproofing and protective coating

POLYTHANE PR is a two component fast curing aromatic polyurea based elastomeric waterproofing coating system for concrete and metal surfaces and polyurethane foams. Free from solvents, the product is a 100% solid low VOC coating., which is applied by a high pressure spray plural component pump.

POLYTHANE PR can be applied in a single or multiple layers in thicknesses ranging from 250 microns to 2.5mm on vertical surfaces without sagging.

TDS_Polythane PR_GCC_1115

CHARACTERISTICS

- ▶ Fast curing time. Quick turnaround time for subsequent site works.
- ▶ Moisture and temperature insensitive. Reactive even at 0°C.
- ▶ Low VOC. Odourless.
- ▶ Tough and durable seamless and monolithic surface.
- ▶ High resistance to abrasion, puncture, impact and thermal shocks.
- ▶ High resistance to chemicals.
- ▶ Excellent low temperature flexibility and crack bridging ability.
- ▶ Low permeability. Highly durable and sustainable.
- ▶ Non Toxic- Can be used in potable water applications.

FIELDS OF APPLICATION

POLYTHANE PR is applied as a waterproofing and protective coating for:

- ▶ Bridge decks and bridges
- ▶ Underpasses & culverts
- ▶ Basements and foundations
- ▶ Roof, terraces & balconies
- ▶ Internal lining of water reservoirs, sewage treatment, manholes and desalination plants
- ▶ Primary and secondary containments for fuels, oils, fertilizers, and chemicals
- ▶ Car parking decks & industrial floors
- ▶ Theme & water parks.

APPLICATION INSTRUCTIONS

Surface Preparation

A proper substrate preparation is required to be done prior to applying the coating:

Concrete: Clean the surface thoroughly of all contaminants. Suitable blasting method can be used as per the guidelines specified in ASTM D4259 for surface cleaning. Cracks and potholes

shall be repaired with a suitable product from the POLYCRETE® concrete repair system.

Metal: Metal surfaces shall be grit blasted to a bright finish meeting the requirements of SA2½.

Priming

Prime the prepared surface with POLYPRIME PU* @ 4-5m²/lit and allow it to dry completely before the application of the polyurea coating.

For damp substrates, apply POLYPRIME R* as primer @4-5m²/L

Mixing & Application

POLYTHANE PR application shall be done using a high pressure plural spray equipment.

Technical Specification (Proportioning Unit)

Output capacity	> 7.5 lt/minute
Operating/Static Pressure	> 2500 psi
Spray pressure at Gun	> 2300 psi
Primary heating	70°C – 80°C
Hose heating	70°C – 80°C
Volume ratio of mix	1:1
Application temperature	80°C
Application pressure	150 – 180 bar

The coating should not be diluted with any solvent under any circumstances. Use POLYFOAM CLEANER for purge line and flushing of the spray equipments prior to application to remove all impurities.

Spray the coating as evenly as possible. It can be applied from 250 microns to 2.5mm in multiple passes without any considerable sag on vertical surfaces.

Protection

The applied coating shall be protected by Protection Boards(Bituboard/Bitustick R400)*, in case if backfilling is required.

CAUTION:

- i. The coating should not be applied directly on wet or damp substrates.
- ii. Outdoor application should be avoided during extreme climatic conditions.

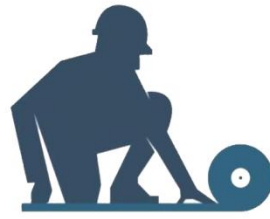
Product Guide V7 - Structural Waterproofing



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