WHITECHEM POLYUREA 1044

Premium, %100 Pure, Polyurea Based Waterproofing and Coating Product

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1– PRODUCT DESCRIPTION

WHITECHEM POLYUREA 1044 is two component, solvent-free, UV resistant, %100 pure polyurea system. It is applied with high pressure and heated special spray machines. As a result of the reaction, a membrane with excellent mechanical and chemical resistance properties is formed on the applied surface Due to these properties, it can be easily used on all kind of surfaces for waterproofing and coating purposes.

2– PRODUCT PROPERTIES

- Two component, aromatic, UV resistant
- 100 % solid content
- VOC free, odorless
- Fast set and service time
- Seamless
- Applicable in any desired thickness
- Applicable on all surfaces with suitable primer
- Can be used on horizontal and vertical surface
- Resistant to all types of vehicle traffic
- Rood resistant
- Water vapor permeability
- Excellent flexibility and crack bridging
- Excellent chemical and abrasion resistance
- Excellent resistance to weather conditions

3– APPLICATION AREAS

- General waterproofing applications (roofs, terraces, balconies etc.)
- Water tanks, pipes, ponds and pools
- Sewage and sewer linings
- Roads, bridges and tunnels
- On thermal insulation products (PU foam, EPS, XPS etc.)
- Foundation and curtain concretes
- Parking lots, factories, hospitals and other industrial floors
- Refineries, petrochemical and energy industry
- Pickup and bedliners
- Ship coating and marine industries

4- APPLICATION CONDITIONS

- The surface must be strong and of sufficient strength. Application should not be made on screed concrete which has low quality. The compressive strength for surface must be minimum 2,5 MPa, the lowest adhesion strength should be 1,5 MPa.
- Before application on fresh concrete the concrete should be allowed to dry for at least 28 days.
- The surface and ambient temperature should be at least 5 °C and not more than 35 °C.
- Relative air humidity should be less than %85.
- The maximum amount of surface moisture should be 4% for the surfaces applied polyurethane primer **(WHITECHEM PRIMER S80)**, maximum 6% for surfaces applied moisture tolerant epoxy primer **(WHITECHEM PRIMER 80)**, maximum 7% for surfaces applied water based epoxy primer **(WHITECHEM PRIMER W80)**.
- Attention should be paid to condensation on the surface. Application should not be made early in the morning. The surface temperature should be at least 3 °C higher than the dew point.
- Do not apply on frozen, melting surfaces or on surfaces where rain is expected within 6-8 hours.
- The above conditions apply to both primer and polyurea application.

5- SURFACE PREPARATION

- The application surface should be clean and dry. The elements that prevent adhesion should be cleaned from the surface. Do not wash to clean the surface.
- If necessary, the surface should be wiped off with suitable wiping machines in order to remove the weak concrete on the surface for to open the eyelets and openings. The glazed top layer of ceramic surfaces should be roughened. Dust happened after wiping should be removed from the surface by brush or vacuum cleaners.
- Dilatations on the surface should be insulated with the appropriate polyurethane based filler material **(WHITECHEM PU DF 25)** and dilatation tape.
- Any fractures, gaps and segregations on the surface must be repaired with suitable epoxy mortar **(WHITECHEM EP MORTAR 310)** or cement based repair mortars.
- Corner chamfers should be supported with appropriate repair mortar or chamfer tape.
- The large screed concrete surfaces should be cut. The inside of the joints should be filled with polyurethane or polyurea based sealant **(WHITECHEM WP 35 - WHITECHEM POLYUREA JH 1070 / JH 1080)**.
- Sanding and polishing should be done according to the standards for corrosive areas in metal surface coatings. The joints on the cleaned metal surface should be covered with polyurethane based sealant **(WHITECHEM WP 35)**, flexible tape or steel paste.
- As a result of these processes, dust and debris on the surface should be removed from the surface for the last time.

6- PRIMER APPLICATION

- If the surface moisture is less than 4% on absorbent surfaces (concrete, wood etc.), it is recommended to use a low viscosity primer **(WHITECHEM PRIMER 90 - WHITECHEM PRIMER E80)** for the first coat primer application. This application will reduce the amount of epoxy primer to be applied on the second layer priming and the number of pinholes on the surface in polyurea application.
- After the impregnation primer application, one can choose between **WHITECHEM PRIMER S80, WHITECHEM PRIMER 80** or **WHITECHEM PRIMER W80** according to surface moisture.
- If the surface moisture is above 4%, the moisture tolerant primer **(WHITECHEM PRIMER 80)** or **WHITECHEM PRIMER W80** should be used instead of first layer impregnation primer.
- For metal surfaces, choose **WHITECHEM PRIMER M80**.
- For non-absorbent surfaces (ceramic, glass or metal), choose **WHITECHEM PRIMER S80**, **WHITECHEM PRIMER 80** or **WHITECHEM PRIMER W80**.
- To obtain a homogeneous primer mixture, the primer should be mixed with an electric mixer for 3-4 minutes, low speed (~ 300 - 400 rpm) or with suitable equipment. Do not mix at high speed for a long time to prevent air bubbles.
- The prepared primer mixture is applied to the surface by brush, roller or airless spraying machines.
- When the primer is still wet, it is recommended to spray 0.3-0.7 mm of silica sand on the surface to increase the adhesion of the polyurea to the surface.
- Before applying **WHITECHEM POLYUREA 1044**, make sure that the primed surface is sufficiently dry. The primed surface should not be too wet or completely dry. It is sufficient to leave a feeling of adhesion in your hand.
- Foreign objects adhering to the primer surface and quartz sand, which is highly sprinkled, should be cleaned by brush or vacuum before application.

7- POLYUREA APPLICATION

- **Preparation of Components :**

Before starting the application, the component B (amine resin) must be mixed in the barrel for at least 30 minutes until a homogenous color is obtained. The mixing process must continue during application. It is important that the temperature of components A and B be in the range of 25-30 °C before application. The components should not be diluted in any way.

- **Spray Machine Settings :**

The polyurea is applied to floors with a spraying machine operating at high pressure and temperature. Machine settings must be checked continuously during application.

Parameters	Datas
A Component (MDI Prepolymer) Temperature	70-71 °C
B Component (Amine Resin) Temperature	67-68 °C
Hose Temperature	67-68 °C
Machine Pressure	140-180 bar

After all preparations are finished, the polyurea is applied by spraying on the surface with a minimum thickness of 2 mm for 2 layers.

- **Mixing ratio:**

It should be checked continuously whether the mixing ratio is correct or not with looking at machine pressure bar hours.

Mixing Ratio	Unit	Datas
A / B	Volume	100 / 100
	Weight	112 / 100

8- TOP COAT APPLICATION

- If the applied **WHITECHEM POLYUREA 1044** product is under direct sunlight, color change can be observed after a certain period of time. However, this does not affect the physical properties and performance of the product.
- If color stability is desired, aliphatic top coat is applied. Aliphatic polyurethane paint, aliphatic polyurea system or polyaspartic polyurea system may be preferred as the top coat application. The final coat should be applied within 0 - 12 hours after the application of the main coat.

9- CONSUMPTION

Product	Consumption
WHITECHEM PRIMER 0,3-0,7 mm Quartz Sand **WHITECHEM POLYUREA 1044**	300 - 500 g/m2 1,0 - 1,5 kg/m2 2,0 - 2,2 g/m2 (for 2mm)

* Consumption in the table is theoretical. Consumption may vary according to surface permeability, weather conditions, and the technique of application.

10- TECHNICAL FEATURES

Component Properties

	Unit	Method	A Component	B Component
Chemical Structure	-	-	MDI Prepolymer	Amine Resin
Physical Condition	-	-	Liquid	Liquid
Density (25°C)	gr/ml	ASTM D 1217	1,11 ± 0,03	1,02 ± 0,02
Viscosity (25°C)	cps	ASTM D 4878	700 - 800	300 - 600
Solid Content	%	ASTM D 2697	100	100
VOC Content	%	ASTM D 1259	0	0
Color	-	-	Transperant Yellow	Desired RAL Codes

Reaction Parameters

	Unit	Method	Datas
Gel Time	Second	-	5 - 10
Tack Free Time	Second	-	15 - 30

Finished Product Features

Test Name	Unit	Method	Datas
Final Product Structure	-	-	Solid Elastomeric Membrane
Tensile Strength	MPa	ASTM D 638	≥ 18
Module	MPa	ASTM D 638	%100 elongation ≥ 10 %300 elongation ≥ 15
Repeat coating time	hour	-	0-12
Elongation	%	ASTM D 638	≥ 350
Shore D	-	ASTM D 2240	40 - 45
Shore A	-	ASTM D 2240	90 - 95
Tear Resistance	N/mm	ASTM D 624	≥ 50
Taber Abrasion Resistance	mg	EN ISO 5470-1	< 200 (H22, 1000 cycle)
Impact Resistance	-	EN ISO 6272-1	Class III
Adhesion Strength	N/mm^2	ASTM D 4541	Concrete: ≥ 2 Steel: ≥ 6
Carbon Dioxide Permeability	meter	EN 1062-6	76,45
Capillary Water Permeability and Water Transfer Rate	$kg/m^2h^{0,5}$	EN 1062-3	0,021
UV Resistance Test	-	ASTM G53	no cracking and swelling

Chemical Resistances Per ASTM D543 For Immersion In Fluids Methods:

Chemical Name	Result	Chemical Name	Result
Sulfuric Acid (10%)	5	Potassium Hydroxide (10%)	5
Sulfuric Acid (20%)	4	Potassium Hydroxide (20%)	5
Sulfuric Acid (30%)	1	Sodium Hydroxide (50%)	5
Hydrochloric Acid (10%)	5	Brake Fluid	2
Hydrochloric Acid (20%)	4	Drinking Water (1mg/L chlor)	5
Nitric Acid (10%)	2	Chlorine Pool Water	5
Acetic Acid (10%)	5	Vinegar (5%)	5
ChromicAcid	4	Hydrogen Peroxide (3%)	4
Hydrofluoric Acid (10%)	1	Mineral oil	5
Phosphoric Acid (10%)	5	Hydraulic oil	5
Phosphoric acid (20%)	5	Engine oil	5
Diesel	5	Toluene	2
Gasoline	4	Methanol	5
Kerosene	5	Ethanol (10%)	5
Citric Acid (10%)	5	Aceton	2
Citric Acid (20%)	5	MEK	2
LacticAcid (25%)	5	Hexane	5
Muric Acid (10%)	5	Diethyl Ether	3
Ammonium Hydroxide (10%)	5	Xylene	2
Ammonium Hydroxide (20%)	5		

* These tests were done by dipping into chemicals for 6 months.
* 5: RESISTANT **4: RESISTANT. ONLY COLOR CHANGE** 3. SWELLING **2: CONDITIONS (SHORT-TERM DISCRIMINATION)** 1: NOT RECOMMEND

11 - PACKAGING

225 kg drum (A - MDI Prepolymer)
200 kg drum (B - Amine Resin)

12 - SHELF LIFE AND STORAGE CONDITIONS

- Polyurea components are moisture sensitive. Therefore, in original, unopened and undamaged packages, it is suitable for 9 months from date of production when stored correctly between +10 °C and +30 °C.
- Products should be stored in dry and places where not having direct sunlight.

13 – CLEANING

Clean all tools and application equipment with suitable cleaner solvent immediately after use. Hardened / cured material can only be cleaned by mechanical methods.

14 - WARNING AND SUGGESTIONS

- **WHITECHEM POLYUREA 1044** B component contains corrosive polyamines and component A isocyanates. Follow the instructions in MSDS form before or after use or when a problem is encountered.
- Personal protective equipment and full face mask with appropriate filter should be used during application.
- There must be sufficient air circulation in the application area.
- Give empty barrels to authorised hazardous waste collector companies