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WHITECHEM POLYUREA HP 1044

1 – PRODUCT DESCRIPTION

WHITECHEM POLYUREA HP 1044 is a very fast curing, two component, aromatic, pure polyurea system derived from a reaction of an isocyanate prepolymer and an amine terminated resin blend. It is a high performance product designed especially for industrial applications where high abrasion, chemical and corrosion resistance is a priority. For waterproofing and protecting purposes, this product can be applied on materials like concrete, metal, wood, ceramic and many other substrates. The material must be applied utilizing high pressure, heated plural component spray proportioning equipment.

2 – FEATURES

- Excellent impact and abrasion resistance
- Fast reactivity and fast return to service time
- Seamless coating
- 100% solid, VOC free, no solvents
- Environmentally friendly
- Very good tensile and structural strength
- Excellent chemical resistance
- Excellent impact and abrasion resistance
- Excellent thermal stability
- Excellent adhesion on concrete, steel, aluminum, plastics, fibers, wood, foam etc.
- Excellent corrosion protection
- UV, chlorine and saltwater resistant
- Variable application thickness is possible
- Broad color spectrum

3 – APPLICATION AREAS

General waterproofing and anticorrosion applications where high performance required as:

- Industrial & manufacturing facilities, storage, load and high traffic areas
- Wastewater infrastructure
- Roads, bridge decks, railways, tunnels and truck bed liners
- Mining containment, process equipment and distribution
- Primary & secondary containments
- Power plants , refineries, oil and gas industry
- Cargo containers
- Parking lots and garages
- Cold storage facilities, loading docks and ramps

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4 – SURFACE PREPARATION & APPLICATION PROCEDURE

Surface Preparation: Surface preparation strongly affects coating performance. Concrete substrates must be prepared mechanically using abrasive blast cleaning to remove cement laitance and achieve an open textured surface. Weak concrete must be removed and surface defects such as voids must be fully exposed. Repairs to the substrate, filling of blowholes/voids and surface leveling must be carried out using appropriate products. All dust, loose and friable material must be completely removed from all surfaces before application of the product, preferably by brush and/or vacuum. For application pull off strength of the surface should be min. 1.5 N/mm² and concrete residual moisture should be max. 4 % pbw (with appropriate moisture tolerant primer should be max. 6% pbw). The moisture content should be measured by moisture meter. Be aware of condensation; the substrate must be at least 3 °C above dew point to reduce the risk of condensation of the coating. Relative air humidity for application should be lower than 85%. Prior to application, confirm substrate moisture content, relative air humidity and dew point.

Application conditions/ limitations:

	Surface Temperature	Ambient Temperature	Relative Air Humidity
Optimum	10 °C -30 °C	20 °C -30 °C	25-50%
Minimum	-10 °C	-10 °C	0%
Maximum	50 °C	50 °C	85%

Priming: The application surface has to be primed in order to achieve an even surface and good adhesion. Lightly spreading out with quartz sand 0,3-0,8 mm is recommended because this provides higher adhesion values and extends the maximum waiting time of primer prior to the application of polyurea coating. In order to avoid the formation of blisters do not spread to excess.

Polyurea Application: The polyurea must be applied within 12-24 hours of applying the primer. Isocyanate prepolimer and amine resin must be applied using a two component high pressure and heat spray machine. The machine should be able to spray the components in 1:1 volume ratio. Both components must be heated above 70 °C. In order to achieve good performance, the temperature and pressure should stay same during the application and must be controlled regularly. Polyurea system components might not diluted under any circumstances. Before application, amine component must be stirred at least 30 minutes using a barrel mixer until a homogenous mixture and colour obtained. Aromatic polyurea coating systems are UV stable but are not color stable. The cured coating may exhibit discoloration when exposed to sunlight. This does not influence the performance and physical properties of the material. If the color stability required, an aliphatic top coat must be applied within 12 hours of applying base coat.

Consumption of Coating Components:
Primer: 0,3-05 kg/m^2
Quartz sand: 1-1,5 kg /m^2
Polyurea coating: 1,05- 1,1 kg/m^2 /mm (recommended film thickness is minimum 2 mm.)

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5 – PACKAGING

200 kg barrel (Amine component)
225 kg barrel (Iso component)

6 – COLORS

Standard color is medium grey. Custom colors any RAL number is available upon request.

7 – SHELF LIFE & STORAGE CONDITIONS

Polyurea components are sensitive to moisture. Keep polyurea components in tightly closed containers. Mix amine resin before application. Store the polyurea components between 20 -30 °C. 9 months of storage time, if stored according to stated conditions.

8 – SAFETY

Contains isocyanate MDI. Avoid breathing vapors. Avoid contact with skin and eyes. Take precautions during application. Wear suitable protective clothing, gloves and eye/ face protection. Adequate ventilation of the working area is recommended. Refer to SDS sheet prior to use.

9 – TECHNICAL FEATURES

Component Properties

	UNIT	METHOD	ISO COMPONENT (A)	AMINE COMPONENT (B)
Density (25°C)	gr/cm^3	ASTM D 1217	1,11±0,03	1,02±0,02
Viscosity (25°C)	mPa.s	ASTM D 4878	700-800	300-600
Shelf life	-----	-----	9 months	9 months

Process Properties

	UNIT	DATAS
Mix Ratio	By volume	A=100 B=100
	By weight	A= 112 B= 100
Process temperature(°C)	°C	A: 70-80 B: 70-80
Process pressure (bar)	Bar	A: 180-200 B: 180-200

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Physical Properties

	METHOD	DATAS
Chemical structure		A: MDI Prepolymer B: Amine Resin
VOC content (%)	ASTM D1259	0
Solid content (%)	ASTM D2697	100
Gel time (sec)	--	3-5
Tack free time (sec)	--	10-25
Recoat time (hr)	--	0-12 (without pretreatment)
Post cure time (hr)	--	24
Density (gr/cm^3)	ASTM D792	0,99-1,03
Tensile strength (MPa)	ASTM D638	≥ 20
Elongation at break (%)	ASTM D638	≥200
Hardness (Shore D)	ASTM D2240	50-45
Tear strength (N/mm)	ASTM D 624	≥50
Taber abrasion (mg)	EN ISO 5470-1	<25 (H22, 1000 cycle)
Impact resistance	EN ISO 6272-1	Class III
Thermal Resistance	--	-30 °C-100°C
Pull off strength (N/mm^2)	ASTM D 4541	Concrete: ≥2,5 Steel: ≥6