



## AKFIX POLYUREA 1044 (STANDARD PURE)

### 1 – DESCRIPTION

**POLYUREA 1044** is a very fast set, rapid curing, aromatic, flexible, two component, 100% pure polyurea coating system derived from a reaction of an isocyanate prepolymer and an amine terminated resin blend. The system is designed as a waterproofing and floor protective coating for concrete, metal, wood, ceramic, geotextile and PU foam substrates. It combines the advantages of seamless, waterproof coating with very long time service and durability. The product has high moisture and temperature insensitive properties, allowing application in the most problematic ambient conditions. The material must be applied utilizing high pressure, heated plural component spray proportioning equipment. Polyurea 1044 conform the requirements of the EN 1504-2 standard (concrete surface protection systems).

### 2 – FEATURES

- Fast reactivity and fast return to service time,
- Seamless and jointless coating,
- 100% solid, VOC free, no solvents,
- Environment friendly,
- Little or no odor,
- Excellent thermal stability,
- Excellent chemical resistance,
- Excellent impact and abrasion resistance,
- Very good tensile and structural strength,
- Excellent water resistance,
- Excellent adhesion on concrete, steel, aluminum, plastics, fibers, wood, foam etc.,
- Excellent flexibility,
- Excellent crack-bridging properties,
- Ideal for complex and detailed applications,
- Temperature and moisture insensitive,
- Excellent corrosion protection,
- UV, chlorine and saltwater resistant,
- High application thickness is possible,
- Broad color spectrum.

### 3 – APPLICATION AREAS

- General water isolation of storage tanks, pools, swimming pools, ponds, pipes, pipelines, waste water treatments, manholes and sewer linings, roof and terrace coatings.
- Floors; industrial floors, manufacturing facilities, warehouses, hospitals, factory, parking lots and garages.
- Construction of roads, bridge decks, railways and high speed railways, tunnels, airports and line striping.
- Marine industry and marine applications.



- Oil and gas industry, mining, secondary containment, energy industry and chemical processing facilities.
- Leisure industry; water parks, aquariums linings, play grounds and decorative applications

## 4 – SURFACE PREPARATION & APPLICATION PROCEDURE

- **Surface Preparation:** Surface preparation strongly affects the 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/mm<sup>2</sup> and concrete residual moisture should be max. 4% pbw (with an 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
<b>Optimum</b>	5-30 °C	20-30 °C	25-50%
<b>Minimum</b>	-10 °C	-10 °C	0%
<b>Maximum</b>	50 °C	50 °C	85%

- **Priming:** The application surface has to be primed in order to achieve an even surface and good adhesion. Lightly broadcasting 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 broadcast to excess.
- **Polyurea Application:** The polyurea must be applied within 12-24 hours of applying the primer. Isocyanate prepolymer 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 color 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: 0,3-0,5 kg/m<sup>2</sup>

Quartz sand: 1-1,5 kg /m<sup>2</sup>

Polyurea coating: 1,05- 1,1 kg/m<sup>2</sup>/mm (recommended film thickness is minimum 2 mm.)

## 5- PACKAGING

200 kg barrel (Amine side)

225 kg barrel (Iso side)

## 6- SHELF LIFE & STORAGE CONDITIONS

Polyurea components are sensitive to moisture. Keep polyurea components in tightly closed containers. Mix amine resin before application. Store polyurea components between 20 -30 °C. Shelf life of the unopened original packaging is nine months from manufacturing date.

## 7- 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.

## 8- TECHNICAL FEATURES

### Component Properties

	UNIT	METHOD	MDI PREPOLYMER (A)	AMINE RESIN (B)
<b>Density (25°C)</b>	gr/cm <sup>3</sup>	ASTM D 1217	1,11±0,03	1,02±0,02
<b>Viscosity (25°C)</b>	mPa.s	ASTM D 4878	700-800	300-600
<b>Shelf life</b>	-----	-----	9 months	9 months

### Process Properties

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



## 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)	--	5-10
Tack free time (sec)	--	15-25
Recoat time (hr)		0-12 (without pretreatment)
Density (gr/cm <sup>3</sup> )	ASTM D792	0,99-1,03
Tensile strength (MPa)	ASTM D638	≥ 18
Modulus (MPa)	ASTM D638	%100 elongation ≥10 %300 elongation ≥15
Elongation at break (%)	ASTM D638	≥350
Hardness (Shore D)	ASTM D2240	40-45
Hardness (Shore A)	ASTM D2240	90-95
Tear strength (N/mm)	ASTM D 624	≥50
Taber abrasion (mg)	EN ISO 5470-1	<30 (H22, 1000 cycle)
Impact resistance	EN ISO 6272-1	Class III
Pull off strength (N/mm <sup>2</sup> )	ASTM D 4541	Concrete: ≥2,5 Steel: ≥6

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