



AKFIX POLYUREA AS 1044

1 – PRODUCT DESCRIPTION

AKFIX POLYUREA AS 1044 is a very fast curing, two component, aromatic, flexible, pure polyurea system coating derived from a reaction of an isocyanate prepolymer and an amine terminated resin blend. This product is especially applied to surfaces to build up antistatic coatings to avoid risks of ignition due to electrostatic charge. It can be applied to areas where flammable liquids of danger classes are stored. For protecting and coating purposes, this product can be applied on materials like concrete, metal, wood, ceramic and PU foam. The material must be applied utilizing high pressure, heated plural component spray proportioning equipment.

2 – FEATURES

- Antistatic coating
- Fast reactivity and fast return to service time
- Hardens just in 10 second.
- Fast application time; one worker can cover 1000m² area in 2mm thickness in 1 day.
- 100% solid, VOC free, no solvents
- Environmentally friendly
- Excellent thermal stability
- Provides hydro-isolation, anti-rust and top coat paint properties.
- Excellent thermal stability (-25°C-120°C)
- Very good tensile and structural strength
- Excellent chemical resistance
- Long lasting (minimum 25 years)
- Excellent impact and abrasion resistance
- Excellent adhesion on concrete, steel, aluminum, fibers, wood, foam etc.
- Excellent flexibility
- Excellent crack bridging properties
- Temperature and moisture insensitive
- Excellent corrosion protection
- UV, chlorine and saltwater resistant
- Broad application temperature range (-10-60°C %100 R.H.)
- Variable application thickness is possible

3 – APPLICATION AREAS

- Electric transformers
- Thermal power plants
- Manufacturing facilities and storage areas
- Schools
- Industrial cold rooms
- Laboratories
- Hospitals and operating rooms
- Parking lots and garages
- Oil and gas industry



- Refineries
- Mining industry
- Mineral industry

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 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 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/m²

Quartz sand: 1-1,5 kg /m²

Polyurea coating: 1,00- 1,1 kg/m² /mm (recommended film thickness is minimum 2 mm.)



5 – PACKAGING

200 kg barrel (Amine component)

225 kg barrel (Iso component)

6 – COLORS

Standard color is medium grey. Custom colors in any RAL numbers are 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. Shelf life of the unopened original packaging is 6 months from manufacturing date.

8 – SAFETY

Contains isocyanate (MDI). Avoid breathing vapors. Avoid contact with skin and eyes. Take precautions during application. Adequate ventilation of the working area is recommended. Refer to SDS sheet for detailed information prior to use.

Please follow the instructions for safety:

- In closed areas; good ventilation is required.
- In open areas; reverse air flow must be prevented.
- Protective gloves must be used.
- Working suits that covers whole body must be weared.
- Protective goggles must be used.
- Minimal respiratory protection and mask should be used

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



Chemical Resistance after 6 months at room temperature

%10 Sodium Chloride (NaCl)	Resistant
%10 Sulfuric Acid (H ₂ SO ₄)	Resistant
%10 Hydrochloric Acid (HCl)	Resistant
%20 Phosphoric Acid (H ₃ PO ₄)	Resistant
%20 Ammonium (NH ₄) ⁺	Resistant
%50 Sodium hydroxide (NaOH)	Resistant
%20 Potassium hydroxide (KOH)	Resistant

Physical Properties

	METHOD	DATAS
Chemical structure		A: MDI Prepolymer B: Amine Resin
Color		White, black, grey, yellow and any RAL color
VOC content (%)	ASTM D1259	0
Solid content (%)	ASTM D2697	100
Gel time (sec)	--	5-10
Tack free time (sec)	--	15-30
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	≥ 16
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
Thermal Resistance	--	-25 °C-120°C
Pull off strength (N/mm ²)	ASTM D 4541	Concrete: ≥2 Steel: ≥6
Surface resistance(ohm)	DIN IEC 61340	≤0,5*10 ⁹ (fullfills the requirement for coating systems)
Reaction to Fire	EN 13501-1	Class E
Co ² Permability	EN 1062-6	SD = 76,45 m
Abrasion resistance	EN ISO 5470-1	< 200 (H22, 1000 cycle)
Bond strength by pull-off	EN 1542	2,0 N/mm ²
Thermal Shock Resistance (200°C in 1 min.)	--	Resistant
Shelf Life	--	9 months
Consumption	--	1,00- 1,1 kg/m ² /mm



Polyurea Application Machine Components

- High pressurized compressor (pneumatic / hydraulic) (Min 7 bar)
- Air drier.
- Transfer pump set for A and B components.
- 45 kw Generator.
- Heated hose set.
- Gun.

CHEMICAL RESISTANCE TEST RESULTS (SIX MONTHS IMMERSION)

CHEMICAL NAME	RESULT
Sulphuric acid (10%)	R
Sulphuric acid (20%)	R-DIS
Sulphuric acid (30%)	NR
Hydrochloric acid (10%)	R
Hydrochloric acid (20%)	R-DIS
Nitric acid (10%)	NR
Acetic acid (10%)	R
Chromic acid	R-DIS
Hydrofluoric acid (10%)	NR
Phosphoric acid (10%)	R
Phosphoric acid (20%)	R
Ammonium hydroxide (10%)	R
Ammonium hydroxide (20%)	R
Potassium hydroxide (10%)	R
Potassium hydroxide (20%)	R
Sodium hydroxide (10%)	R
Sodium hydroxide (20%)	R
Sodium hydroxide (50%)	R-DIS

CHEMICAL NAME	RESULT
Diesel	R
Gasoline	R-S
Kerosene	R
Hydraulic oil	R
Mineral oil	R
Motor oil	R
Methanol	R
Ethanol (10%)	R
Acetone	C
Brake Fluid	R
Potable water (1mg/L chlor)	R
Chlorinated pool water	R
Vinegar (5%)	R
Toluene	C
Xylene	C
MEK	C
Hydrogen peroxide (3%)	R-DIS
Diethyl ether	R-S

NOTE: The chemical resistance detail given above is a guideline based on laboratory testing in controlled conditions, results from the field may vary due to actual conditions on site.

R: RESISTANT	R-DIS: RESISTANT-DISCOLORATION ONLY	R-S: RESISTANT-SLIGHT SWELLING	C: CONDITONAL (INSTANT SPILLAGE)	NR: NOT RECOMMENDED
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