

# MONARCH UL

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## DESCRIPTION:

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MONARCH UL is high performance modified polyurea designed and developed to perform well for anticorrosion and waterproofing applications on steel, concrete, fiberglass, wood, and many other substrates. It is a two-component, 100% solids, fast set aromatic product and forms a hard and tough film with excellent resiliency. This aromatic elastomer displays good chemical resistance, outdoor durability, thermal stability, and abrasion resistance. MONARCH UL can be textured easily for anti-skid purposes. The product has good moisture permeation resistance compared to polyurethanes and suitable as a protective liner in many applications. MONARCH UL provides excellent adhesion to most substrates when used with a suitable Monarch primer.

## FEATURES:

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- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Performs in constant process temperatures from -20 °F to 250 °F (-30 °C to 120 °C)
- Good elongation and tear properties
- Seamless, resilient, flexible and durable
- Good corrosion protection
- Good impact and abrasion resistance
- Good thermal stability
- Resistant to many solvents, acids and alkalis (consult NCSI)
- Low permeability waterproofing membrane

## TYPICAL USES:

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- Truck bed liner, Utility vehicles, Cargo liner, Boat lining, Waterproof decking, Boat lining, Cargo holds, Horse trailers,...
- General waterproofing, damp proofing, vapour barrier and retarder
- Below grade waterproofing
- Concrete protective coating
- Steel protective coating
- Pedestrian and vehicular traffic coating
- Primary containment
- Secondary containment
- Industrial floorings

## COLORS:

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Black, or clear/neutral. Custom colors, blended to match any RAL number, are available upon request subject to minimum quantity.

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## PACKAGING:

100-gallon (380-liter) drum sets, shipped in metal drums of 50 gallons (190 liters) each of side A and side B

## COVERAGE:

MONARCH UL may be applied at any rate to achieve the desired thickness.  
 Calculation for theoretical coverage: 40 ft<sup>2</sup>/gal @ 40 mils (1 m<sup>2</sup>/liter @ 1mm).

## STORAGE:

Six months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture. The use of drum heaters is encouraged to reduce material viscosity at low temperatures.

TECHNICAL DATA (All values @ 77 °F / 25 °C)	US	Metric
Solids by volume (ASTM D2697)	100%	100%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	40 ft <sup>2</sup> /gal @ 40 mils	1m <sup>2</sup> / lit @ 1mm
Specific Gravity of materials (ASTM D792)	A: 9.54, B: 8.52 lbs./gal	A: 1.14, B: 1.02 kg/ liter
Specific Gravity of materials (ASTM D792)	Mixed 9.17 lbs./gal	Mixed 1.10 kg/lit
Viscosity at 158 °F/70 °C in cps ±10% (ASTM D4878)	A-120 ± 20	A-120 ± 20
	B-190 ± 20	B-190 ± 20
Shelf life @ 77 °F /25 °C	6 months	6 months
Tensile strength (ASTM D412-C)	2400 ± 300 psi	16.5 ± 2 MPa
Elongation (ASTM D412-C)	200 ± 40 %	200 ± 40 %
Hardness (ASTM D2240)	55 ± 5 Shore D	55 ± 5 Shore D
Flexibility -2mm mandrel (ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.040-0.046grains/hr-ft <sup>2</sup>	0.35 to 0.4 gms/hr-m <sup>2</sup>
Water absorption -24 hours (ASTM D471)	> 0.5 %	> 0.5 %
Crack Bridging @ -13 °F/-25 °C (ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D624)	400 ± 40 pli	71 ± 7 kN/m
Impact Resistance (ASTM G14), No Holidays	> 200 in-lbf	> 20 J (N-m)
Flammability (FMVSS-571.302) Title 49, Transportation	Pass	Pass

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Flash point Pinsky Martin	>200 °F	>93 °C
Service temperature (Dry)	-20 °F to 250 °F	-30 °C to 120 °C
Abrasion Resistance (ASTM D 4060) weight loss	< 33 mg loss Taber CS 17-wheel 1Kg/1000 rev	
<b>PROCESSING PROPERTIES (Under standard lab conditions)</b>		
Mix Ratio V/V	1:1	
Pot life @ 150 °F	4 to 6 seconds	
Tack free time ( DFT & Temperature dependent)	10 to 30 seconds	
Recoat time	0 to 12 hours	
Post cure time	24 hours	
<i>Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected. Values included above are per NCSI standard lab practices &amp; methodology of draw down film at various dry film thicknesses.</i>		

## MIXING:

MONARCH UL might not be diluted under any circumstance. Thoroughly mix MONARCH UL Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained. Always use dedicated spray equipment.

## SURFACE PREPARATION:

### Concrete:

The surface of a concrete subfloor should be dry, smooth, structurally sound and free of depression, scale, or foreign deposits of any kind. Remove all curing compounds. Abrasive blast, sweep blast or water blast to remove all laitance material and expose voids. Use a good quality epoxy filler or mortar for void and spall filling, skim coat or repairs. Prime, fill imperfections in the substrate surface to limit out-gassing. All concrete substrates, on or below grade level should be tested for moisture content. On-grade or below-grade concrete floors or slabs should have a moisture barrier installed to protect from ground moisture. The surface preparation of concrete should meet and conform to Joint NACE

6/SSPC-SP-13 standards and achieve a concrete surface profile of CSP 3 to CSP 6 as per ICRI Guideline No.03732 for optimum performance.

### Metal:

All surfaces should be clean and free from contamination. The surface should be assessed and treated in accordance with ISO 8504, Abrasive blast the surface to minimum NACE-2/SSPC SP-10/Sa 2.5, as per ISO 8501-1, for a visual assessment of surface cleanliness with an anchor profile of 3 to 4 mils (75 -100 microns). Soluble salts must be removed to an acceptable levels. *Refer to NCSI surface preparation manual for detailed procedures for different types of substrates.*

## APPLICATION:

Must be applied utilizing high-pressure, heated plural component spray proportioning equipment capable of delivering materials without loss of pressure or drop in temperature for the appropriate hose length on a consistent basis. For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, MONARCH UL should always be applied over a suitable primer for maximum adhesion. For all submersed or immersion applications, use of a suitable primer is absolutely essential.

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On horizontal surface applications, a texture “stipple” coat can be applied for non-skid purposes, after reaching the initial desired film thickness. Recommended DFTs are a function of the project specific requirements. Please review your specific project with Monarch technicians.

### EQUIPMENT CLEAN UP:

Cured product may be disposed of without restriction. Uncured Isocyanate and resin portions should be mixed together and disposed of in accordance with local regulations. Containers should be disposed of according to local environmental laws and ordinances.

### WARNING:

This product contains Isocyanate and curatives

### CHEMICAL RESISTANCE:

Each Monarch product formulation has varying levels of resistance to specific chemicals. Please review the chemical immersion test data included in the Monarch Test Book for general resistance to specific chemicals at specific concentration levels. Chemical concentrations are complex and when combined with temperatures above ambient levels this complexity increases exponentially. Contact Monarch Technical Personnel for specific recommendations for chemical resistance prior to specifying these products in this application type. Consult with NCSI for more details on product and chemical resistance. The following chart is the results of Polyurea in chemicals spillage and tested as per modified ASTM D 3912.

Chemicals	Resistance	Chemicals	Resistance
Hydrochloric acid upto 10%	R	Ammonium Hydroxide 20%	R
Sulphuric Acid 15%	R	Ammonium Hydroxide 50%	RC
Phosporic Acid 10%	R	Pottasium hydroxide 10%	R
Acetic Acid 10%	R	Pottasium hydroxide 20%	RC
Sea water	R	Sodium Hydroxide 20%	RC
Water @ 176 °F (80 °C)	R		
Diesel Fuel	R		
Gasoline Unleaded	R		

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Motor Oil, Brake Fluid	RC
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**R = Resistant    RC = Slight surface change or discolouration with no loss of hardness**

**WARRANTIES AND DISCLAIMERS:**

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*Monarch warrants that the two components of this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product is dependent upon the proper mixture and application of the components by the applicator. Monarch has no role in the application of the finished polymer other than to manufacture and supply its two components. It is vital that the person applying this product understands the product and is fully trained and certified in the use of plural component equipment and application of plural component materials. There are no warranties that extend beyond the description on the face of this instrument, except when provided in writing, directly by Monarch and executed under seal by a company officer.*

