

A Spray Applied Architectural Membrane Using Poly bd[®] Liquid Resins

The following is a starting point formulation for a Poly bd[®] Resin asphalt based architectural membrane. It is designed to be spray applied. An airless two component mix meter piece of equipment such as Binks Formulator G can be used.

This formulation exhibits good mechanical properties. It also has a low MTRV as well as excellent resistance to 20% NaOH and 20% H₂SO₄. To obtain resistance to 20% HCl, 2-ethyl-1, 3-hexanediol should be substituted for Voranol 220-530 diol on the same hydroxyl basis, 1:1. The overall properties of this membrane make this an excellent starting point formulation for between slab, below grade, or buried waterproofing applications. Above ground applications can be considered if the membrane is properly protected from direct sunlight.

Starting Point Formulation

	<u>Component</u>	<u>Parts by Weight</u>
Part A	Poly bd R45HTLO Resin	100.0
	Voranol 220-530 ⁶	8.6
	Asphalt AC20 ¹	72.9
	Circosol 430 Oil ²	72.9
	Cyanox [®] 2246 ³	1.0
	Sterling [®] R (Carbon Black) ⁴	2.0
	T-12 Catalyst ⁵	3-4 drops

Part B	Isonate [®] 143L ⁶	25.5
NCO/OH = 1.05		
Mix Ratio Volume – 13/1		
Mixed Viscosity = 6200 cps at 25 °C		
MTRV (metric perms) = 0.168		

Mechanical Properties:

Tensile (psi)	370
Elongation (%)	419
Modulus 100% (psi)	100
200% (psi)	160
300% (psi)	240
Tear Die C (pli)	49
Hardness (Shore A)	36

Chemical Resistance¹

	<u>Initial</u>	<u>20% NaOH</u>	<u>20% H₂SO₄</u>
Tensile strength (psi)	370	377	315
Elongation (%)	419	433	335
Modulus 100% (psi)	100	104	104
200% (psi)	160	172	177
300% (psi)	240	255	274
Tear Die C (pli)	49	48	55
Hardness (Shore A)	36	38	40

¹Samples were immersed in test media for one week at 160 °F.

Suppliers List

¹Exxon, Koch

²Sun Oil Co (Belgium), Naphthenic oils

³Cytec Industries, Inc

⁴Cabot Corp

⁵Air Products & Chemicals

⁶Dow Chemical - ISONATE pure and modified MDI products are potentially hazardous materials and require care in handling.

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