



Product Technical Data Sheet

MIRATHANE AR

1. PRODUCT DESCRIPTION

Mirathane AR (Auto-Ramp) systems are designed to provide technical and economic solutions for most vehicular decks. It is a cold liquid applied, elastomeric urethane traffic deck membrane and integral urethane skid resistant traffic topping. Finished film thickness of the systems will vary depending upon intended end use and environmental service conditions.

Mirathane AR systems are designed for use under direct exposure to light to heavy vehicular traffic. It is an attractive, tough and durable system designed to protect the concrete deck surfaces from the deleterious effects of water and waterborne chloride penetration. The systems consist of a primer providing a continuous bond to the concrete substrate, an elastomeric urethane membrane and tough protective traffic urethane topping with encapsulated aggregate for skid resistance.

- Mirathane AR systems provide effective economical solutions for most usage conditions.
- Mirathane AR for light to medium vehicular traffic (parking stalls and low turn over facilities).
- Mirathane AR for heavy vehicular traffic (drive lanes and ramps).

A. ADVANTAGES AND LIMITATIONS

ADVANTAGES:

- Low Odor
- Good Weatherability
- Uniform Concrete Gray Color
- Custom Colors Available (Minimum order 300 gallons)

LIMITATIONS:

- Cracks Must Be Waterproofed Prior to Placement
- Moisture vapor transmission (MVE) in excess of 3.0 lbs/1000 sq/ft per 24 hr. period per ASTM F1869-04, may result in delaminations, discoloration or improper curing. Use Miracote MVERS II Primer vapor control membrane over substrates, which have MVE emissions rate that exceed these limits. Consult with Crossfield prior to using MVERS II Primer if moisture vapor transmission exceeds 15 lbs/1000 sq/ft per 24 hr period per ASTM F1869-04.

Recommended Thicknesses

The Guideline Chart lists recommended mil thicknesses, which vary depending upon end-use and environmental exposure conditions. Each structure should be treated uniquely. Thicknesses do not include increases from the Primer or skid resistant aggregate.

THICKNESSES	Base Membrane	Topcoat	Total
INTERMEDIATE DECKS			
Parking Stalls	25 mils	15 mils	40 mils
Drive Lanes and Ramps	25 mils	30 mils	55 mils
TOP DECKS			
Parking Stalls	25 mils	15-30 mils	40-55 mils
Drive Lanes and Ramps	25 mils	30 mils	55 mils

Weathering Test: ASTM G153-04, Atlas Twin Arc Weatherometer Type DH 2,000 hours (equivalent to approximately six (6) years of natural weathering. Visual Examinations: No signs of chalking, crazing, cracking, blistering, delaminating, spalling, softening or any other deleterious effects. ASTM D751, Five (5) specimens weathered and five (5) specimens aged per AC39 Sec. IV A & B. Stretch rate 12+/-0.5 in./min.

With Aggregate	Tensile Strength lb/in.	Elongation %
Control	21.3	89.0
Weathered	12.0	131.0
% Change Weathered	43.6	32.0
Aged	23.0	111.0
% Change Aged	7.3	15.2
Without Aggregate	Tensile Strength lb/in.	Elongation %
Control	41.8	169.0
Weathered	29.0	154.0
% Change Weathered	30.6	8.9
Aged	50.0	133.0
% Change Aged	16.4	21.3

Age Test: ASTM D412, Stretch rate 20 +/-0.5 in./min. Procedure D&E, Six (6) cycles of each procedure. Material tested with aggregate. Visual Examinations after Aging Test: No signs of chalking, crazing, cracking, blistering, delaminating, spalling, softening or any other deleterious effects.

	ASTM D412 Tensile Strength psi	ASTM D412 Elongation %
Control	2573	254
Weathered	3666	280
% Change Weather	+ 42.5	+ 10.2
Aged	3982	308
% Change Aged	+ 54.8	+ 21.5
	ASTM C297 Bond Strength psi	
Primer	Metal	Concrete
Control	414	458
Aged	401	436
% Change	3.2	5.0
Mode of Failure	Cohesive Failure	Adhesion Failure of Concrete

- Percolation Test: ICC-ES Evaluation Svc. Inc., AC 39 Sec. IV-G Loss due to Percolation after the 1,000 cycles abrasion test (% of original head, max. allowed 1%): 0%
- Absorption Test: ASTM D570, 24 hour immersion in distilled water. Weight % of water absorption (max. allowed 5%): 1.86%
- Water Vapor Transmission (WVT) Test: ASTM E96 Desiccant Method: MVT): 0.000000249 gr/Pa-sec-m²; MVT: 4,350 grains/ft³-hr-in Hg
- Abrasion Test: Formerly ASTM D1242 Method A as modified by ICC-ES Evaluation Svc., Inc. AC39 Sect. IV-F (1,000 cycles, 1,000 grams, No. 80TP Aluminum Oxide Grit). Thickness lost (max. allowed 20 mils): 9 mils

- Concentrated Load Test: AC39, Sec. IV-L, One inch diameter steel plate with rounded corners.

Load (lbs)	100	200	300
Deflection (in.)	0.020	0.028	0.037

- Impact Resistance: A two pound steel ball dropped eight feet onto the decking system. Test was performed three times with an average indentation of 0.027 in.
- Crack Resistance (Crack Bridging): Top coat showed signs of cracking while bottom coat maintained its integrity.
- Chemical Resistance Tests: ASTM D1308 Determine Relative Stain Resistance of Plastics by immersing specimens in 18 reagents @ 122°F (50°C) for 16 hours.

Reagent	Non-Abraded	Abraded
Ammonia Solution – 5%	1	1
Anti-Freeze	1	1
Chlorine Solution – 10%	1	1
Diesel Fuel	1	1
Gasoline – Regular	1	1
Heavy Duty Detergent	1	1
Hydraulic Fluids	1	1
Kerosene	1	1
Lubricating Oil	1	1
Muriatic Acid	2	2
Paint Thinner	1	1
Salt Solution – 10%	1	1
Soap Solution	1	1
Sulfuric Acid – 3%	1	1
Sulfuric Acid - Concentrate	3	3
Toluene	1	1
Transformer Oil	1	1
Turpentine	1	1

Number Code: 1 – Unaffected: 2 – Superficially Affected:
3 – Considerably Affected.

Note: (a). Of the 18 reagents used in the chemical resistance test, only sulfuric acid concentrate caused a deterioration of the decking system. (b) Wearing surface revealed no cracking, crazing, delamination, or any other deleterious effects. (c) The test specimens which were coded “No. 2 or No. 3” could not be restored to their original surface condition by normal cleaning methods.

- Low Temperature Flexibility: AC39 Sec. K. 50°F (10°C). No cracking or crazing upon visual examination under 5x magnification in the bent condition.
- Fire Resistance Test Series Class “A”: U.B.C. Standard 32-7, ASTM E108, U.L. 790, N.F.P.A. No. 256, Spread of Flame Test (2 decks) on concrete surface.

Spread of Flame Test (2 decks)		
	Base (in.)	Length (in)
Deck 1	15	18
Deck 2	15	27
Max. Flame Spread Allowed	40	72

Mirathane AR Vehicular Deck System will satisfactorily withstand the Flame Spread portion of the test for Class A Rating in UBC STD #32-7, ASTM E108, U.L. 790 and N.F.P.A. No. 256, when constructed, installed and tested as described herein.

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CAUTION: ALWAYS KEEP OUT OF THE REACH OF CHILDREN.



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