



APPROVALS AND TESTING

TEST DATA: Polydeck® 355 Pedestrian Deck System

Summary of Test Report Conducted by Ramtech Laboratories on the Polydeck 355 Decking System

1. Weathering Test: ASTM G-23, Atlas Twin Arc Weatherometer Type DH 2000 hours (equivalent to approximately 6 years of natural weathering).

Visual Examinations: No signs of chalking, crazing, cracking, blistering, delaminating, spalling, softening or any other deleterious effects.

ASTM-D 751, Five specimens weathered and five specimens aged per AC39 Sec. IV A & B. Stretch rate 12 ± 0.5 in./min.

With Aggregate	Tensile Strength(lb./in.)	Elongation(%)
Control	10.4	34
Weathered	15.0	25 %
Change Weathered	31	26
Aged	12	25
% Change Aged	13	26

Without Aggregate	Tensile Strength(lb./in.)	Elongation(%)
Control	23.4	165
Weathered	35.3	147
% Change Weathered	34	11
Aged	32	123
% Change Aged	27	25.4

2. Aging Test: ASTM D-412, Stretch rate 20 ± 0.5 in./min. Procedure D & E. Six cycles of each procedure. Material tested without aggregate.

Visual Examination after Aging Test: No sign of chalking, crazing, cracking, blistering, delamination, or any other deleterious effects.

	Tensile Strength (psi)	Elongation(%)
	ASTM D-412	ASTM D-412
Control	1971	265
Weathered	1919	246
% Change Weathered	-2.64	-7.17
Aged	2024	285
% Change Aged	+2.7	+7.5

Bond Strength (psi), ASTM C-297:

Polyprime 21	Plywood	Metal	Concrete
Control	119	386	311
Aged	103	320	318
% Change	13.4	1.7	2.2
Mode of Failure	Cohesive failure of plywood	Cohesive failure of Polydeck 355	Cohesive failure of concrete

Polyprime 2140	Plywood	Metal	Concrete
Control	102	372	273
Aged	89	369	271
% Change	12.7	0.8	0.8
Mode of Failure	Cohesive failure of Plywood	Cohesive failure of Polydeck 355	Cohesive failure of concrete

3. Percolation Test: ICC-ES Eval. Svc., Inc. AC 39 Sect. IV-G: Loss to Percolation after 1000 cycles abrasion test (% of original head, max. allowed 1%): 0%

4. Absorption Test: ASTM D 570, 24 hr. immersion in distilled water: Weight % of water absorption (max. 5%): 1.75%

5. Water Vapor Transmission (WVT) Test: ASTM E-96 Desiccant Method: WVT: 0.000000210 grams/Pa sec m², WVT: 0.368 grains/ft² hr in. Hg

6. Abrasion Test: ASTM D-1242 Method A as modified by ICC-ES Evaluation Svc., Inc. AC 39 Sect. IV-F (1000 cycles, 1000 grams, No. 80 TP Aluminum Oxide Grit). Thickness lost (max. allowed 20 mils): 0.017 in.

7. Concentrated Load Test: AC 39, Sec. IV L. One inch diameter steel plate with rounded corners.

Load [lbs]	100	200	300
Deflection [inches]	0.018	0.031	0.039

8. Impact Resistance: A 2 lb. steel ball dropped 8 ft. to the deck surface. Test was performed three times with an average indentation of 0.025 in.

9. Crack Resistance (Crack Bridging): Top coat showed signs of cracking while bottom coat maintained its integrity.

10. Chemical Resistance Tests: ASTM D-2299 Determine Relative Stain Resistance of Plastics by immersing specimens in 18 reagents @ 122°F (50°C) for 16 hours.

	Non-Abraded	Abraded
Heavy duty detergent sol.	1	1
Muriatic acid - 10%	1	1
Ammonia solution - 5%	1	1
Anti-Freeze	1	1
Kerosene	1	1
Salt Solution - 10%	1	1
Paint thinner - 10%	1	1
Chlorine Solution - 10%	1	1
Turpentine - 10%	1	1
Sulfuric Acid - 3%	1	1
Transformer Oil	1	1
Sulfuric Acid - conc.	3	3
Diesel fuel	1	1
Hydraulic Fluids	1	1
Gasoline	1	1
Toluene	1	1
Lubricating oil	1	1
Soap Solution - 1%	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. 3 - Considerably Affected" could not be restored to their original surface condition by normal cleaning methods.

11. Low Temperature Flexibility: AC 39 Sec. K. 5°F. No cracking or crazing upon visual examination under 5x magnification in the bent condition.

12. Fire Resistance Test Series Class "B": AC 39 Section IV C. U.B.C. Standard 15-2, ASTM E-108, U.L.790, N.F.P.A. No. 256, on 5/8" (1.6 cm) plywood.

A) Intermittent Flame Exposure Test (2 decks): Both of the decks met the requirements for Class B Intermittent Flame Exposure Test. There was no evidence of displacement, sliding, spalling, or flames underneath these decks during or after the test.

B) Spread of Flame Test (2 decks):

Base (in.)	Length (in.)	
Deck 1	21	54
Deck 2	18	43
Max. Flame Spread Allowed	40	72

C) Burning Brand Test (4 decks): Both decks passed. No flaming or damage occurred underneath decks. The heat areas were confined to the immediate area of brand placement. There was no displacement of the Polydeck 355 System observed during or after the test.

Polydeck 355 Decking System will satisfactorily withstand the three methods of tests for a Class B Rating on concrete substrates and Class B rating on 5/8" plywood in UBC STD #32-7, ASTM E108, UL 790 and NFPA No. 256, when constructed, installed and tested as described herein.

13. One-Hour Fire-Resistive Construction: Based on the performance of the test assembly, Polydeck 355 Walking Deck System installed on 5/8" thick C-D plywood as a substitute for the double wood floor described in Construction No. 13, Item 13-1.1, Table No. 7-C of the 1994 U.B.C. Standard No. 7-1. The assembly was tested with 2 X 10 floor joists spaced at 16 inches on center.

The average room temperature rise on the unexposed face was 260°F and the maximum single thermometer reading was 310°F after 65 minutes. The acceptance limit is 250°F average temperature rise with no single reading over 350°F above ambient after 60 minutes. The area under the test time vs. temperature curve equals the standard time-temperature E-119 curve at 60.56 minutes.

STM C-957-93 (Ramtech Report #10988-97)

1. Dry Film Thickness: 4 coats, 47 ± 2 mils (0.12 ± 0.005 cm)

2. Weight Loss: ASTM 957-93, C-836 (max. 40%): 13.8%

3. Low Temperature Flexibility and Crack Bridging: 10 cycles, 1/16" movement, @ -15°F: Passed

4. Adhesion in Peel: after water immersion (7 days, min. 5 lbs/in.), ASTM 957-93, C-794: 14 lbs/in

5. Chemical Resistance: ASTM C-957, D-471: Meets minimum requirements

	Tensile, psi	Actual % of Control	Minimum C-957 Requirements
Control	1102	N/A	--
Water	1046	95	70
Ethylene Glycol	934	85	70
Mineral Spirits	854	78	45

6. Weather Resistance and Recovery from Elongation: ASTM C-957-93, D-412: Meets minimum requirements.

	Elongation Recovery (%)	Tensile Strength (psi)	Elongation (%)
Control	91.2 (2 hrs.) 98.4 (24 hrs.) 84.3	1069	97.2
Weathered	90.3 (2 hrs.) 96.9 (24 hrs.) 81.4	1164	90
% of Control	99 (2 hrs.) 98.5 (24 hrs.) 96.5%	108.8%	92.6%

7. Abrasion Test: ASTM C-957-93, C-501, weight loss (Maximum allowed: 0.050 grams): 0.045 grams

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