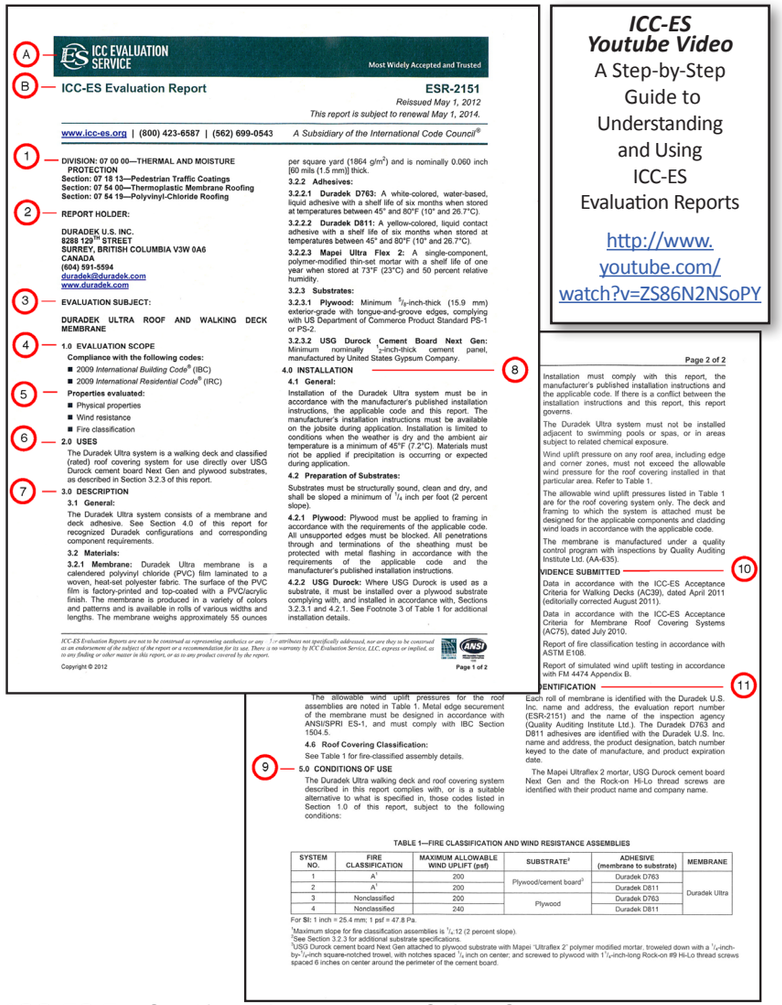

ICC EVALUATION SERVICE — Most Widely Accepted and Trusted

ICC-ES Evaluation Report — ESR-2151

Reissued May 1, 2012

This report is subject to renewal May 1, 2014.

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1 DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 18 13—Pedestrian Traffic Coatings
Section: 07 54 00—Thermoplastic Membrane Roofing
Section: 07 54 19—Polyvinyl-Chloride Roofing

2 REPORT HOLDER:

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duradek@duradek.com
www.duradek.com

3 EVALUATION SUBJECT:

DURADEK ULTRA ROOF AND WALKING DECK MEMBRANE

4 1.0 EVALUATION SCOPE
Compliance with the following codes:
- 2009 International Building Code® (IBC)
- 2009 International Residential Code® (IRC)

5 Properties evaluated:
- Physical properties
- Wind resistance
- Fire classification

6 2.0 USES
The Duradek Ultra system is a walking deck and classified (rated) roof covering system for use directly over USG Durock cement board Next Gen and plywood substrates, as described in Section 3.2.3 of this report.

7 3.0 DESCRIPTION
3.1 General:
The Duradek Ultra system consists of a membrane and deck adhesive. See Section 4.0 of this report for recognized Duradek configurations and corresponding component requirements.
3.2 Materials:
3.2.1 Membrane: Duradek Ultra membrane is a calendered polyvinyl chloride (PVC) film laminated to a woven, heat-set polyester fabric. The surface of the PVC film is factory-printed and top-coated with a PVC/acrylic finish. The membrane is produced in a variety of colors and patterns and is available in rolls of various widths and lengths. The membrane weighs approximately 55 ounces per square yard (1864 g/m²) and is nominally 0.060 inch (60 mils (1.5 mm)) thick.
3.2.2 Adhesives:
3.2.2.1 Duradek D763: A white-colored, water-based, liquid adhesive with a shelf life of six months when stored at temperatures between 45° and 80°F (10° and 26.7°C).
3.2.2.2 Duradek D811: A yellow-colored, liquid contact adhesive with a shelf life of six months when stored at temperatures between 45° and 80°F (10° and 26.7°C).
3.2.2.3 Mapei Ultra Flex 2: A single-component, polymer-modified thin-set mortar with a shelf life of one year when stored at 73°F (23°C) and 50 percent relative humidity.
3.2.3 Substrates:
3.2.3.1 Plywood: Minimum 5/8-inch-thick (15.9 mm) exterior-grade with tongue-and-groove edges, complying with US Department of Commerce Product Standard PS-1 or PS-2.
3.2.3.2 USG Durock Cement Board Next Gen: Minimum nominally 1/2-inch-thick cement panel, manufactured by United States Gypsum Company.

8 4.0 INSTALLATION
4.1 General:
Installation of the Duradek Ultra system must be in accordance with the manufacturer's published installation instructions, the applicable code and this report. The manufacturer's installation instructions must be available on the jobsite during application. Installation is limited to conditions when the weather is dry and the ambient air temperature is a minimum of 45°F (7.2°C). Materials must not be applied if precipitation is occurring or expected during application.
4.2 Preparation of Substrates:
Substrates must be structurally sound, clean and dry, and shall be sloped a minimum of 1/4 inch per foot (2 percent slope).
4.2.1 Plywood: Plywood must be applied to framing in accordance with the requirements of the applicable code. All unsupported edges must be blocked. All penetrations through and terminations of the sheathing must be protected with metal flashing in accordance with the requirements of the applicable code and the manufacturer's published installation instructions.
4.2.2 USG Durock: Where USG Durock is used as a substrate, it must be installed over a plywood substrate complying with, and installed in accordance with, Sections 3.2.3.1 and 4.2.1. See Footnote 3 of Table 1 for additional installation details.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

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Installation must comply with this report, the manufacturer's published installation instructions and the applicable code. If there is a conflict between the installation instructions and this report, this report governs.

The Duradek Ultra system must not be installed adjacent to swimming pools or spas, or in areas subject to related chemical exposure.

Wind uplift pressure on any roof area, including edge and corner zones, must not exceed the allowable wind pressure for the roof covering installed in that particular area. Refer to Table 1.

The allowable wind uplift pressures listed in Table 1 are for the roof covering system only. The deck and framing to which the system is attached must be designed for the applicable components and cladding wind loads in accordance with the applicable code.

The membrane is manufactured under a quality control program with inspections by Quality Auditing Institute Ltd. (AA-635).

10 VIDENCE SUBMITTED
Data in accordance with the ICC-ES Acceptance Criteria for Walking Decks (AC39), dated April 2011 (editorially corrected August 2011).
Data in accordance with the ICC-ES Acceptance Criteria for Membrane Roof Covering Systems (AC75), dated July 2010.
Report of fire classification testing in accordance with ASTM E108.
Report of simulated wind uplift testing in accordance with FM 4474 Appendix B.

11 ENTIFICATION
Each roll of membrane is identified with the Duradek U.S. Inc. name and address, the evaluation report number (ESR-2151) and the name of the inspection agency (Quality Auditing Institute Ltd.). The Duradek D763 and D811 adhesives are identified with the Duradek U.S. Inc. name and address, the product designation, batch number keyed to the date of manufacture, and product expiration date.
The Mapei Ultraflex 2 mortar, USG Durock cement board Next Gen and the Rock-on Hi-Lo thread screws are identified with their product name and company name.

The allowable wind uplift pressures for the roof assemblies are noted in Table 1. Metal edge securement of the membrane must be designed in accordance with ANSI/SPRI ES-1, and must comply with IBC Section 1504.5.
4.6 Roof Covering Classification:
See Table 1 for fire-classified assembly details.

9 5.0 CONDITIONS OF USE
The Duradek Ultra walking deck and roof covering system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

TABLE 1—FIRE CLASSIFICATION AND WIND RESISTANCE ASSEMBLIES

SYSTEM NO.	FIRE CLASSIFICATION	MAXIMUM ALLOWABLE WIND UPLIFT (psf)	SUBSTRATE[2]	ADHESIVE (membrane to substrate)	MEMBRANE
1	A[1]	200	Plywood/cement board[3]	Duradek D763	Duradek Ultra
2	A[1]	200		Duradek D811	
3	Nonclassified	200	Plywood	Duradek D763	
4	Nonclassified	240		Duradek D811	

For SI: 1 inch = 25.4 mm; 1 psf = 47.8 Pa.
[1]Maximum slope for fire classification assemblies is 1/4:12 (2 percent slope).
[2]See Section 3.2.3 for additional substrate specifications.
[3]USG Durock cement board Next Gen attached to plywood substrate with Mapei "Ultraflex 2" polymer modified mortar, troweled down with a 1/4-inch-by-1/4-inch square-notched trowel, with notches spaced 1/2 inch on center; and screwed to plywood with 1 1/4-inch-long Rock-on #9 Hi-Lo thread screws spaced 6 inches on center around the perimeter of the cement board.

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ICC-ES Youtube Video
A Step-by-Step Guide to Understanding and Using ICC-ES Evaluation Reports

http://www.youtube.com/watch?v=ZS86N2NSoPY

ICC-ES Evaluation Reports Explained

A. ICC Evaluation Service (ICC-ES), a subsidiary of the International Code Council, interprets the International Codes.
ICC-ES is a non-profit, limited liability company that conducts technical evaluations of building products, components, methods, and materials.

B. An Evaluation Report presents the findings of ICC-ES as to the compliance with code requirements of the subject of the report—a particular building product, component, method or material. ICC-ES evaluation reports are aimed particularly at making it easier for those charged with enforcing code—building officials, building departments, building inspectors in the field—to determine the compliance of products with code. Evaluation reports are also used extensively by architects, engineers, contractors, specifiers, and others in the building industry that have an interest in making sure products and systems meet building-code requirements.

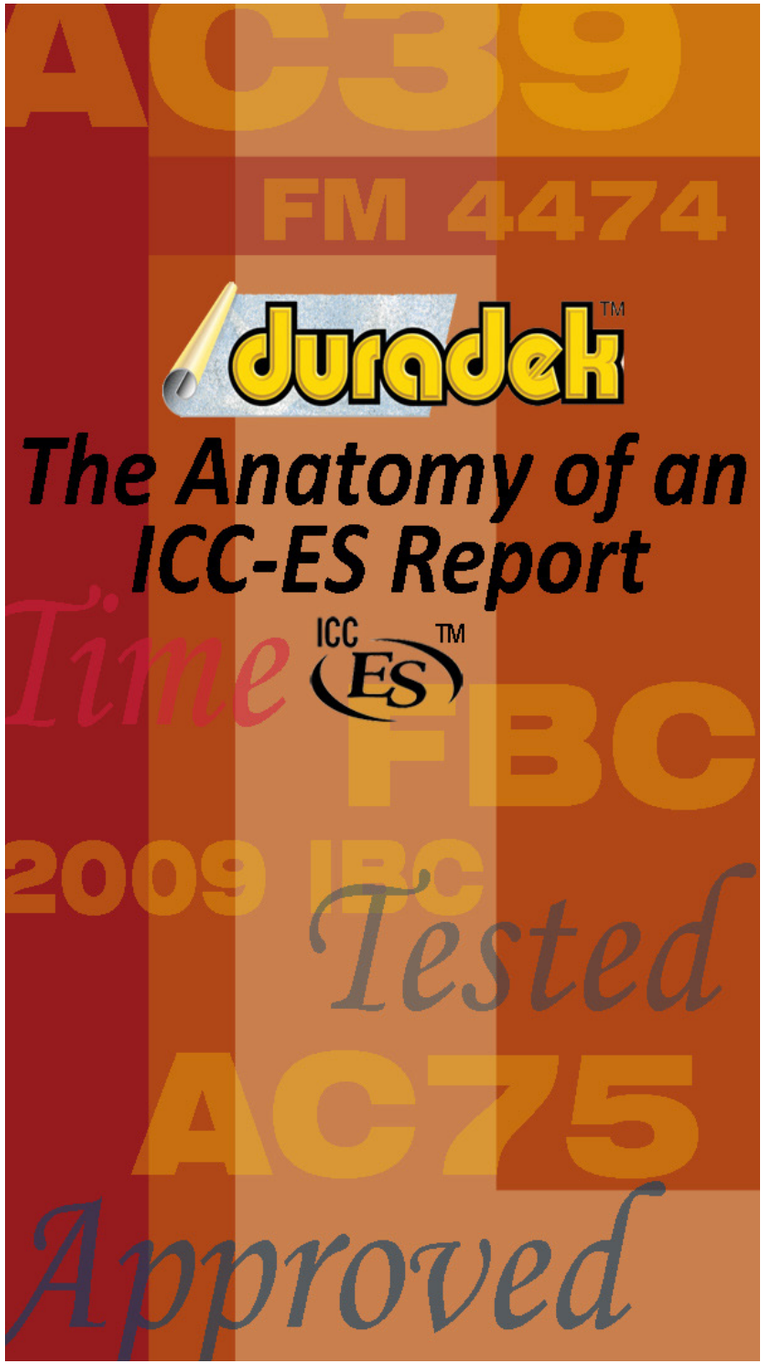
1. **CSI Division Number:** ICC-ES Evaluation Reports, and the building products represented in them, are organized according to the Construction Specifications Institute's (CSI) Master Format system.
   - **Section: 07 18 13 – Pedestrian Traffic Coatings:** are defined either as a cementitious coating, an elastomeric coating or as a membrane system. ***Duradek Ultra is a membrane system.***

Duradek Ultra was also evaluated as product meeting the following membrane roofing criteria.
- **Section: 07 54 00 – Thermoplastic Membrane Roofing**
- **Section: 07 54 19 – Polyvinyl-chloride Roofing**

Cementitious & elastomeric membranes are not subject to additional roof covering systems approval.

2. **Report Holder:** The name and address of the company or organization that has applied for the Evaluation Report.
3. **Evaluation Subject:** The specific product(s) covered by the report.
4. **Evaluation Scope:** The code(s) that were used to evaluate the product.
   - 31 States have adopted the 2009 IBC and 27 have adopted the 2009 IRC.
5. **Properties Evaluated:** a brief description of the properties the product was evaluated against such as fire resistance and wind resistance. This section also shows if the product can be used for structural purposes.
6. **Uses:** Identifies the product's uses and the applicable code provisions. Walking decks may be used in three different applications:
   a. walking deck only;
   b. walking deck and non classified roof covering;
   c. walking deck and classified roof covering.

   Duradek Ultra *is classified as a walking deck and classified roof covering.*
7. **Description:** Provides a general description of the product and its features, such as length, thickness, etc.
8. **Installation:** Identifies requirements to help the inspector ensure the product is installed properly according to the code requirements or acceptance criteria.
9. **Conditions of Use:** Statement that the product, as described in the Evaluation Report, complies with, or is a suitable alternative to, the requirements of the applicable code; lists conditions under which the report is issued.
   - Item 5.5— Duradek Ultra membranes are manufactured under a quality control program.
10. **Evidence Submitted:** Data (i.e., standards, calculations, installation instructions, quality documentation) that was used in evaluating the product.
    - Duradek Ultra membrane meet the Acceptance Criteria for Walking Decks (AC 39), the criteria used for Pedestrian Traffic Coatings, and for Membrane Roof Covering Systems (AC 75).
    - Simulated wind uplift tests are required for membrane roof covering classifications but not for Cementitious & Elastomeric Coatings systems.
11. **Identification:** Information that can be used to identify the product, including the manufacturer's name, product name, Evaluation Report number, etc.



ICC-ES.ORG -REPORTS for PEDESTRIAN TRAFFIC COATINGS
Information listed on ICC-ES Website as of August 2012

To view reports online, visit:

http://www.icc-es.org/reports/index.cfm?csi_num=07 18 13&view_details

Report Number	Org./Code	Manufacturer	Product	Codes	Pedestrian Traffic Coating: Acceptance Criteria for Walking Decks (AC39)	Membrane Roofing: Acceptance Criteria for Membrane Roof Covering Systems (AC75)	2009 IBC	2009 IRC	FBC	Walking Deck Only	Walking deck & non-classified roof covering	Walking deck & classified roof covering	QC program with inspection agency named	Acceptance Criteria for Walking Decks (AC39)	Simulated wind uplift testing (FM 4474 Appendix B)	Fire classification testing (ASTM E108)	Acceptance Criteria for Membrane Roof Covering Systems (AC75)
R-1284	ICC-ES	Gaco Western, LLC	Gacoflex Urethane Rubber Walking Deck and Roof Covering	09 06 LC	✓		✓	✓		1			✓	✓			
R-1661	ICC-ES	Hill Brothers Chemical Company	Desert Crete and Desert Brand Magnesite Fire-retardant Walking Deck and Roof Covering Systems	06 LC	✓					1			✓	✓	3	2	
R-1714	ICC-ES	Crossfield Products Corp. Miracote Division	Miracote Miraflex II Walking Deck and Roof Covering	06 LC	✓					1			✓	✓	5	4	
R-1757	ICC-ES	Crossfield Products Corp.	Dex-O-Tex Weatherwear Roof Deck Covering	09 06 LC	✓		✓	✓		1			✓	✓	3	6	
R-2028	ICC-ES	Americrete, LLC	A-9000 Decking System	09 06 LC	✓		✓	✓		1			✓	✓		4	
R-2091	ICC-ES	Lonseal, Inc.	Londeck Walking Deck System	06	✓					1				✓			
R-2097	ICC-ES	Pli-Dek Systems, Inc.	Pli-Dek and Con-Dek Walking Deck and Roof Covering Systems	09 06 FBC LC	✓		✓	✓	✓	1			✓	✓	5	7	
R-2125	ICC-ES	AVM Industries, Inc.	Elasto Fiberdeck 100 Walking Deck System	09 06	✓		✓	✓		1			✓	✓		4	
R-2151	ICC-ES	Duradek U.S. Inc.	Duradek Ultra Roof and Walking Deck Membranes	09	✓	✓	✓	✓	✓*	✓	✓	✓	✓	✓	✓	✓	✓
R-2201	ICC-ES	Westcoat	Westcoat ALX System	09 06 LC	✓		✓	✓		1				✓	3	4	
R-2245	ICC-ES	Environmental Building Products, Inc. dba Enduro Products	Enduro-Kote and Enduro-Flex Kote Walking Deck and Roof Covering Systems	09 06 LC	✓		✓	✓		✓	✓	✓	✓	✓	3	4	
R-2413	ICC-ES	Skyline Building Systems, Inc.	DecTec Select Walking Deck and Roof Membrane	06 LC	✓					✓	✓			✓	8		
R-2492	ICC-ES	Quality Systems, Inc.	Perma•Crete® Deck Coating Products Finish System	06 LC	✓					1			✓	✓			
R-2697	ICC-ES	Pacific Polymers, Inc.	Elasto-Deck 5000 FR Walking and Roof Deck System	09 06	✓		✓	✓		1			✓	✓		4	
R-2785	ICC-ES	Polycoat Products	Polycoat-Aquatight®, Polytuff, Flexideck® P-TW Underlayment Waterproofing System	06 LC	✓					1			✓	✓		4	
R-2897	ICC-ES	Parex USA, Inc.	Mer-Ko Shur Deck	09	✓		✓	✓		✓	✓	✓	✓	✓	3	4	
R-2900	ICC-ES	Parex USA, Inc.	Mer-Ko Weather Deck	09	✓		✓	✓		✓	✓	✓	✓	✓	3	4	
R-3262	ICC-ES	Tuff Industries, Inc.	Tufdek® Professional Series Walking Deck and Roof System	09	✓	✓	✓	✓		✓	✓			✓	9		✓
-3389 - ESR-2900	UBC	Mer-Kote Products, Inc.	Converted to ESR-2900	LC													
-4804	UBC	Excellent Coatings, Inc.	Excel-Coat® Walking and Roof Deck System	LC													
-5019	UBC	Deck Flex Waterproofing Systems	Deck Flex W.M. and Deck Flex W.F. Fire Retardant Walking Deck and Roof-covering Systems	LC													
-5416	UBC	Life Paint Company	Life Deck AL Walking Deck System	LC													
-5968 - ESR-2897	UBC	Mer-Kote Products, Inc.	Converted to ESR-2897	LC													

LC — Companies evaluated with the LC (Legacy Code) were not tested to current building code requirements and are applicable to evaluation criteria and reports prior to 2003.

2009 IBC adopted in 31 states or territories

2009 IRC adopted in 31 states or territories

* Approved by Florida Building Commission - FL#12407-R1 for use outside of HVHZ

Code Legend	
12 09 06 03↓ 03↓	2012 to 2003 and earlier editions of I-Codes for building products
12 09 06	2012 to 2003 and earlier editions of I-Codes for PMG products
IGCC	International Green Construction Code
CAL	California Green Building Standards Code
CBC	California Building Code
FBC	Florida Building Code
LC	Legacy Code

ICC-ES Report Comparisons for
Pedestrian Traffic Coatings

It is apparent that when choosing a deck waterproofing product, it is not always an "apples-to-apples" comparison.

Even when products receive similar testing, there is a significant "grey area" to what standards were actually tested.

For architects, inspectors, specifiers, builders and homeowners, it is important to know what to look for to be sure you are getting the product performance and value that you are expecting.

duradek™

Duradek Ultra vinyl is the most tested product in its class and is upheld to the highest test performance measurements for a walking deck and classified roof covering membrane.

1) Classification not stated in Evaluation Report

2) ASTM E119 one-hour fire-resistance-rated construction (optional)

3) Allowable wind speeds noted in report. No wind-uplift tests required for bonded coating systems as long as test specimens provide a minimum bond strenght of 10 psi

4) Test standard not mentioned in report

5) Wind resistance testing in accordance with FM 1-52

6) Reports of reduced-scale fire-resistive-rated assembly tests submitted

7) Reports of small-scale fire tests in accordance with ASTM E119 submitted

8) Wind uplift resistance noted in report

9) Allowable wind uplift noted in report but no test standard noted

International Code Editions adopted by state and jurisdiction listed: www.iccsafe.org

ICC-ES Approved Acceptance Critereia (AC) listed: www.icc-es.org/criteria/index