

SPEC NOTE: THIS SPECIFICATION HAS BEEN PREPARED TO ASSIST THE SPECIFIER IN PREPARING A PROJECT OR MASTER SPECIFICATION. IT FOLLOWS GUIDELINES ESTABLISHED BY CONSTRUCTION SPECIFICATIONS INSTITUTE (CSI) AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

SPEC NOTE: FOLLOWING IS WRITTEN AS A COMPLETE STAND ALONE MASTER SPECIFICATION SECTION FOR PROVISION OF ACRYLIC COMPOSITE WALL PANELS IN A DRAINED AND BACK VENTILATED RAIN SCREEN SYSTEM ATTACHED WITH FIXED POINT CONNECTIONS. IT CAN ALSO BE USED AS SUPPLEMENTARY INFORMATION FOR INCORPORATION INTO ANOTHER SPECIFICATION SECTION. SPEC NOTES WILL IDENTIFY WHICH ARTICLES OR PARAGRAPHS SHOULD BE COPIED INTO ANOTHER SPECIFICATION SECTION AS APPLICABLE.

SPEC NOTE: THIS SECTION IS BASED ON CORIAN® EXTERIOR CLADDING MATERIAL MANUFACTURED BY DUPONT. TECHNICAL INFORMATION AND A LISTING OF THE DUPONT REGISTERED CORIAN® FABRICATOR/INSTALLERS CAN BE PROVIDED BY LOCAL DUPONT™ CORIAN® COMMERCIAL SALES REPRESENTATIVE. QUALIFIED CONSTRUCTION AND DESIGN PROFESSIONALS MAY COPY THIS DOCUMENT FOR THE PURPOSE OF CREATING CONSTRUCTION SPECIFICATIONS OR PURCHASE ORDERS FOR PRODUCTS AND MATERIALS MANUFACTURED BY E. I. DU PONT NEMOURS AND COMPANY.

THIS SECTION IS FOR APPLICATIONS USING CORIAN® EXTERIOR CLADDING WHICH IS RECOMMENDED FOR USE IN THE FOLLOWING SITUATIONS:

CORIAN® EXTERIOR CLADDING CAN BE USED ON ALL BUILDINGS TYPES, CLASSIFIED AS “TYPE I, II, III, IV OR V” STRUCTURE BY IBC 2009. THERE ARE NO RESTRICTIONS ON “TYPE V” BUILDINGS. FOR BUILDINGS CLASSIFIED AS A “TYPE I, II, III OR IV” STRUCTURE PER IBC 2009, SPECIAL CONSTRUCTION IS NEEDED FOR INSTALLATIONS EXCEEDING 40 FEET IN HEIGHT. CONTACT DUPONT COMMERCIAL SALES REPRESENTATIVE FOR TECHNICAL SUPPORT.

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes: Provide acrylic composite wall panels including but not limited to following:
1. Exterior Cladding Panels
 2. Fascia
 3. Soffits
 4. Sunshades
 5. Column Covers
- B. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
1. Provision of general LEED® requirements: Section 01 33 29, General LEED® Requirements.
 2. Provision of general LEED® Product requirements: Section 01 60 13, LEED® Product Requirements.
 3. Waste management and disposal requirements: Section 01 74 19, Construction Waste Management and Disposal.
 4. Sheathing: Section 06 16 00, for sheathing behind façade system
 5. Weather Barriers Section 07 25 00
 6. Sheet Metal Flashing and Trim Section 07 62 00

1.2 REFERENCES

A. Abbreviations and Acronyms:

1. IBC: International Building Code.
2. LEED®: Leadership in Energy and Environmental Design; www.usgbc.org.

B. Definitions:

1. Acrylic Polymer Composite Wall Panel: Nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

C. Reference Standards:

- | | |
|------------------------|---|
| 1. ASTM B117-116 | - Standard Test Method for Operating Salt Spray (Fog) Apparatus |
| 2. ASTM C518-10 | - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus |
| 3. ASTM D570-98 | - Standard Test Method for Water Absorption of Plastics |
| 4. ASTM D638-10 | - Standard Test Method for Tensile Properties of Plastics |
| 5. ASTM D1929-16 | - Standard Test Method for Determining Ignition Temperature of Plastics |
| 6. ASTM D2247-2015 | - Standard Test Method for Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity |
| 7. ASTM D2248-01a-2013 | - Standard Test Method for Detergent Resistance of Organic Finishes |
| 8. ASTM D5420-10 | - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact) |
| 9. ASTM E84/UL723 | - Standard Test Method for Surface Burning Characteristics of Building Materials |
| 10. ASTM E228-11 | - Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer |
| 11. ASTM E330/E330M-14 | - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference |
| 12. ASTM G21-13 | - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi |
| 13. NFPA 101® | - Life Safety Code® |
| 14. NFPA 255-06 | - Standard Method of Test of Surface Burning Characteristics of Building Materials |
| 15. NFPA 268-12 | - Standard Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source |
| 16. NFPA 285-12 | - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components |
| 17. UL 2824 | - GREENGUARD Certification Program, Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers |

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Meetings: Arrange pre-installation meeting prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Architect. Presided over by Contractor, include Architect who may attend, Subcontractor performing work of this trade, Owner's representative, testing company's representative and consultants of applicable discipline.

1. Review Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.
2. Review substrate conditions, status of substrate work and preparation, areas of potential conflict and interface, availability of materials and components, equipment, facilities and scaffolding, procedures and sequencing requirements for full and proper installation, integration and preparation.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00, Administrative Requirements.
- B. Product Data: Include manufacturer's product specifications, standard details, test results, and general recommendations, as applicable to materials and finishes for each component and for total system assemblies.
- C. Health Product Declaration (HPD) from panel manufacturer
- D. [Environmental Product Declaration (EPD) from panel manufacturer]
- E. Shop Drawings: Show layouts of all wall surfaces, details of corner conditions, joints, system profiles, supports, anchorages, trim, flashings, closures, and special details.
- F. Include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Certify system meets wind load and structural loads required by Code in the jurisdiction of the project.
- G. Include details indicating relationship with adjacent construction.
- H. Verification Samples: Submit two 4x4 inch samples of each color selected.
- I. Fabricator Certification: Fabricator Training Certificate provided by panel manufacturer
- J. Installer Qualifications: Documentation that installer is acceptable to system manufacturer.
- K. Sustainable Design Submittals: Panel Manufacturer's documentation of GREENGUARD and ISO 14001 certification.
- L. Extra Stock Materials: Furnish 2% extra stock materials for each primary size of panel. Label, wrap and store where directed.

1.5 CLOSEOUT SUBMITTALS:

- A. Operation and Maintenance Data: Provide data in accordance with Section 01 78 23, Operation and Maintenance Data
- B. Warranty: Provide panel manufacturer's 20 year standard limited, transferable warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturing Facility: ISO 9001
- B. Installer Qualifications: Engage an experienced installer who has completed wall system projects similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

- C. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in the jurisdiction where the Project is located and who is experienced in providing engineering services of the kind indicated.
- D. Mockups: Provide an in-place mock-up of wall system at location on the building acceptable to the Architect. Accepted mock-up may remain in place.
 - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- E. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01. Review methods and procedures related to wall assemblies.
 - 1. Meet with installers whose work interfaces with or affects panels, including installers of doors, windows, and louvers.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to installation, including system supplier's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review flashings, special details, wall penetrations, openings, terminations, and condition of other construction.
 - 6. Review temporary protection requirements during and after installation.
 - 7. Review procedures for repair of panels damaged after installation.
 - 8. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in unopened and undamaged containers with identification labels intact.
 - 1. Package panels and substructure components adequately to protect against handling and transportation damage.
 - 2. Exercise care in unloading, storing and handling of panels and components to prevent bending, warping, twisting or surface damage.
 - 3. Stack materials on platforms or pallets off the ground, covered with suitable weather protection. Provide adequate ventilation around weather protection. Slope material to prevent accumulating water. Do not store panels in contact with other materials that might cause staining, scratching or other surface damage.

PART 2 – PRODUCTS

2.1 COMPOSITE WALL PANEL MATERIAL

- A. Manufacturer: DuPont™ Corian® Exterior Cladding Material by DuPont; www.corian.com
- B. Substitution Limitations: This Specification is based on DuPont™ Corian® Exterior Cladding material. Substitutions not permitted.

2.2 PANEL MATERIALS

- A. Exterior Cladding Panel material.

1. Nonporous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction.
- B. Material thickness: 12 mm (nominal (1/2")). 19 mm (nominal 3/4") may be specified for textured panels.
1. Finish: Provide panel with uniform finish characteristics.
 2. Color: Color as selected from manufacturer's Exterior Cladding color palette.
- C. Sustainability Provide Products meeting following LEED® performance criteria:

SPEC NOTE: USE FOLLOWING IN CONNECTION WITH LEED v4 CREDIT, recycled content. MRc3, option 2. IT MAY BE NECESSARY TO SPLIT FOLLOWING PARAGRAPH DUE TO DIFFERENT PRODUCTS WITHIN A PARTICULAR SECTION HAVING DIFFERENT RECYCLING AMOUNTS (IE. IN SECTION 09 21 16, GYPSUM BOARD IS 40% AND STEEL IS 25%). EDIT ACCORDINGLY.

1. MRc3, option 2: Provide Product with a combined minimum pre-consumer and post-consumer recycled content of [xx%].

SPEC NOTE: USE FOLLOWING PARAGRAPH IF AMOUNT OF RECYCLED CONTENT IS UNKNOWN, BUT DESIRED FOR LEED® CREDIT.

2. MRc3, option 2: Provide Product with maximum pre-consumer and post-consumer recycled content available.

D. Performance Criteria:

1. Acrylic Composite Exterior Cladding Material:

	Property	Requirement	Test Procedure
a.	Tensile Strength	6000 psi	ASTM D638
b.	Tensile Modulus	1.5 x 10 ⁶ psi	ASTM D638
c.	Tensile Elongation	0.4%	ASTM D638
d.	Flexural Strength	10000 psi	ASTM D790
e.	Flexural Modulus	1.2 x 10 ⁶ psi	ASTM D790
f.	Thermal Expansion	3.9 x 10 ⁻⁵ m/m °C (2.2 x 10 ⁻⁵ in./in. °F)	ASTM E228
g.	Thermal Conductivity	<5.5 BTU/hr ft. ² °F (0.78 W/m K)	ASTM C518
h.	Freeze/Thaw Resistance	No Observable Changes	ASTM C666
i.	Salt Fog	Surface Easily Renewed	ASTM B117
j.	Sulfur Dioxide Resistance	No Effect	ASTM G85
k.	Fungi and Bacteria	Does Not Support Microbial Growth	ASTM G21 & G22
l.	Microbial Resistance	Highly Resistant to Mold Growth	UL 2824
m.	Nitric Acid /Mortar Resistance	Surface Easily Renewed	AAMA 605.2
n.	Alkali/Acid Resistance	Surface Easily Renewed	ASTM D1308
o.	High Temperature (100°F) With 100% Relative Humidity	Surface Easily Renewed	ASTM D2247
p.	Detergent Resistance	Surface Easily Renewed	ASTM D2248
q.	Self/Flash Ignition	>430°C	ASTM D1929

r.	Ignitability	No Building Spacing Limitations	NFPA 268
s.	Multistory Propagation	Special Construction for Heights >40 ft.	NFPA 285
t.	Type V Buildings (US Only) EXPAND – SEE PG#1	No Limitations	
u.	Flammability	All Colors (12 mm)	ASTM E84, NFPA 255, UL 723
	Flame Spread	<25	
	Smoke Developed	<25	
v..	Class	A	NFPA 101®, Life Safety Code

2.3 DESIGN CRITERIA, DELEGATED DESIGN: PROVIDE COMPREHENSIVE ENGINEERING ANALYSIS OF COMPOSITE WALL PANEL ASSEMBLY. ANALYSIS SHALL BE DONE BY A QUALIFIED PROFESSIONAL ENGINEER, USING DESIGN CRITERIA INDICATED.

- A. Structural Performance: Assembly shall be capable of withstanding the following loads and stresses indicated below, based on testing according to ASTM E330.
 - 1. Wind Loads: Composite wall panels shall be capable of withstanding the following wind load pressures [insert pressure criteria].
 - 2. Deflection: Composite wall panels shall be capable of withstanding wind loads with horizontal deflection no greater than [insert deflection criteria].

2.4 PANEL INSTALLATION

- A. Install panels and sub-frame system in accordance with system manufacturer's guidelines and approved submittals.
- B. Install panels plumb and level and accurately spaced in accordance with system manufacturer's recommendations and approved submittals and drawings.
- C. Anchor panels and sub-framing securely per engineering recommendations and in accordance with approved shop drawings to allow for necessary movement and structural support.
- D. Do not install panels or component parts which are observed to be defective or damaged including, but not limited to: warped, bowed, abraded, scratched, and broken members.
- E. Do not cut or trim component parts during installation in a manner that would damage the finish, decrease the strength, or result in visual imperfection or a failure in performance. Return component parts with require alteration to the shop for re-fabrication or replacement.
- F. Install corner profiles and trim with fasteners appropriate for use with adjoining construction as indicated on the Contract Drawings and as recommended by manufacturer.

2.5 ADJUSTING AND CLEANING

- A. Remove any masking and panel protection as soon as practical after installation.
- B. Adjust final panel installation so that all joints are true and even throughout the installation. Panels out of plane shall be adjusted with the surrounding panels to minimize any imperfection.
- C. Repair panels with minor damage. Remove and replace panels damaged beyond repair as a direct result of the panel installation.
- D. Clean finished surfaces as recommended by panel manufacturer.

2.6 FABRICATION

- A. Fabricate panels per manufacturer's requirements.
- B. Fabricate panel shapes true and square per approved Shop Drawings. Ease edges. Panels shall be shop fabricated to minimize field cutting, splicing and assembly. Label panels per approved Shop Drawings.
- C. All machined panel features should include minimum radius of 1/16".
- D. Larger panel sizes can be fabricated by seaming sheet together. Seams must be reinforced, 100% seam coverage, with 2" width reinforcement strip of 6 mm or 12 mm material thickness.
- E. Joint type: [Open] [Seamed] [Butt] [Quirk Miter Revealed] [Ship-lap].
- F. [Thermoform panels in shapes as indicated in Drawings.].
- G. [[Engrave panels] [Form Pattern] as indicated on Drawings.]. Panels with significant engraving may require thermoform post treatment to achieve flatness, per panel material manufacturer's requirements.
- H. [Panel Texture shall be [Standard][Sandblasted] [Waterjet] [per approved mock-up] [indicate desired panel texture] [per Architect's sample] [where shown on Drawings.]].

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Verify, prior to beginning installation, that structural support and building surfaces are ready to receive the work of this Section.
 - 2. Verify weather barrier installation is complete.
- B. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 FIELD QUALITY CONTROL

- A. Site tests: Independent test laboratory will conduct (air and water infiltration, deflection, etc.) tests for integrated system performance.

3.3 ERECTION TOLERANCES

- A. Shim and align panels within a tolerance of 1/4" in 20'.
- B. Maximum offset of 1/8" from adjoining faces.
- C. Joint opening between panels shall be consistent with project specific panel dimensions and ASTM E228 – Linear Thermal Expansion, as tested by panel manufacturer.

3.4 SITE QUALITY CONTROL

- A. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Architect at no cost to Owner.
- B. Clean surfaces in accordance with manufacturer's recommendations. Remove any excess mastic or sealant materials, and other foreign materials "Care and Maintenance Instructions".

3.5 PROTECTION

- A. Protect installed product and finishes surfaces from damage during construction
- B. Repair or replace damaged products before Substantial Completion of the Work.

The DuPont Oval, DuPont™, and Corian® are trademarks or registered trademarks of E. I. du Pont de Nemours and Company (“DuPont”) or its affiliates. All rights reserved.

LEED® is a registered trademark of US Green Building Council.

END OF SECTION