

# DuROCK ICF Finish System

## Exterior Finish System for Insulated Concrete Forms (ICF)

### MANUFACTURER'S SPECIFICATION 09 24 16

#### Part 1 – GENERAL

##### 1.1 RELATED SECTIONS

- .1 Specification 03 30 00 – Cast-in-Place Concrete
- .2 Specification 07 27 00 – Air Barriers
- .3 Specification 07 60 00 – Flashing & Sheet Metal
- .4 Specification 07 90 00 – Joint Protection (Sealants)

##### 1.2 SYSTEM DESCRIPTION

- .1 DuROCK ICF Finish System is a direct applied exterior finishing system for Insulated Concrete Forms (ICF's). DuRock ICF Finish System is intended for use where the model building code permits the use of fire-tested wall assemblies that include combustible foamed plastic insulation. Contact DuRock for manufacturer-specific information.

SPEC NOTES	<ul style="list-style-type: none"> <li>1. <i>Code compliance – the suitability of this system is subject to approval according to Municipal requirements. Check with all authorities having jurisdiction.</i></li> <li>2. <i>Fire-resistance ratings are specific to the substrates (supporting walls), and not to the finish. Fire testing of DuROCK ICF Finish System may be required when used on non-combustible construction.</i></li> </ul>
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##### 1.3 DESIGN REQUIREMENTS

- .1 Building Substrates (shall be engineered by others where required):
  - .1 Substrate supporting DuROCK ICF Finish System must be structurally sound and continuously supported. All substrates shall be:
    - a. Continuous, flat and plumb, with surface variations less than 2 mm/m (¼ inch per 10 ft).
    - b. Designed to deflect not more than L/720.
    - c. Clean, dry, and free of any deleterious material that would affect the attachment of the DuROCK ICF Finish System, such as wax, oil, paint, dust and dirt.
  - .2 Substrate:
    - a. Buried-web, Expanded Polystyrene (EPS) Insulated Concrete Forms (ICF).
    - b. Expanded Polystyrene (EPS) must be compliant with ULC-S701, Type 2, and made by a manufacturer approved by DuROCK.
    - c. Concrete must be cured at least 28 days.
- .2 Terminations and Expansion Joints
  - .1 Expansion and termination joints shall have an elastomeric sealant with a closed-cell foam backer rod or bond breaker tape, as specified in [section 07 90 00] [and] [the architectural drawings].
    - a. Sealant joints shall be installed as required by either Subsection 5.6.2 or 9.27.4 of the model building code, and in general compliance with ASTM C 1481.
    - b. Expansion and termination joints in DuROCK ICF Finish System are formed by backwrapped or edgewrapped terminations in the system, whereby the insulation is encapsulated with the reinforced base coat onto the concrete core of the ICF.
  - .2 Expansion joints shall be designed by others, and are required at the following locations;
    - a. Where expansion joints in the substrate occur, including building expansion joints and where significant structural movement may be expected to occur.
    - b. At the abutment of dissimilar substrates.
    - c. At changes in roof lines, building shape, or structural system.



SPEC NOTES	<p>3. <i>Location and size of expansion joints are the responsibility of the designer. Joint width should be designed to be four times greater than the anticipated range of joint movement.</i></p> <p>4. <i>DuROCK recommends that expansion joints be at least 12.7 mm (½ inch) wide, and termination joints should be at least 9.5 mm (³⁄₈ inch) wide.</i></p> <p>5. <i>Windows and doors shall be situated in openings such that only insulation remains outboard of them (ie. bucks are not to be left exposed in areas that are to receive DuROCK ICF Finish System).</i></p>
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.3 All sealant joints shall be vented where the DuROCK ICF Finish System or adjoining element is expected to drain.

SPEC NOTE	<p>6. <i>Vents for sealant joints are recommended as follows:</i></p> <p>a. <i>Spaced not more than 3 m (10 ft) apart in long horizontal joints.</i></p> <p>b. <i>Spaced not more than 1.5 m (5 ft) apart in joints less than 3 m long.</i></p> <p>c. <i>Incorporate plastic masonry vents, or equivalent pest screens, providing a nominal venting area of not less than 3.2 cm<sup>2</sup> (½ in<sup>2</sup>).</i></p> <p>d. <i>Vent tubes or leaving gaps in the sealant are also viable alternatives to venting sealant joints.</i></p>
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.3 Decorative Elements:

- .1 Mouldings, shapes, trim, and window sills where the DuROCK ICF Finish System may be exposed are to be designed with a slope on all upward facing horizontal projections, sloped not less than:
  - a. 6:12, rise over run for slopes up to 305 mm (12 inches) wide, or
  - b. 3:12, rise over run for slopes up to 102 mm (4 inches) wide.

SPEC NOTE	<p>7. <i>Horizontal projections that do not conform to the above would be acceptable for wall areas that are partially enclosed, such as where a soffit extends out above such projections. Otherwise, metal flashing with a drip edge is recommended.</i></p>
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.2 Horizontal projections shall be designed, consistent with governing codes and standards, such that these will not be configured or construed as roofing or loadbearing (pedestrian or otherwise).

.4 Flashing:

- .1 Corrosion resistant flashing must be installed according to the requirements of section 07 60 00 in general conformance with Part 5 or Subsection 9.27.3 in the model building code.
- .2 Flashing must be designed and installed by others, sloping outward with drip edges to direct precipitation to the exterior, and must be provided at the top of parapet walls and other similar points of termination.

### 1.4 PERFORMANCE REQUIREMENTS

- .1 DuROCK Base Coat tested according to UEAtc Article 3.3.1.1 – pass two hours impermeability to water, UEAtc Article 3.3.1.2 – maximum water absorption 20% of dry weight, and ASTM D1623C – bond strength exceeds 0.1 MPa.
- .2 Reinforcing Mesh tested according to ASTM D 5034 – minimum 10mm mesh size, minimum 35 N/mm breaking strength, and minimum 15N/mm residual strength after soaking in alkaline solution for 28 days, pH 12.5.
- .3 DuROCK Finish Coat tested according to:
  - .1 MIL.STD.810E – surpass 28 day mildew and fungus resistance
  - .2 ASTM B117 – surpass 300 hour salt spray resistance
  - .3 ASTM D822B – surpass 2500 hour accelerated weathering, and
  - .4 ASTM D1623C – bond strength exceeds 0.1 MPa.

SPEC NOTE	<p>8. <i>Wind load resistance of DuROCK ICF Finish System is achieved via attachment to the substrate, hence, the substrate must be designed withstand the anticipated wind loads.</i></p>
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### 1.5 SUBMITTALS

- .1 Upon request, DuROCK will supply finish coat samples, approximately 200 x 200 mm (8 x 8 inches), providing representation of the texture and colour.

### 1.6 QUALITY ASSURANCE

- .1 Manufacturer shall be a member in good standing of the EIFS Council of Canada, and certified by the EIFS QAP.
- .2 Applicator shall be knowledgeable and experienced in stucco installation.

### 1.7 DELIVERY, STORAGE & HANDLING

- .1 All materials and components shall be:
  - .1 Supplied by DuROCK Alfacing International Limited or its appointed distributors in the original, unopened packaging with labels clearly identifying each component.
  - .2 Inspected upon delivery, and any defective materials and/or components are not to be used.
  - .3 Stored off the ground, under protective cover, away from direct sunlight and kept dry.
- .2 All water-based materials, supplied in plastic pails, are to be kept above 4°C (40°F) and below 40°C (104°F).
- .3 All dry-bagged materials shall be kept dry and protected from high humidity and moisture.

### 1.8 SITE CONDITIONS

- .1 Surface and ambient conditions for application of wet-state-materials must be kept above 4°C (40°F).
- .2 Finish coats applied in high humidity conditions will take longer than 24 hours to dry. If such conditions occur, provide supplemental heat to reduce the humidity, or provide protection long enough for finish coats to dry completely.
- .3 Wet-state-materials shall not be applied in direct sunlight in temperatures exceeding 30°C (86°F) without protective cover.
- .4 All work shall be protected from rain, snow, hail, and wind exceeding 25 km/hr (15 mph) for not less than 24 hours after wet material application.
- .5 Do not apply materials in weather conditions that will cause adverse affects to performance.

### 1.9 WARRANTY

- .1 DuROCK ICF Finish System is eligible for a limited manufacturer’s warranty starting from the date of substantial completion. The [Owner] [Contractor] [Designer] must make a formal application at the end of the project to receive such a warranty.
- .2 DuROCK’s warranty is effective when materials are paid for in full, and the workmanship complies with this specification.

## Part 2 – MATERIALS

### 2.1 GENERAL

- .1 DuROCK Alfacing International Limited, or its appointed distributors, shall supply all the materials and components for the DuROCK ICF Finish System.
- .2 Substitution of materials or components shall void the manufacturer’s warranty.

### 2.2 MATERIALS

- .1 Insulation:
  - .1 Spray-in-Place Polyurethane Foam, compliant with ULC-S710.1:
    - a. Single component, moisture cure, low expansion rate foam, applied into ICF joints as a gap filling material.
- .2 Base Coats:
  - .1 DuROCK Prep Coat – a water-based acrylic dispersion that is field mixed with Type 10, 20, or 30 Portland cement, used as an adhesive and base coat.
  - .2 DuROCK Prep Coat D – a dry acrylic polymer-based material that is field mixed with potable water, used as an adhesive and base coat.
  - .3 DuROCK Polar Bear – a water-based acrylic dispersion that is factory mixed, applied with stainless steel trowel, used to adhere edgewrapping to wood bucks.

SPEC NOTES	9. <i>Where wood bucks (framing) remain in place within the core of the ICF at the perimeter of through wall penetrations (such as windows and doors), DuROCK Polar Bear shall be used to encapsulate the reinforcing mesh onto these wood elements.</i>
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- .3 DuROCK Fibre Mesh – alkali resistant glass fibre reinforcing:
  - .1 DuROCK Fibre Mesh 4.5 – nominal 153 g/m<sup>2</sup> (4.5 oz/yd<sup>2</sup>) weight, supplied in 965 mm (38 inches) wide by 45.7 m (150 feet) long rolls. The DuROCK logo appears on the mesh.
  - .2 DuROCK Fibre Mesh 6.0 – nominal 200 g/m<sup>2</sup> (6.0 oz/yd<sup>2</sup>) weight, supplied in 965 mm (38 inches) wide by 45.7 m (150 feet) long rolls. The DuROCK logo appears on the mesh.
  - .3 DuROCK Intermediate Mesh – nominal 400 g/m<sup>2</sup> (12.0 oz/yd<sup>2</sup>) weight, supplied in 965 mm (38 inches) wide by 22.9 m (75 feet) long rolls.

- .4 DuROCK High Impact Mesh 15– nominal 523 g/m<sup>2</sup> (15.4 oz/yd<sup>2</sup>) weight, supplied in 965 mm (38 inches) wide by 22.9 m (75 feet) long rolls.
- .5 DuROCK High Impact Mesh 21 – nominal 712 g/m<sup>2</sup> (21.0 oz/yd<sup>2</sup>) weight, supplied in 965 mm (38 inches) wide by 22.9 m (75 feet) long rolls.
- .4 Primers & Paint:
  - .1 DuROCK Base Primer – water-based, color-pigmented acrylic dispersion used as a primer for DuROCK Finishes, applied by roller or brush.
  - .2 DuROCK Roll-On – water-based, color-pigmented acrylic coating with a fine sand texture, used as a finish coat on decorative trim and mouldings, applied by roller or brush.
- .5 Finish Coats:
  - .1 DuROCK Finishes – water-based, color-pigmented acrylic finish with integral texture, applied by trowel or spray. Refer to the DuROCK Finishes data sheet for the selection of colour and texture.
  - .2 DuROCK Specialty Finishes – water-based, exposed colored aggregate finishes with integral texture, applied by trowel or spray. Refer to the data sheet for further information.

## 2.3 MIXING

- .1 All DuROCK water-based products require mixing with a medium duty power-drill (400 – 500 RPM) and stainless steel or corrosion resistant paddle-mixing-blade.
- .2 DuROCK water-based pail-packaged products to be mixed with Portland cement are required to be mixed to a uniform consistency prior to mixing with Portland cement.
  - .1 Prep Coat – Gradually add 15 kg (33 lbs) of Type 10, 20, or 30 Portland Cement to one-half pail of Prep Coat mixing continuously until a workable consistency is attained. Let the mixture stand for approximately 5 minutes, then mix again to temper the mix and increase the pot life, adding up to 250 mL (8 oz) of potable water if required to adjust viscosity.
- .3 DuROCK dry-based products are to be mixed with potable water in the specified ratio for the product, until a workable consistency is attained. The mixture is to let stand for approximately 5 minutes, then mix again to temper the consistency and increase the pot life, adding up to 250 mL (8 oz) of potable water, if required to adjust viscosity.
  - .1 Prep Coat D – One bag to 6 L (1.3 imp gal) of potable water.
- .4 DuROCK non-cementitious water-based pail-packaged factory-mixed products are required to be mixed to a uniform consistency prior to application.
  - .1 Up to 250 mL (8 oz) of potable water may be added to DuROCK Finishes, when being applied in hot weather, however, water shall not be added to heavily pigmented finishes, i.e., dark colours.
  - .2 Water is not to be added during the mixing of DuROCK Polar Bear, Base Primer, Roll-On, or DuROCK Specialty Finishes.
- .5 Discard any material that has become stiff or hard.

## Part 3 – EXECUTION

### 3.1 GENERAL

- .1 Prior to commencing the work, review the substrate and report any deficiencies to the appropriate authority. Coordinate work with other trades.
- .2 Install DuROCK ICF Finish System following the general principles summarized in ASTM C 1397.
- .3 Apply masking and temporary protection to ensure the work of this section does not result in the products staining other components of the building assembly.
- .4 Maintain a minimum ambient and surface temperatures above 4°C (40°F) for at least 24 hours after each application of wet-state material.

### 3.2 BASE COAT & FIBRE MESH

- .1 Gaps in the ICF formwork joints, greater than 1.6 mm (<sup>1</sup>/<sub>16</sub> inch), wide must be sprayed with spray-in-place polyurethane foam or filled with Type 1 EPS, compliant with ULC-S701.
- .2 The insulation must be rasped with an abrasive metal or otherwise to ensure the surface is plane and smooth, removing any of the insulation that may have been damaged due to prolonged exposure to ultraviolet radiation.
- .3 Aesthetic reveals, where specified, shall be cut such that;
  - .1 The depth provides at least 19 mm (<sup>3</sup>/<sub>4</sub> inch) of solid insulation at the innermost point of the reveal.

- .2 The reveals must not coincide with any insulation form joints or webs/spacers for the ICF.
- .3 Horizontal reveals are sloped to provide positive drainage of precipitation, at least 3:12.
- .4 Minimum thickness of insulation overtop of the webs shall be at least 6.4 mm (¼ inch) after rasping.
- .5 Backwrapping or edgewrapping of the reinforced base coat is required at all system terminations, including expansion joints.
  - .1 The Starter Mesh shall be encapsulated within the base coat at least 65 mm (2½ inches) onto the concrete core or wood blocking.
  - .2 In locations where the wood blocking has been left as the surrounding buck for through wall penetrations, DuROCK Polar Bear shall be used to apply the Starter Mesh onto the wood, Prep Coat shall be used as the base coat to embed the remainder of the fibre mesh at penetrations.
  - .3 Fibre mesh must be installed at least 229 x 305 mm (9 x 12 inches) at a 45° angle at the corners of all through wall penetrations.
  - .4 Fibre mesh fully encapsulated within the base coat on all exposed edges of the insulation.
  - .5 At least 6.4 mm (¼ inch) space is left around the perimeter of windows, doors and other penetrations.
- .6 Base Coat and Fibre Mesh:

SPEC NOTES	10. <i>The Designer has the option to specify the standard weight of the reinforcing mesh as 4.5, 6.0 or intermediate mesh at 12. Also areas requiring high impact resistance must specify the weight of high impact mesh as 15 or 21 abutted with 4.5 overtop.</i>
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- .1 The base coat shall be applied to the insulation as delineated in the architectural drawings.
- .2 Fibre mesh shall be embedded into the wet base coat with a minimum wet thickness of 2 mm (1/12 inch) and the surface shall be rendered uniformly and smooth.
- .3 Horizontal and vertical overlapping of the fibre mesh must be at least 100 mm (4 inches).
- .4 At interior and exterior corners, the fibre mesh shall be doubled up, overlapping at least 100 mm (4 inches) onto each side of the corner.
- .5 High impact mesh, where required, must be installed without overlapping to prevent bulging in the wall surface. Standard weight of 4.5 or 6.0 oz must be installed overtop of high impact mesh.
- .6 The base coat shall be cured at least 24 hours between coats, as well as before primer or finish.

### 3.3 PRIMER & FINISH COAT

- .1 Where specified, DuROCK Base Primer shall be applied to the reinforced base coat with a roller, brush or spray equipment. Primer must dry at least 4 to 6 hours prior to finish coat application.

SPEC NOTE	11. <i>DuROCK recommends the application of primer prior to the finish to enhance the color consistency and durability of the system. DuROCK also recommends application of primer for all dark colored finishes, or applications in hot weather conditions. The Designer must specify if primer is required.</i>
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- .2 Apply DuROCK Finish Coat in accordance with the recommendations for the specific texture (refer to the appropriate DuROCK product data sheet). Render and float the DuROCK Finish Coat to match the approved color and texture approved by the owner or designer.
  - .1 Finish coat shall not be applied in joints that are to receive sealant.
  - .2 Finish coat shall terminate at least 100 mm (4 inches) above finished grade and at least 50 mm (2 inches) above roofing systems, decks, or balconies.
  - .3 Protect DuROCK Finish until it is fully dried, and for at least 24 hours after application.
- .3 Clean Up:
  - .1 Remove masking and temporary protection as required.
  - .2 Ensure work of other trades is not adversely affected by the work of this section.
  - .3 Remove all leftover materials and garbage from the jobsite.

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End of Specification 09 24 16