



# Jewel Stone

## Decorative Concrete Overlay System

### MANUFACTURER'S SPECIFICATION 09 62 81

#### Part 1 – GENERAL

##### 1.1 RELATED SECTIONS

- .1 Specification 03 30 00 – Cast-in-Place Concrete
- .2 Specification 09 70 00 – Sealants

##### 1.2 SYSTEM DESCRIPTION

- .1 Jewel Stone is polymer modified cement overlay system for horizontal and vertical application on concrete, concrete masonry, and ceramic tile surfaces, for both interior and exterior applications.

<b>SPEC NOTES</b>	<ul style="list-style-type: none"> <li>1. <i>The structural integrity of concrete surfaces should be reviewed prior to the Jewel Stone application, specifically when the concrete has been left exposed and may have had surface treatment that could affect the adhesion of the Jewel Stone.</i></li> <li>2. <i>Existing concrete surfaces should be ad-hoc tested by applying Jewel Stone base coat to assess the adhesion. Contact DuROCK for further assistance.</i></li> <li>3. <i>Jewel Stone is not intended for use over dry pack grouts or mortars.</i></li> </ul>
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##### 1.3 DESIGN REQUIREMENTS

- .1 Building Substrates (shall be engineered by others where required):
  - .1 Substrates for Jewel Stone shall be:
    - a. Interior or exterior concrete that has been cured at least 28 days.
    - b. Exterior concrete shall be sloped for proper drainage.
    - c. Concrete masonry for vertical applications.
    - d. Interior ceramic tile that has had the glazed finish removed.

<b>SPEC NOTES</b>	<ul style="list-style-type: none"> <li>4. <i>The Designer may require the assessment of the moisture content of the concrete, as can be determined by either of the following methods:</i> <ul style="list-style-type: none"> <li>a. <i>ASTM F 1869-04 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Sub floor Using Anhydrous Calcium Chloride – the moisture emission rate of the concrete shall be less than 1 g/h/m<sup>2</sup> (5 lbs per day per 1,000 ft<sup>2</sup>)</i></li> <li>b. <i>ASTM D 4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method – whereby the relative humidity under the sheet shall be less than 80% after 72 hours from sealing the plastic to the concrete surface.</i></li> </ul> </li> </ul>
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- .2 Substrates supporting Jewel Stone must be structurally sound and continuously supported. Concrete substrates shall be;
  - a. Flat, with voids filled prior to application.
    - i) Jewel Stone base coat can be applied to fill voids up to 12.7 mm (½ inch) deep.
  - b. Clean, dry, and free of any surface contamination that would affect the adhesion, such as wax, oil, paint, dust, efflorescence and dirt.

<b>SPEC NOTE</b>	<ul style="list-style-type: none"> <li>5. <i>Existing cracks and/or cracks that may later form in the substrate can extend through the Jewel Stone. DuROCK does not warrant against cracking due to the level of strain that substrate movement can impose upon Jewel Stone.</i></li> </ul>
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- .2 Control and expansion joints shall be designed by others, as specified in section 07 90 00.

<b>SPEC NOTE</b>	<ul style="list-style-type: none"> <li>6. <i>Location and size of control and expansion joints are the responsibility of the designer.</i></li> </ul>
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**1.4 SUBMITTALS**

- .1 Upon request, the Jewel Stone applicator will provide mock-up(s) 600 x 600 mm (24 x 24 inches), providing representation of the texture and colour. This mock-up may form part of the completed work, or may be applied on a suitable substrate for transport, such as 6 mm (¼ inch) cement board.

**1.5 QUALITY ASSURANCE**

- .1 Manufacturer shall have not less than 10 years experience producing decorative overlay products.
- .2 The applicator shall be knowledgeable and experienced in Jewel Stone installation and shall install the products according to DuROCK’s requirements.

<b>SPEC NOTE</b>	7. <i>Inspection of the work in this section shall be conducted by a qualified 3<sup>rd</sup> party.</i>
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**1.6 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.

**1.7 SITE CONDITIONS**

- .1 Surface and ambient conditions for application of wet-state-materials must be kept above 4°C (40°F) for at least;
  - .1 72 hours after the application of the Jewel Stone base and finish coats, and
  - .2 24 hours after the application of sealers.
- .2 Application of product where the surface or ambient temperature is below 15°C (59°F) requires temporary enclosure and supplemental heating.
- .3 Wet-state-materials shall not be applied in direct sunlight in temperatures exceeding 30°C (86°F) without protective cover.
  - .1 Jewel Stone Binders shall be kept below 30°C (86°F) in hot weather applications.
  - .2 If required, use cold packs surrounding the pails to keep the temperature of binder as low as possible in hot weather applications.
- .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.

**1.8 WARRANTY**

- .1 Jewel Stone 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 Jewel Stone.
- .2 Substitution of materials or components shall void the manufacturer’s warranty.

**2.2 MATERIALS**

- .1 General:
  - .1 Muriatic Acid shall be commercial quality, 30 to 38% hydrochloric acid.
  - .2 Water shall be potable.
- .2 Jewel Prime Coat – a water-based acrylic dispersion as a surface conditioner for concrete substrates.
- .3 DuROCK 5 oz Reinforcing Mesh – nominal weight 174 g/m2 (5.2 oz/yd2), supplied in 965 mm (38 in) wide by 45.7 m (150 ft) long rolls. The DuROCK logo appears on the mesh.

- .4 Base Coat:
  - .1 DuROCK Jewel Stone Regular – a two-component product whereby the dry mix of aggregates and cement is mixed with a wet mix of water and either Pure Cement Binder or Self-Leveling Binder.
    - a. DuROCK Jewel Stone Regular (Dry Mix) – Portland cement mixed with a blend of silica aggregates, minerals and colour, available in a base white colour or integrally tinted in 30 standard colours. Refer to the current Jewel Stone colour chart available from DuROCK.
    - b. DuROCK Jewel Stone Pure Cement Binder or Self-Leveling Binder (Wet Mix) – a water-based acrylic dispersion.
- .5 Finish Coat:
  - .1 DuROCK Jewel Stone Regular, as described above, mixed with water and Pure Cement Binder. Available in one of the standard DuROCK colours or in a base white colour and tinted with colour packs.
- .6 Jewel Stone Colour Packs, Sealers and Anti-Slip Aggregates:
  - .1 DuROCK Jewel Stone Regular (Dry Mix) – 3 kg Colour Packs – Portland cement mixed with a blend of silica aggregates, minerals and colour, available in a series of standard colours. Refer to the current Jewel Stone colour chart available from DuROCK.
  - .2 Jewel Stone Sealers:
    - a. DuROCK Clear Sealer 96 – a water-based acrylic dispersion, recommended as a two coat sealer for vertical surfaces and as a primer for urethane sealers.
    - b. DuROCK Durathane – an acrylic-urethane dispersion, interior or exterior, recommended for low VOC emission and light pedestrian traffic.
    - c. DuROCK Epoxy – a two component chemical cured epoxy, 100% solids, recommended heavy pedestrian traffic, used for interior applications only.
    - d. DuROCK Xylene Acrylic – xylene solvent-borne acrylic penetrating sealer, available with separate primer and top coat, used for exterior applications only. Note the following:
      - i) The xylene solvent carrier is highly flammable. Proper care for storage and application to prevent ignition of fire is required.
      - ii) Application of Xylene Acrylic sealer shall only be outdoors, in well ventilated areas.
  - .3 Jewel Stone Anti-Slip Resin – resin aggregate, applied as part of the sealer top coat.

## 2.3 MIXING

- .1 Jewel Stone products require mixing with a medium duty power-drill (400 – 500 RPM) and stainless steel or corrosion resistant paddle-mixing-blade. Let each mix stand for 2 to 5 minutes, then re-mix.
- .2 Stir all pail products to ensure a homogeneous consistency prior to use and or mixing.
- .3 DuROCK Jewel Stone Binders are mixed with the dry components as follows:
  - .1 As a base coat over concrete, mix one bag of DuROCK Jewel Stone Regular (Dry Mix) with 2 L (2.1 quarts) Jewel Stone Self-Leveling Binder and 2 L (2.1 quarts) water, or with 3 L (3.1 quarts) Pure Cement Binder and 2 L (2.1 quarts) water, adding the dry to the wet components.
  - .2 As a base coat over ceramic tile, mix one bag of DuROCK Jewel Stone Regular (Dry Mix) with 3 L (3.1 quarts) Pure Cement Binder and 1 L (1.1 quarts) water, adding the dry to the wet components.
- .3 As a top coat, mix one bag of DuROCK Jewel Stone Regular (Dry Mix) with 2 L (2.1 quarts) Pure Cement Binder and 2 L (2.1 quarts) water, adding the dry to the wet components.
  - a. When applying Jewel Stone Regular to prepare surface cracks in concrete, mix one bag with 4 L (1 gallon) of Jewel Stone Pure Cement Binder, do not add water.
- .4 Except where stated in DuROCK technical literature, no product shall be altered by adding foreign substances of any kind. The use of accelerators or other additives is prohibited.
- .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.
- .2 Coordinate the work of this section with other trades and erect barriers to protect wet materials.
- .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 72 hours after each application of wet-state material, except sealers which only require 24 hours.
- .5 Only stainless steel application tools shall be used, except where some non-ferrous specialty tools may be required, such as a plastic float.

### 3.2 SURFACE PREPARATION

- .1 The concrete surface shall be sufficiently rough for satisfactory adhesion of Jewel Stone, utilizing either of the following methods;
  - .1 Mechanical grinding or shot-blasting, or
  - .2 Muriatic acid etching, 2 parts water to 1 part acid, applied for 20 minutes then rinsed and dried.
- .2 The ceramic tile surface shall be sanded to roughen the surface after the glaze finish has been removed.
- .3 Clean the surface by the appropriate method to remove all dust, dirt and surface contamination. Vacuum all dirt and dust prior to commencing application work.
- .4 Surface cracks in concrete must be fiber meshed and pre-coated with Jewel Stone Regular extending at least 75 mm (3 inches) onto each side of the crack, increasing the Pure Cement Binder content to eliminate the water additive.
- .5 Apply Jewel Prime Coat to the concrete surface, and let dry to the touch before applying the base coat.

<b>SPEC NOTE</b>	8. <i>The Designer shall provide a scaled diagram for the desired lines, control joints and expansion joints for the Jewel Stone application. This is required to ensure the applicator will have sufficient manpower to apply the finish coat layer up to a suitable termination point. The recommended working area for a reasonable application should not be more than 13.4 m<sup>2</sup> (144 ft<sup>2</sup>).</i>
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### 3.3 BASE COAT

- .1 Apply the Jewel Stone Regular base coat at a nominal thickness of [3.2 mm (<sup>1</sup>/<sub>8</sub> inch)].
- .2 For ceramic surfaces, immediately embed reinforcing mesh into base coat.

<b>SPEC NOTE</b>	9. <i>The Jewel Stone Base coat should be specified in the integral colour that you choose for the grout lines.</i>
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- .3 Jewel Stone Regular base coat shall be cured for at least 12 hours, firm and dry to the touch, before commencing work on the finish coat application.

### 3.4 FINISH COAT & COLOUR RENDERING

- .1 If specified, grout lines can be rendered to enhance the pattern and texture of the Jewel Stone finish coat. Grout lines are created as follows:
  - .2 Fibre-reinforced tape is typically selected for creating grout or mortar lines that are 9.5 to 12.7 (3/8" to 1/2 inch) wide. Fibre-reinforced tape is applied directly onto the Jewel Stone base coat in a pattern, specified by the Architect and/or designer, prior to the application of the Jewel Stone finish coat.
    - .1 Preformed self-adhering templates are an alternate method of creating shape and patterns to the Jewel Stone finish coat. These templates must be well adhered, temporarily, to the base coat during the finish coat application.
  - .3 Apply the Jewel Stone finish coat at a nominal 3.2 mm (<sup>1</sup>/<sub>8</sub> inch).
    - .1 The nominal thickness for Jewel Stone base coat and Finish Coat combined, as applied on concrete shall be at least 6.4 mm (1/4 inch).
  - .4 The Jewel Stone finish coat should be textured by leaving trowel marks, ridges and voids to create the desired aesthetic effect.
  - .5 Remove templates and/or fibre-reinforced tape to expose the base coat.
    - .1 On horizontal areas exposed to pedestrian traffic, if the voids in the finish coat (where the base coat has been exposed by the tape or template) are greater than 12.7 mm (1/2 inch) deep then mix up Jewel Stone Regular in the desired grout color and apply it with a mason's pointing bag to fill in the recesses with a concave bead of material.
- .6 If specified, lines can be cut into the finish coat when the initial set has occurred, whereby the finish coat is firm enough to walk on, but still soft enough to carve, i.e., within 3 hours of application. . Using carving tools, fines lines and curves can be carved into the Jewel Stone finish. Shaving the surface with a steel trowel, angled on a 45, will remove any unwanted peaks, while polishing the surface with a flat trowel will create an authentic stone texture. Brush off any cuttings or waste before colouring.
- .7 Once the Jewel Stone finish coat has cured for 24 hours you can utilize the DuROCK Jewel Stone colour packs by sprinkling the tinted powder onto the Jewel Stone surface and washing it into the surface with a wet sponge to create the desired effect. On vertical surfaces, dip a wet sponge into the color pack and wash the wall with color to create desired effect.

<b>SPEC NOTE</b>	10. <i>Colour washes can also be applied onto Integral Jewel Stone if desired. The Jewel Stone Quartz product can also be used as a finish coat. .</i>
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- .1 Once the different colours have been applied, brush the loose dry colour off the surface and allow sufficient curing before applying the sealer (this varies depending upon the amount of water used to render the colour onto the surface).

### 3.5 SEALER & CLEAN UP

- .1 Jewel Stone finish coat shall be cured for at least 24 hours prior to sealer application.
- .2 Apply the specified sealers at the recommend yield, as provided in the DuROCK product data sheets.
- .3 Apply Jewel Stone Anti-Slip Resin for Jewel Stone applications exposed to pedestrian traffic, in particular exterior horizontal surfaces or areas that may periodically get wet.
  - .1 Apply the non-slip aggregate on horizontal surfaces before the sealer top coat is applied, utilizing 1 kg per 19 L pail (2.2 lbs per 5 gallon pail) of sealer, by either;
    - a. Broadcasting the non-slip resin between the primer and top coat, or
    - b. Thoroughly mixing the non-slip resin into the top coat before application.

<b>SPEC NOTE</b>	11. <i>DuROCK requires Anti-Slip Resin to be applied on horizontal surfaces exposed to pedestrian traffic if the area is likely to be exposed to water, from precipitation, or otherwise. It is optional for interior horizontal surfaces that will not get wet.</i>
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- .4 Except if epoxy has been used, re-sealing is required for Jewel Stone typically on an annual basis (after the winter season for exterior applications), using the same sealer as first applied.
- .5 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.

End of Specification 09 62 81
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