

RS-D2 is a rapid hardening, pre-packaged shotcrete material for dry-process applications. This product is a pre-blended, pre-packaged, dry-process shotcrete material powered by Rapid Set® technology, containing blended aggregates and other carefully selected components. It has greatly enhanced shooting characteristics providing greatly reduced setting times and very rapid strength development.

#### FEATURES & BENEFITS

- Very rapid early age strength development
- Improved adhesive and cohesive plastic properties
- Significantly reduced rebound, resulting in lower material usage
- Superior ability to build greater thicknesses in a single pass in both vertical and overhead orientations
- Low shrinkage
- All KING products are manufactured using ISO 9001:2015 Certified Processes

#### OPTIONAL FEATURES & BENEFITS

##### GRADATION

- By default RS-D2 is blended to meet ACI 506 "Guide to Shotcrete", Table 1.1, Gradation No. 2
- RS-D2 G1 is blended to meet ACI 506 "Guide to Shotcrete", Table 1.1, Gradation No. 1

##### EXAMPLE:

For RS-D2 with Gradation No. 1, the name of the product would be RS-D2 G1.

#### USES

- Ground support applications for mining, tunneling and other underground openings.
- Construction of underground bulkheads, backfill barricades, pillars, ventilation walls and other underground concrete structures.
- Use of a predampener in conjunction with dry process accelerated shotcrete is not recommended. Contact your local KING Technical Representative for more information.

#### PROCEDURES

**Surface Preparation:** All surfaces to be in contact with RS-D2 must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all loose or delaminated rock. Clean the area with potable water, leaving the substrate saturated but free of standing water (SSD).

**Application:** Apply RS-D2 in accordance with the ACI 506 "Guide to Shotcrete" publication.

#### CURING

Good curing conditions are beneficial to optimizing the physical properties of RS-D2. Although the high relative humidity commonly found in underground environments provides for good curing conditions, additional curing is often appropriate and should be performed in accordance with ACI 308 "Guide to Curing Concrete".

#### TECHNICAL DATA

The following data is representative of typical values achievable using proper application techniques as outlined in the ACI 506 "Guide to Shotcrete" publication. The data was obtained during project field tests and in-house shotcrete studies.

#### SET TIME\*

ASTM C 1117	
Initial	5 minutes
Final	10 minutes

#### COMPRESSIVE STRENGTH\*

ASTM C 116 (MODIFIED)	
2 Hour	21 °C (70 °F) 21 MPa (3000 psi)

ASTM C 1604	
1 Day	30 MPa (4350 psi)
7 Day	40 MPa (5800 psi)
28 Day	50 MPa (7250 psi)

#### FLEXURAL STRENGTH

ASTM C 78	
7 Day	5.5 MPa (800 psi)
28 Day	6.0 MPa (870 psi)

#### BOILED ABSORPTION

ASTM C 642	7.0%
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#### MAXIMUM VOLUME OF PERMEABLE VOIDS

ASTM C 642	15.0%
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\*The following data was obtained under controlled conditions with material and ambient temperatures of 21 °C (70 °F). Higher or lower temperatures can respectively accelerate or delay setting time and early-age compressive strength gain.

#### OPTIMUM PERFORMANCE

- Performance of in-place shotcrete relies heavily upon application techniques. To ensure optimum quality of in-place shotcrete, the material, equipment and key personnel should be pre-qualified prior to project start-up.

#### YIELD

1,000 KG (2,205 lb) bag contains approximately 0.45 m<sup>3</sup> (16.5 ft<sup>3</sup>).

#### PACKAGING

RS-D2 is normally packaged in 1,000 KG (2,205 lb) bulk bags and polywrapped on wooden pallets. Material can also be supplied in 30 KG (66 lb) triple-lined bags. All KING products can be custom packaged to suit specific job requirements.

#### STORAGE AND SHELF LIFE

Material should be stored in a dry, covered area, protected from the elements. Unopened bags have a shelf life of 12 months. Physical properties of RS-D2 may be adversely affected if material is stored in temperatures below 0 °C (32 °F). Material should be allowed to warm to at least 15 °C (60 °F) prior to shooting in order to optimize early age compressive strength results.

#### SAFETY PROCEDURES

RS-D2 contains rapid setting cement. Normal safety-wear such as rubber gloves, dust mask and safety glasses used to handle conventional cement based products should be worn. Safety Data Sheets are available upon request.

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**Warranty:** This product is designed to meet the performance specifications outlined in this product data sheet. If the product is used in conditions for which it was not intended, or applied in a manner contrary to the written recommendations contained in the product data sheet, the product may not reach such performance specifications. The foregoing is in lieu of any other warranties, representations or conditions, expressed or implied, including, but not limited to, implied warranties or conditions of merchantable quality or fitness for particular purposes, and those arising by statute or otherwise in law or from a course of dealing or usage of trade. [REV.0007\_2458717.5]