

PRODUCT DATA SHEET

King® AF-D1

ACCELERATED SHOTCRETE OR CONCRETE MIX

PRODUCT DESCRIPTION

King® AF-D1 is an accelerated shotcrete or concrete mix containing special, high-alumina cement and silica fume. It is designed to produce superior heat and thermal-cycling resistant characteristics.

WHERE TO USE

- Furnace linings
- Chimney linings
- Furnace foundations
- Ore-pass linings
- Other high temperature and thermal-cycling areas

CHARACTERISTICS / ADVANTAGES

1. Resistance to high temperature and thermal-cycling

The high performance cement used in this mix provides improved resistance to thermal shock and thermal cycling for areas with exposure to extremely high temperatures.

2. Abrasion resistance

The properties provided by the special high performance cement used in King® AF-D1 provide abrasion resistance 2 times higher than similar mixes using normal Portland cement.

3. Early strength development

King® AF-D1 reaches initial set after 2-3 hours. However, after this period of time strength gain develops rapidly providing 24 hour compressive strength results similar to 28 day results of mixes using normal Portland cement.

PRODUCT INFORMATION

Composition / Manufacturing

Packaging 30 kg (66 lb) triple-lined bag, 1000 kg (2200 lb) FIBC* or 1500 kg (3300 lb) FIBC polywrapped on wooden pallets. Special packaging for marine shipping is available upon request.

*Flexible Intermediate Bulk Container

Shelf Life 12 months in original packaging, unopened

Storage Conditions Store dry, ensuring that product is not exposed to rain, condensation or high humidity.

Compressive Strength	1 day	40 MPa (5 800 psi)	ASTM C1604 & ASTM C42
	3 days	45 MPa (6 525 psi)	
	7 days	48 MPa (7 000 psi)	
	28 days	58 MPa (8 400 psi)	

Temperature Resistance **HEAT & THERMAL-CYCLING RESISTANCE**
 Withstands temperatures up to 1000 °C (1832 °F)

BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

LIMITATIONS

- The performance of this mix relies heavily on the abilities of the nozzleman. Personnel should be trained in proper shotcreting techniques.
- King® AF-D1 contains accelerators and silica fume.
- Precautions must be taken to protect against fallout when applying passes thicker than 100 mm (3 in).

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

SUBSTRATE PREPARATION

All surfaces to be in contact with King® AF-D1 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 concrete providing a roughened surface and a minimum of 20 mm (¾ in) clearance behind any corroded reinforcing steel. The perimeter of the repair area should be saw-cut a minimum of 20 mm (¾ in). Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).

APPLICATION

Apply in accordance with the ACI 506 "Guide to Shotcrete" publication.

CURING TREATMENT

Curing is essential to optimize physical properties of the shotcrete and minimize plastic shrinkage. King® AF-D1 should be cured immediately after material has reached initial set in accordance with ACI 308 "Guide to Curing Concrete". Continuously moist cure for a minimum period of seven (7) days. Alternatively, moist cure for a minimum period of 24 hours and apply two (2) coats of a curing compound that complies with ASTM C309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.

CLEAN UP

Clean all tools and equipment immediately after use with water. Once hardened, material can only be removed mechanically.

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.