

## IN-PAKT PRECISION GROUT

Pre-packaged, high performance, pumpable, non-shrink, cementitious grout. In-Pakt Precision Grout is a cement based, non-metallic, non-shrink grout containing well graded, natural, fine aggregate, silica fume and other carefully selected components. In-Pakt Precision Grout meets ASTM C 1107, Type C grout and can be used at varying consistencies from dry pack to fluid.

### FEATURES & BENEFITS

- Can be mixed and placed from dry pack, plastic and fluid consistencies using relatively low water:cement ratios.
- Excellent pumpability.
- Improved resistance to water washout.
- Achieves hardened properties in a wide range of temperature conditions.
- Very low permeability.
- Non-corrosive, non-chloride, non-metallic.
- Excellent resistance to freeze-thaw cycling and salt-scaling in the presence of de-icing salts.
- All KING products are manufactured using ISO 9001:2008 Certified Processes.

### USES

- Grouting machinery base plates and column sole plates.
- Grouting anchor bolts, dowels and hand rails.]
- Repair of precast units.
- Infill of pipes and sleeves in marine environments.
- Not recommended for areas of extremely high vibration.
- Grout should be protected from freezing until after final set.
- Surface temperature of the grouted area should be between 5°C and 30°C (40°F and 86°F).
- For void filling applications larger than 50 mm (2 inches), use MS-S10 Self-Consolidating Concrete.
- Contact KING Technical Support Staff for recommendations or information on uses or conditions not listed.

### PROCEDURES

#### Surface Preparation:

All surfaces to be in contact with In-Pakt Precision Grout must be free from dust, oil, grease or any other foreign substances that may interfere with the bond of the material. Remove all delaminated or unsound concrete providing a roughened surface. Clean the area to be repaired with potable water, leaving the concrete saturated but free of standing water (SSD).

#### Water Proportioning For Grout Consistency:

The following amounts of water will produce the following grout consistencies:

**Dry Pack** – approx. 2.3 litres (0.61 US gallon) of water

**Plastic** – approx. 3.1 litres (0.82 US gallon) of water

**Fluid** – approx. 4.0 litres (1.0 US gallon) of water

**Note:** Water requirement varies with temperature. Increase water slightly as temperature rises and decrease water slightly as temperature decreases.

### Mixing:

Place 75% of required potable water into mixer and slowly introduce entire bag of In-Pakt Precision Grout. Add balance of required water slowly while mixer is running, not exceeding maximum recommended volume of water. Continue mixing for a minimum of 3 minutes and stop only when material has obtained a consistent homogeneous mix. Allow 5 minutes mixing time if using a spiral blade drill mixer. Keep grout mix well agitated until placed.

### Placing:

**Dry Pack** – Firmly press or ram In-Pakt Precision Grout into place using metal or hardwood tamping tools and a mason's trowel. Grout consistency when pressed into a firm ball should display no cracking or excessive surface moisture.

**Plastic** – Rod In-Pakt Precision Grout into place or trowel into areas where material can not flow into place. Grout consistency should be similar to that of a masonry mortar (between 100 – 115% flow, ASTM C 1437).

**Fluid** – In-Pakt Precision Grout may be poured or pumped into place. Pour continuously with adequate head pressure or pump into place ensuring that all voids are completely filled. Formwork joints should be caulked with suitable material. Adequately vent high points to allow entrapped air to escape.

### Curing:

Curing is essential to optimize physical properties of the concrete and minimize plastic shrinkage. In-Pakt Precision Grout should be cured immediately after material has reached initial set or immediately after forms are removed in accordance with ACI 308 "Guide to Curing Concrete". Continuously moist cure for a minimum period of 7 days. Alternatively, moist cure for a minimum period of 24 hours and apply a curing compound that complies with ASTM C 309. Curing is particularly critical in rapid moisture loss conditions such as high temperatures, high winds and low humidity.

### TECHNICAL DATA

The following data is representative of typical values achievable under laboratory conditions. Results in the field may vary.

	DRY PACK	PLASTIC	FLUID
<b>MIXING RATIO PER 25 KG (55 LB.)</b>			
	2.3 litres (0.61 US gallon)	3.1 litres (0.82 US gallon)	4.0 litres (1.0 US gallon)
<b>WORKING TIME</b>			
	30 minutes	60 minutes	60 minutes
<b>FLOW TABLE ASTM C 1437</b>			
		110%	> 150%
<b>WET DENSITY ASTM C 138</b>			
		2170 kg/m <sup>3</sup> (135 lb./ft <sup>3</sup> )	2155 kg/m <sup>3</sup> (134 lb./ft <sup>3</sup> )

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	DRY PACK	PLASTIC	FLUID
<b>SET TIME</b>			
<b>ASTM C 191 (METHOD A)</b>			
Initial		3.0 hours	6.5 hours
Final		3.5 hours	8.5 hours
<b>COMPRESSIVE STRENGTH</b>			
<b>ASTM C 109</b>			
1 Day		25 MPa (3625 psi)	20 MPa (2900 psi)
3 Day	50 MPa (7250 psi)	30 MPa (4350 psi)	25 MPa (3625 psi)
7 Day	55 MPa (7975 psi)	45 MPa (6525 psi)	40 MPa (5800 psi)
28 Day	70 MPa (10150 psi)	55 MPa (7975 psi)	50 MPa (7250 psi)
<b>SPLITTING TENSILE STRENGTH</b>			
<b>ASTM C 496</b>			
28 Day		5.0 MPa (725 psi)	3.5 MPa (505 psi)
<b>BOND STRENGTH BY SLANT SHEAR</b>			
<b>ASTM C 882</b>			
28 Day		14.0 MPa (2030 psi)	13.6 MPa (1970 psi)
<b>BOND STRENGTH PERFORMANCE OF ANCHORS *</b>			
<b>ASTM E 1512 and E 488</b>			
24 Hour			50 kN (11250 lb.)
7 Day			75 kN (16875 lb.)
28 Day			90 kN (20250 lb.)
*: Tests conducted with a 15M (#4) steel rebar embedded at a depth of 150 mm (6 in.) in a 19 mm (¾ in.) diameter hole drilled in a 35 MPa concrete.			
<b>MODULUS OF ELASTICITY</b>			
<b>ASTM C 469</b>			
28 Day		27.5 G Pa (4.0 x 10 <sup>9</sup> psi)	22.5 G Pa (3.25 x 10 <sup>9</sup> psi)
<b>HARDENED HEIGHT CHANGE</b>			
<b>ASTM C 1090</b>			
28 Day		0.03%	0.06%
<b>ABSORPTION</b>			
<b>ASTM C 642</b>			
		8.2%	13.0%

	DRY PACK	PLASTIC	FLUID
<b>FREEZE-THAW RESISTANCE</b>			
<b>ASTM C 666</b>			
		105%	108%
		(Excellent durability factor)	
<b>DE-ICING/SALT-SCALING RESISTANCE</b>			
<b>ASTM C 672</b>			
25 Cycles		0.01 kg/m <sup>2</sup> (0.002 lb./ft <sup>2</sup> )	0.04 kg/m <sup>2</sup> (0.008 lb./ft <sup>2</sup> )
50 Cycles		0.09 kg/m <sup>2</sup> (0.02 lb./ft <sup>2</sup> )	0.20 kg/m <sup>2</sup> (0.04 lb./ft <sup>2</sup> )
<b>YIELD</b>			
25 kg (55 lb.)		0.013 m <sup>3</sup> 0.46 ft <sup>3</sup>	0.0136 m <sup>3</sup> 0.48 ft <sup>3</sup>
<b>PACKAGING</b>			
In-Pakt Precision Grout is normally packaged in 25 kg (55 lb.) triple lined bags and polywrapped on wooden pallets. All KING products can be custom packaged to suit specific job requirements.			
<b>STORAGE AND SHELF LIFE</b>			
Material should be stored in a dry covered area protected from the elements. Unopened bags have a shelf life of 12 months.			
<b>SAFETY PROCEDURES</b>			
In-Pakt Precision Grout contains Portland cement. Normal safety-wear such as rubber gloves, dust mask and safety glasses used to handle conventional cement based products should be worn. Material Safety Data Sheets are available upon request.			
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.0001_08/01/2014]			

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