CONCRETE REPAIR : PRODUCTS :

KING PRODUCT TRAINING PROGRAMS

Customized training programs, ranging from 1-hour "lunch box" presentations to full day hands-on training sessions, are available at any time to contractors, distributors, architects and consulting engineers. To book a training session that suits your needs, contact your King Technical Sales Representative.



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CONCRETE REPAIR, PATCHING, RESURFACING AND GROUTING APPLICATION CHART

	CONCRETE REPAIR PRODUCTS											NCRETE ND RESU PROD	GROUTING PRODUCTS											
	FA-S6 CONCRETE	FA-S10 CONCRETE	MS-S6 CONCRETE	MS-S10 CONCRETE	LM-S6 CONCRETE	LM-S10 CONCRETE	MS-S6 SELF- CONSOLIDATING CONCRETE	MS-S10 SELF- CONSOLIDATING CONCRETE	HP-S6 CONCRETE	HP-S10 CONCRETE	DURO- CRETE	DURO- CRETE CT	DURO- CRETE UW	SUPER-TOP OV	IN-PAKT CONSTRUCTION GROUT			IN-PAKT PRECISION GROUT			IN-PAKT PRECISION CT GROUT			MS CABLE GROUT
															Dry Pack	Plastic	Fluid	Dry Pack	Plastic	Fluid	Dry Pack	Plastic	Fluid	
THICKNESS	25 mm	38 mm	25 mm	38 mm	25 mm	38 mm	38 mm	50 mm	25 mm	38 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	n/a
MINIMUM	(1 inch)	(1½ inch)	(1 inch)	(1½ inch)	(1 inch)	(1½ inch)	(1½ inch)	(2 inches)	(1 inch)	(1½ inch)	(½ inch)	(½ inch)	(1/4 inch)	(½ inch)	(½ inch)	(1/4 inch)	(½ inch)	(½ inch)	(1/4 inch)	(1/4 inch)	(½ inch)	(½ inch)	(½ inch)	
THICKNESS	150 mm	600 mm	150 mm	600 mm	150 mm	300 mm	150 mm	600 mm	150 mm	600 mm	38 mm	38 mm	38 mm	38 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	n/a
MAXIMUM	(6 inches)	(24 inches)	(6 inches)	(24 inches)	(6 inches)	(12 inches)	(6 inches)	(24 inches)	(6 inches)	(24 inches)	(1½ inch)	(1½ inch)	(1½ inch)	(1½ inch)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	
APPLICATIONS	Form	Form	Form	Form	Form	Form	Closed Form	Closed Form	Form	Form	Hand	Hand	Hand	Hand	Hand	Hand	Form	Hand	Hand	Form	Hand	Hand	Form	Cable
	& Place	& Place	& Place	& Place	& Place	& Place	& Place	& Place	& Place	& Place	Patch	Patch	Patch	Patch	Patch	Patch	& Place	Patch	Patch	& Place	Patch	Patch	& Place	Grouting
PUMPABLE	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No	No	No	No	No	No	No	Yes	No	No	Yes	No	No	Yes	Yes
SET TIME	8	8	8	8	8	8	8	8	4	4	25	5	30	25	3	3	6.5	3	3	6.5	3	3	5.5	8
(INITIAL)	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours	minutes	minutes	minutes	minutes	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours
SET TIME	10	10	10	10	10	10	10	10	6	6	10	7	45	45	3.5	3.5	8.5	3.5	3.5	8.5	3.5	3.5	7	10
(FINAL)	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours	minutes	minutes	minutes	minutes	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours
COMPRESSIVE STRENGTH	E																							
1-DAY	15 MPa	15 MPa	20 MPa	20 MPa	10 MPa	10 MPa	10 MPa	10 MPa	40 MPa	40 MPa	15 MPa	20 MPa	20 MPa	25 MPa	30 MPa	25 MPa	20 MPa	30 MPa	25 MPa	20 MPa	30 MPa	25 MPa	15 MPa	28 MPa
	(2175 psi)	(2175 psi)	(2900 psi)	(2900 psi)	(1500 psi)	(1500 psi)	(1500 psi)	(1500 psi)	(5800 psi)	(5800 psi)	(2175 psi)	(2900 psi)	(2900 psi)	(3625 psi)	(4350 psi)	(3625 psi)	(2900 psi)	(4350 psi)	(3625 psi)	(2900 psi)	(4350 psi)	(3625 psi)	(2175 psi)	(4060 psi)
3-DAY	30 MPa	30 MPa	25 MPa	25 MPa	20 MPa	20 MPa	25 MPa	25 MPa	45 MPa	45 MPa	25 MPa	25 MPa	30 MPa	27 MPa	45 MPa	30 MPa	25 MPa	50 MPa	30 MPa	25 MPa	40 MPa	30 MPa	20 MPa	40 MPa
	(4350 psi)	(4350 psi)	(3625 psi)	(3625 psi)	(2900 psi)	(2900 psi)	(3625 psi)	(3625 psi)	(6525 psi)	(6525 psi)	(3625 psi)	(3625 psi)	(4350 psi)	(3900 psi)	(6525 psi)	(4350 psi)	(3625 psi)	(7250 psi)	(4350 psi)	(3625 psi)	(5800 psi)	(4350 psi)	(2900 psi)	(5800 psi)
7-DAY	35 MPa	35 MPa	35 MPa	35 MPa	25 MPa	25 MPa	30 MPa	30 MPa	50 MPa	50 MPa	30 MPa	25 MPa	35 MPa	30 MPa	50 MPa	35 MPa	30 MPa	55 MPa	45 MPa	40 MPa	45 MPa	45 MPa	35 MPa	45 MPa
	(5075 psi)	(5075 psi)	(5075 psi)	(5075 psi)	(3625 psi)	(3625 psi)	(4350 psi)	(4350 psi)	(7250 psi)	(7250 psi)	(4350 psi)	(3625 psi)	(5075 psi)	(4350 psi)	(7250 psi)	(5075 psi)	(4350 psi)	(7975 psi)	(6525 psi)	(5800 psi)	(6525 psi)	(6525 psi)	(5075 psi)	(6525 psi)
28-DAY	45 MPa	45 MPa	45 MPa	45 MPa	35 MPa	35 MPa	40 MPa	40 MPa	60 MPa	60 MPa	35 MPa	30 MPa	40 MPa	35 MPa	65 MPa	40 MPa	35 MPa	70 MPa	55 MPa	50 MPa	55 MPa	55 MPa	40 MPa	60 MPa
	(6525 psi)	(6525 psi)	(6525 psi)	(6525 psi)	(5075 psi)	(5075 psi)	(5800 psi)	(5800 psi)	(8700 psi)	(8700 psi)	(5075 psi)	(4350 psi)	(5800 psi)	(5075 psi)	(9425 psi)	(5800 psi)	(5075 psi)	(10150 psi)	(7975 psi)	(7250 psi)	(7975 psi)	(7975 psi)	(5800 psi)	(8700 psi)
WORKING	60	60	60	60	60	60	60	60	30-45	30-45	10	5	5	20	30	60	60	30	60	60	30	60	60	15
TIME	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes
PACKAGING	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 25 kg (55 lb.)	BAG 25 kg (55 lb.)	BAG 25 kg (55 lb.)	BAG 18.5 kg (40.8 lb.)	g BAG 25 kg (55 lb.)			ВА	G 25 kg (55	lb.)	BAC	BAG 30 kg (66 lb.)		

: CONCRETE : REPAIR : PRODUCTS

How do you start a successful concrete repair project?





Your project is always unique, and often comes with its own unique set of challenges.

Let our team of professionals develop an innovative, pre-packaged solution that answers **your** needs and meets **your** project challenges.

An innovative approach with time-tested materials

Let your King Representative show you how our tried-and-true, pre-packaged materials can eliminate the guess work and simplify your concrete repair projects.



Concrete Repair and Rehabilitation:

Our Philosophy

QUALITY PRODUCTS

A successful project starts with quality products. Anything less puts even the best construction crews at a disadvantage. Through our philosophy of continuous improvement, King Packaged Materials Company ensures that each bag of product contains the same, consistently high-quality components, which allows construction crews to focus on getting the job done.

SIMPLE TO USE

All King products are designed to take away the guess work. Our products contain a wide range of admixtures and only require the addition of water. Liquid polymers, aggregates and other on-site additives that can complicate the mixing process are not required.

CONCRETE PATCHING VS. CONCRETE REPAIR

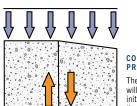
Exterior concrete is susceptible to damage when continuously exposed to freeze-thaw cycles and de-icing salts. Areas with minor surface scaling will need to be patched using concrete patching and resurfacing products. Structural repairs, which often require partial and full depth replacement of concrete, should be repaired with concrete. The reason is simple, as compatibility of repair material is crucial. King's philosophy is to patch concrete with patching materials, re-surface concrete with re-surfacing materials, but repair concrete with concrete.

REPAIRING CONCRETE WITH CONCRETE

The Importance of Compatible Properties

COMPRESSION CREEP

The loss of concrete thickness under a constant load.



DESIGN CRITERIA:

The engineer designs

the repair with a

carrying capacity.

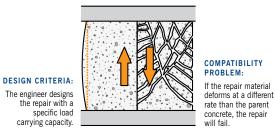
specific load

COMPATIBILITY PROBLEM:

The repair material will carry a load initially, but over time, the repair material relaxes under creep deformation.

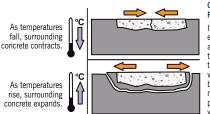
MODULUS OF ELASTICITY

The deformation of concrete under a load.



COEFFICIENT OF THERMAL EXPANSION

The rate at which concrete expands and contracts due to changes in temperature.



COMPATIBILITY PROBLEM:

If the repair material expands or contracts at a different rate than the parent concrete, the repair material will crack or the bond between the repair material and the parent concrete will fail.

CONCRETE REPAIR PRODUCTS



Fly ash enhanced, high performance, concrete repair material, containing 6 mm (1/4 inch) stone and intended for partial depth repairs.



FA-S10 Concrete

FA-S6 Concrete

Fly ash enhanced, synthetic fiber reinforced, high performance, multi-purpose, concrete repair material, containing 10 mm (3/8 inch) stone and intended for partial and full depth repairs.



MS-S6 Concrete

Silica fume enhanced, high performance, concrete repair material, containing 6 mm (1 / $_{4}$ inch) stone and intended for partial depth repairs.



MS-S10 Concrete

Silica fume enhanced, synthetic fiber reinforced, high performance, multi-purpose, concrete repair material, containing 10 mm ($^3/_8$ inch) stone and intended for partial and full repairs.



LM-S6 Concrete

High performance, polymer modified, pre-packaged concrete repair material, containing 6 mm (1/4 inch) stone and intended for partial depth repairs.



LM-S10 Concrete

High performance, polymer modified, pre-packaged, concrete repair material, containing 10 mm (3/8 inch) stone and intended for partial and full depth repairs.



MS-S6 Self-Consolidating Concrete

Silica fume enhanced, high performance, self-consolidating, concrete repair material, containing 6 mm (¹/₄ inch) stone and intended for partial depth repairs.



MS-S10 Self-Consolidating Concrete

Silica fume enhanced, high performance, self-consolidating, concrete repair material, containing 10 mm (³/₈ inch) stone and intended for partial and full depth repairs.



HP-S6 Concrete

High performance, rapid hardening, pre-packaged concrete material, containing 6 mm ($^{1}/_{4}$ inch) stone and intended for partial depth repairs.



HP-S10 Concrete

High performance, rapid hardening, prepackaged, multi-purpose, concrete material, containing 10 mm (³/₈ inch) stone and intended for partial and full depth repairs.





Duro-Crete

High performance, fast setting, concrete repair mortar for partial depth repairs.



Duro-Crete CT

High performance, fast setting, concrete repair mortar for cold temperature applications.



Duro-Crete UW

High performance, fast-setting, concrete repair mortar for underwater repairs.



Super-Top OV

High performance, one component, polymer modified, concrete repair mortar for overhead, vertical or horizontal applications.

GROUTING PRODUCTS



In-Pakt Construction Grout

General purpose, pumpable, non-shrink, cementitious grout.



In-Pakt Precision Grout

High performance, pumpable, non-shrink, cementitious grout.



In-Pakt Precision CT Grout

High performance, pumpable, non-shrink, cementitious grout for cold temperature applications.



MS Cable Grout

Neat, silica fume enhanced, high performance, shrinkage compensated, anchoring grout.

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CONCRETE REPAIR, PATCHING, RESURFACING AND GROUTING APPLICATION CHART

	CONCRETE REPAIR PRODUCTS										CONCRETE PATCHING AND RESURFACING PRODUCTS				GROUTING PRODUCTS									
	FA-S6 CONCRETE	FA-S10 CONCRETE	MS-S6 CONCRETE	MS-S10 CONCRETE	HP-S6 CONCRETE	HP-S10 CONCRETE	LM-S6 CONCRETE	LM-S10 CONCRETE	MS-S6 SELF- CONSOLIDATING CONCRETE	MS-S10 SELF- CONSOLIDATING CONCRETE	DURO- CRETE	DURO- CRETE UW	DURO- CRETE CT	SUPER-TOP OV	MS CABLE GROUT				IN-PAKT PRECISION GROUT			IN-PAKT PRECISION CT GROUT		
			•							•						Dry Pack	Plastic	Fluid	Dry Pack	Plastic	Fluid	Dry Pack	Plastic	Fluid
THICKNESS	25 mm	38 mm	25 mm	38 mm	25 mm	38 mm	25 mm	38 mm	38 mm	50 mm	6 mm	6 mm	6 mm	6 mm	n/a	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm	6 mm
MINIMUM	(1 inch)	(1½ inch)	(1 inch)	(1½ inch)	(1 inch)	(1½ inch)	(1 inch)	(1½ inch)	(1½ inch)	(2 inches)	(½ inch)	(½ inch)	(½ inch)	(½ inch)		(1/4 inch)	(½ inch)	(½ inch)	(1/4 inch)	(½ inch)	(½ inch)	(½ inch)	(½ inch)	(½ inch)
THICKNESS	150 mm	600 mm	150 mm	600 mm	150 mm	600 mm	150 mm	300 mm	150 mm	600 mm	38 mm	38 mm	38 mm	38 mm	n/a	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm	50 mm
MAXIMUM	(6 inches)	(24 inches)	(6 inches)	(24 inches)	(6 inches)	(24 inches)	(6 inches)	(12 inches)	(6 inches)	(24 inches)	(1½ inch)	(1½ inch)	(1½ inch)	(1½ inch)		(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)	(2 inches)
APPLICATIONS	Form & Place	Form & Place	Form & Place	Form & Place	Form & Place	Form & Place	Form & Place	Form & Place	Closed Form & Place	Closed Form & Place	Hand Patch	Hand Patch	Hand Patch	Hand Patch	Cable Grouting	Hand Patch	Hand Patch	Form & Place	Hand Patch	Hand Patch	Form & Place	Hand Patch	Hand Patch	Form & Place
PUMPABLE	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
SET TIME	8	8	8	8	4	4	8	8	8	8	25	30	5	25	8	3	3	6.5	3	3	6.5	3	3	5.5
(INITIAL)	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours	minutes	minutes	minutes	minutes	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours
SET TIME	10	10	10	10	6	6	10	10	10	10	10	45	7	45	10	3.5	3.5	8.5	3.5	3.5	8.5 hours	3.5	3.5	7
(FINAL)	hours	hours	hours	hours	hours	hours	hours	hours	hours	hours	minutes	minutes	minutes	minutes	hours	hours	hours	hours	hours	hours		hours	hours	hours
COMPRESSIVE STRENGTH																								
1-DAY	15 MPa	15 MPa	20 MPa	20 MPa	40 MPa	40 MPa	10 MPa	10 MPa	10 MPa	10 MPa	15 MPa	20 MPa	20 MPa	25 MPa	28 MPa	30 MPa	25 MPa	20 MPa	30 MPa	25 MPa	20 MPa	30 MPa	25 MPa	15 MPa
	(2175 psi)	(2175 psi)	(2900 psi)	(2900 psi)	(5800 psi)	(5800 psi)	(1500 psi)	(1500 psi)	(1500 psi)	(1500 psi)	(2175 psi)	(2900 psi)	(2900 psi)	(3625 psi)	(4060 psi)	(4350 psi)	(3625 psi)	(2900 psi)	(4350 psi)	(3625 psi)	(2900 psi)	(4350 psi)	(3625 psi)	(2175 psi)
3-DAY	30 MPa	30 MPa	25 MPa	25 MPa	45 MPa	45 MPa	20 MPa	20 MPa	25 MPa	25 MPa	25 MPa	30 MPa	25 MPa	27 MPa	40 MPa	45 MPa	30 MPa	25 MPa	50 MPa	30 MPa	25 MPa	40 MPa	30 MPa	20 MPa
	(4350 psi)	(4350 psi)	(3625 psi)	(3625 psi)	(6525 psi)	(6525 psi)	(2900 psi)	(2900 psi)	(3625 psi)	(3625 psi)	(3625 psi)	(4350 psi)	(3625 psi)	(3900 psi)	(5800 psi)	(6525 psi)	(4350 psi)	(3625 psi)	(7250 psi)	(4350 psi)	(3625 psi)	(5800 psi)	(4350 psi)	(2900 psi)
7-DAY	35 MPa	35 MPa	35 MPa	35 MPa	50 MPa	50 MPa	25 MPa	25 MPa	30 MPa	30 MPa	30 MPa	35 MPa	25 MPa	30 MPa	45 MPa	50 MPa	35 MPa	30 MPa	55 MPa	45 MPa	40 MPa	45 MPa	45 MPa	35 MPa
	(5075 psi)	(5075 psi)	(5075 psi)	(5075 psi)	(7250 psi)	(7250 psi)	(3625 psi)	(3625 psi)	(4350 psi)	(4350 psi)	(4350 psi)	(5075 psi)	(3625 psi)	(4350 psi)	(6525 psi)	(7250 psi)	(5075 psi)	(4350 psi)	(7975 psi)	(6525 psi)	(5800 psi)	(6525 psi)	(6525 psi)	(5075 psi)
28-DAY	45 MPa	45 MPa	45 MPa	45 MPa	60 MPa	60 MPa	35 MPa	35 MPa	40 MPa	40 MPa	35 MPa	40 MPa	30 MPa	35 MPa	60 MPa	65 MPa	40 MPa	35 MPa	70 MPa	55 MPa	50 MPa	55 MPa	55 MPa	40 MPa
	(6525 psi)	(6525 psi)	(6525 psi)	(6525 psi)	(8700 psi)	(8700 psi)	(5075 psi)	(5075 psi)	(5800 psi)	(5800 psi)	(5075 psi)	(5800 psi)	(4350 psi)	(5075 psi)	(8700 psi)	(9425 psi)	(5800 psi)	(5075 psi)	(10150 psi)	(7975 psi)	(7250 psi)	(7975 psi)	(7975 psi)	(5800 psi)
WORKING	60	60	60	60	30-45	30-45	60	60	60	60	10	5	5	20	15	30	60	60	30	60	60	30	60	60
TIME	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes	minutes
PACKAGING	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 30 kg (66 lb.)	BAG 25 kg (55 lb.)	BAG 25 kg (55 lb.)	BAG 25 kg (55 lb.)	BAG 18.5 kg (40.8 lb.)	BAG 30 kg (66 lb.)	BAG 25 kg (55 lb)					BAG 25 kg (55 lb.)			

: CONCRETE : REPAIR : PRODUCTS

How do you start a successful concrete repair project?



