

EMACO® SET 45

Chemical-action concrete

DESCRIPTION

Emaco Set - 45 is a one component concrete repair and anchoring material which sets in 15 minutes and will accommodate rubber-tyre traffic 45 minutes after placement. This product bonds to both concrete and masonry and can be used indoors and outdoors for highway and heavy industrial repair jobs. There are two grades: **Emaco Set - 45 Normal** for use in ambient temperatures below 29°C; and **Emaco Set - 45 Hot Weather** for use in ambient temperatures ranging from 29°-38°C.

Note: Regardless of the temperature, **Emaco Set - 45 Hot Weather** formula with aggregate should be used for large placements.

RECOMMENDED FOR

- Bridge deck and highway overlays
- Concrete pavement joint repairs
- Airport runway light installations
- Full depth structural repairs
- Expansion device nosings
- Anchoring iron or steel bridge and balcony railings
- Commercial freezer room repairs
- Loading dock repairs
- Parking deck and ramp repairs
- Heavy industrial repairs

FEATURES AND BENEFITS

- *Easy-to-use – just add water*
- *Wide temperature use range – from below freezing to hot weather exposures*
- *Rapid, high-early strength*
- *Superior bonding – no bonding agent is needed*
- *Resistant to freeze/thaw cycles and deicing chemicals*
- *Thermal expansion/contraction rate similar to Portland cement concrete*
- *Virtually no drying shrinkage*
- *Only air-curing required*

ESTIMATING DATA

Note: WATER CONTENT IS CRITICAL.

A 20kg bag of **Emaco Set - 45** concrete mixed with a maximum 1.4 litres of water produces a volume of approximately 0.01m³. A 60% extension (12kg/bag) using 14mm, rounded, sound aggregate produces a volume of approximately 0.014m³.

APPLICATION DIRECTIONS

Substrate condition

Surface to be repaired should be sound and free from oils and grease and other contaminants. To obtain permanent type repairs the edge of the patch should be square cut and to a depth of not less than 10mm. Flush the area with clean water to remove all debris and dust[®].

Mixing Instructions

Use neat material for patches less than 25mm in depth or width. For deeper patches, 20kg bag of **Emaco Set – 45 Hot Weather** concrete must be extended by adding up to 12kg of properly graded, dust-free, hard, rounded aggregate[®]. (Do not use calcareous aggregate made from soft limestone. Test aggregate for fizzing with 10% HCl. If fizzing occurs, aggregate is unsuitable for use with **Emaco Set - 45**). Mix for approximately 1 to 1½ minutes and place. **Emaco Set - 45 Normal** will not freeze at temperatures above -7°C.

Note: Consult the product bag for detailed preparation and application information.

CURING

Emaco Set - 45 should air dry for proper cure. Liquid membrane curing compounds or plastic sheeting may be used to give the surface early protection from rain, but **never** wet cure **Emaco Set - 45**.

COLOUR

Emaco Set - 45 dries to the colour of Portland cement mortar.

PRECAUTIONS

- Do not add sand, fine aggregate or Portland cement to **Emaco Set - 45** concrete.
- Do not use **Emaco Set - 45** for patches less than 13mm deep. For deep patches, **Emaco Set - 45 Hot Weather** formula, extended with aggregate, should be used.
- WATER CONTENT IS CRITICAL. Do not deviate from the recommended water content printed on the bag.
- When mixing or placing **Emaco Set - 45** in a closed area, provide adequate ventilation.
- Do not use **Emaco Set - 45** as a precision, nonshrink grout.
- Never featheredge. For best results, always sawcut the edges of a patch.

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- Moisture loss during the first three hours after placement must be avoided. Protect **Emaco Set - 45** with plastic sheeting or curing compound in the event of rapid evaporation conditions. Do NOT wet cure.
- Do not place **Emaco Set - 45** on a hot (32°C) dry substrate.
- When used in contact with galvanised steel or aluminum, consult your local Degussa Construction Chemicals technical representative.

CLEANING

Tools should be cleaned with water before material hardens. Hardened material can be mechanically removed.

SHELF LIFE

Emaco Set – 45 can be stored in tightly sealed original bags for 12 months if kept dry and at moderate temperature.

PACKAGING

Emaco Set – 45 is packaged in 20kg moisture resistant bags.

PERFORMANCE DATA

Typical Compressive Strengths – MPa (Materials and curing times at specified temperatures)
AS2073 Part 10 (Modified) [All tests were performed with neat (no aggregate) material.]

	Plain Concrete @ 22°C	Emaco Set - 45 Normal @ 22°C	Emaco Set – 45 Normal @ 2°C	Emaco Set - 45 Hot Weather @ 35°C
1 hour	-	20	-	-
3 hours	-	-	-	20
1 day	3.5	40	10	40
28 days	27.6	48	48	48

Modulus of Elasticity (ASTM C469)	Emaco Set-45 Normal 28.8 GPa Emaco Set-45 Hot Weather 33.8 GPa	7 days 31.4 GPa 28 days 36.2 GPa
Freeze/Thaw Durability Test [®] (ASTM C 666, Procedure A modified)	Both Normal and Hot Weather Emaco - Set 45 achieved a Relative Dynamic Modulus greater than 80% after 300 cycles.	
Sulfate Resistance (ASTM C 1012)	Emaco Set - 45 length change after 52 weeks – 0.9%.	
Typical Setting Times (Gilmore ASTM C 266 modified)	Emaco Set - 45 Normal at 22°C and Emaco Set - 45 Hot Weather at 35°C had the following typical setting times: Initial – 10 to 15 minutes Final – 12 to 20 minutes.	
Coefficient of Thermal Expansion [®] (CRD-C 39-81)	Both Emaco Set - 45 Normal and Emaco Set - 45 Hot Weather had coefficients which equated 12.8 x 10 ⁻⁶ /°C.	
Flexural Strength (ASTM C 78 modified)	75mm x 100mm x 406mm prisms at 1 day strength Emaco Set - 45 mortar – 3.8MPa Emaco Set - 45 mortar with (10mm) pea gravel – 4.2MPa Emaco Set - 45 mortar with (10mm) crushed angular non-calcareous hard aggregate – 4.5MPa	

[®]Surface carbonation inhibits chemical bond. Apply an indicator to the prepared surface to determine if carbonation is present.

[®]Special procedures must be followed when angular aggregate is used. Consult you local Degussa Construction Chemicals technical representative for more information.

[®]Method states that test is discontinued when 300 cycles or an RDM of 60% is reached.

[®] Determined using 25mm x 25mm x 279mm bars. Test was run with neat mixes (no aggregate). Lower coefficient of thermal expansion results are obtained when extended mixes (with aggregate) are used.

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AESe45/6/0505

STATEMENT OF RESPONSIBILITY

The technical information and application advice given in this **Degussa Construction Chemicals** publication are based on the present state of our best scientific and practical knowledge. As the information herein is of a general nature, no assumption can be made as to a product's suitability for a particular use or application and no warranty as to its accuracy, reliability or completeness either expressed or implied is given other than those required by law. The user is responsible for checking the suitability of products for their intended use.

NOTE

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