BUILDING TRUST

PRODUCT DATA SHEET

Parex LA Repair Concrete

Class R4, Flowable, High Strength, Deep Fill, Low Resistivity Cementitious Micro-Concrete

PRODUCT DESCRIPTION

Parex LA Repair Concrete is a cement based, low alkali, one-component, high strength, deep fill micro-concrete with non-shrink properties. The mixed mortar produces a flowable repair mortar suitable for pouring applications meeting the requirements of Class R4 of EN 1504-3. Due to low resistivity, the Product can be used with cathodic protection systems.

USES

- Highway works (particularly suited to motorway bridge repairs).
- Repairs to structural concrete.
- Protection of corroded and damaged reinforced concrete.
- Refurbishment of soffits to bridge beams and crossheads.
- Cathodic protection projects.
- Creating concrete elements (e.g. beams, columns, or underpinning properties).
- Grouting under baseplates.
- Large volume repairs with congested reinforcement or restricted access.
- Deep fill applications (application layer thickness 20 to 500mm).

CHARACTERISTICS / ADVANTAGES

- One-component, ready to use.
- Easy to mix and apply.
- Good early compressive strength (~20 N/mm² at 1 day).
- High final compressive strength (~80 N/mm² at 28 days).
- Non-shrink (in both plastic and hardened states).
- Repair depths up to 500mm in one application.
- Self-compacting (vibration not required).
- Uses aggregates which are not susceptible to Alkali-Silica Reaction (ASR).
- High tensile adhesion / bond strength negating the need for a bonding primer.
- Suitable for use in conjunction with cathodic protection (low resistivity).
- Low chloride content enabling it to be used in contact with steel.
- Can be placed under gravity or pumped.
- Reaction to fire: EuroClass A1.

APPROVALS / STANDARDS

- Conforms to the requirements of EN 1504-3 R4 classification, and the following repair methods:
  - 3.2 Concrete restoration - Recasting with concrete or mortar.
  - 4.4 Structural strengthening – Adding mortar or concrete.
  - 5.3 Increasing physical resistance – Adding mortar or concrete.
  - 6.3 Resistance to chemicals – Adding mortar or concrete.
  - 7.1 Preserving or restoring passivity – Increasing cover with additional mortar or concrete.
  - 7.2 Preserving or restoring passivity – Replacing contaminated or carbonated concrete.
- Complies with the requirements of Design Manual for Roads and Bridges CS 462 Repair and management of deteriorated concrete highway structures (formerly BA 35/90 and BA 52/94).
- Satisfies the requirements of Document: 9-514929-RP-0002: Area 9 Contract P25 - M6 Gravelly Hill Viaduct Concrete Repairs and Cathodic Protection Replacement (often termed 'Midlands Link Specification').

PRODUCT INFORMATION

Chemical Base	Portland cement, selected aggregates and additives.		
Packaging	25kg bag		
Shelf Life	12 Months		
Storage Conditions	Store properly in original unopened, sealed and undamaged packaging in dry and cool conditions.		
Appearance / Colour	Grey powder		
Maximum Grain Size	D_{max}: 4.0 mm		
Density	Cured density typically 2250 to 2300 kg/m³		(12390-7)
Soluble Chloride Ion Content	<0.003%		
Compressive Strength	1 day	~20 N/mm²	(EN 12190)
	3 days	~30 N/mm²	
	7 days	~55 N/mm²	
	14 days	~65 N/mm²	
	28 days	~80 N/mm²	
Modulus of Elasticity in Compression	~28 GPa		(EN 13412)
Flexural Strength	~8 N/mm²		(EN 1015-11)
Tensile Strength	~2.3 N/mm²		(EN 1542)
Coefficient of Thermal Expansion	~10 - 12x10^{-6} /°C		(BS EN 1770)
Electrical Resistivity	~5.7 kΩ·cm		
Reaction to Fire	Euroclass A1		(EN 1504-3 cl. 5.5)

APPLICATION INFORMATION

Yield	This depends on the substrate roughness and thickness of layer applied. As a guide, one 25kg bag yields approximately 12.5 litres of concrete.	
Layer Thickness	20mm minimum / 500mm maximum	
Flowability	750mm in 10 seconds	(EN 13395-3)
Consistency	Flowing concrete	
Ambient Air Temperature	+5°C minimum / +30°C maximum	
Mixing Ratio	3.25 litres (13% by mass) per 25kg bag	
Substrate Temperature	+5°C minimum / +30°C maximum	
Initial set time	~5 hours	(EN 197-1)
Final set time	~8 hours	(EN 197-1)

VALUE BASE

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

ECOLOGY, HEALTH AND 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.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

- Refer to recommendations provided in EN 1504-10.
- Avoid application in direct sun and / or strong wind and / or rain.
- Pour from one side only when using shutters / formwork.
- Do not use vibrating pokers.
- Do not add water over recommended dosage.
- Apply only to sound, prepared substrates.
- Do not add additional water during the surface finishing as this will cause discoloration and cracking.
- Protect freshly applied material from freezing.
- If pumping (recommended for large volume placement):

1. Ensure suitable equipment is used (e.g. Putzmeister SP 11 TMR with a 4-cylinder diesel engine). NOTE: Not all Putzmeister SP 11 models have the same power!
2. Lubricate / prime all hoses with a cement slurry ('double cream' consistency) immediately prior to use.
3. Attach hoses one at a time after priming (pump Parex LA Repair Concrete to the end of each section before attaching a subsequent primed hose).

NOTE: Always conduct equipment trials to confirm the product can be pumped satisfactorily before full project application.

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete:
The concrete shall be free from dust, loose material, surface contamination and materials which reduce bond or prevent suction or wetting by repair materials.
Steel Reinforcement:
Rust, scale, mortar, concrete, dust and other loose and deleterious material which reduces bond or contributes to corrosion shall be removed to a minimum standard of Sa2.
Reference should also be made to EN 1504-10 for specific requirements.
Shutter / Formwork:
Where formwork is to be used, all formwork should be of adequate strength, treated with release agent and sealed to prevent leakage. Ensure formwork includes outlets for extraction of the pre-soaking water. A header box / hopper should be constructed on one side of the formwork so that a head of 150 to 200 mm can be maintained during the pouring operation.
Substrate Preparation
Concrete:
Delaminated, weak, damaged and deteriorated concrete, and where necessary sound concrete, shall be removed by suitable mechanical or very high pressure waterblasting [up to 110 mPa (16500 psi)] techniques. Tying wire fragments, nails and other metal debris embedded in the concrete should be removed where possible.
The edges where concrete is removed should be cut at a minimum angle of 90° to avoid undercutting and a maximum angle of 135° to reduce the possibility of debonding with the top surface of the adjacent sound concrete, and should be roughened sufficiently to provide a mechanical key between the original material and Parex LA Repair Concrete repair mortar.
Ensure sufficient concrete is removed from around reinforcement to allow coating and compaction of the repair material.
The concrete substrate should be pre-soaked with clean potable water continuously for 2 to 6 hours prior to repair mortar application.
Immediately before pouring repair mortar, remove all excess or standing water from within repair area, any formwork, cavities or pockets.
Steel Reinforcement:
Surfaces should be prepared using abrasive blast cleaning techniques or high pressure waterblasting [up to 60 mPa (9000 psi)] techniques.
Where exposed reinforcement is contaminated with chloride or other material which may cause corrosion, the reinforcement shall be cleaned by low pressure waterblasting [up to 18 mPa (2700 psi)].
Reinforcement Corrosion Protection Coating:
Where a coating is required as a barrier, apply to the whole exposed circumference two coats of Sika® MonoTop®-1010 or SikaTop® Armatec®-110 EpoCem® (refer to the relevant Product Data Sheet).
Reference should also be made to EN 1504-10 for specific requirements.

MIXING

Place the required quantity of water into a suitable forced action mixer such as a Creteangle. Slowly add the powder to the water whilst continuously mixing. After all the powder is added, mix for a further minute to ensure a smooth lump-free consistency is achieved.

APPLICATION

Ensure sufficient Parex LA Repair Concrete has been mixed and available so the placing operation can be carried out in one continuous pour. Place from one side of the formwork / shuttering until the area is full. When placing through a flexible tube to the bottom of the section, pour slowly and continuously to displace air upwards within the work piece. For cold weather working, consider using warm water to assist with achieving strength gain and other physical properties.

CURING TREATMENT

At temperatures between +5°C and +35°C, formwork should be left in place until the compressive strength of the Parex LA Repair Concrete has reached at least 10 N/mm². Once the formwork has been struck, any exposed concrete should be cured immediately to ensure full cement hydration and minimise cracking. Use polythene sheeting taped down at edges or other approved method. In cold ambient conditions protect recently placed concrete from freezing.

CLEANING OF TOOLS

Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be mechanically removed.

LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

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.

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