

PRODUCT DATA SHEET

PAREX® 2601 High Performance Bedding Mortar

Non-shrink, very high strength, high flow, cementitious grout specifically designed for bedding / grouting bridge bearings in compliance with the Manual of Contract Documents for Highway Works (MCHW) Volume 1 Specification for Highway Works (SHW) Clause 2601.

DESCRIPTION

PAREX® 2601 High Performance Bedding Mortar is a Portland cement based product giving very high strength, high flow and non-shrink properties. Fully compliant with the Specification for Highway Works (SHW) Clause 2601 - *Bedding Mortar*, the product has been specifically formulated for securing bridge bearings. The placed grout gives structural support and offers good vibration resistance.

USES

The product has been specifically formulated to meet the requirements of the Specification for Highway Works (SHW) Clause 2601 - *Bedding Mortar*, with the main function being the support of bridge bearings.

The product can also be used for the following applications:

- Void filling.
- Dowel bars between precast units.
- Stanchion bases.
- Machine bed plates.
- Ground anchors.
- Rail and track applications.
- Wind turbine bases.
- Securing signage and street furniture.

FEATURES

- Specifically designed for bridge bearings.
- Fully satisfies the Manual of Contract Documents for Highway Works (MCHW) Volume 1 Specification for Highway Works (SHW) Clause 2601: *Bedding Mortar*.
- Stable Product - does not segregate, bleed, effervesce or trap air.
- Pre-packaged, only requiring the addition of water.
- Good early strength gain (~70 N/mm² after 7 days).
- Very high ultimate strength (28-day compressive strength ~90 N/mm²).
- Excellent flow characteristics.
- Non-shrink (shrinkage compensated).
- Can be safely used in contact with steel (low chloride content).
- Low water absorption.
- Resistance to sea water and mild alkali attack.
- Pumpable.
- Provides exceptional structural support and vibration resistance.
- EuroClass A1 reaction to fire rating.
- Total acid-soluble sulfate content (SO₄) less than 5% of the mass of cement (determined in accordance with Test No. 2 in TRL Report 447).
- Good freeze-thaw stability.
- Resistant to sea water, petroleum products and mild alkali attack.
- 28-day compressive strength fully satisfies the requirements of the Midland Links Specification.
- Supplied with Certificate of Analysis.

CERTIFICATES AND TEST REPORTS

- Complies with the requirements of Corps of Engineers Specification for Non-Shrink Grout CRD C621.
- Fully satisfies the requirements of the Manual of Contract Documents for Highway Works (MCHW)

PRODUCT INFORMATION

Composition	Portland cement (complying with BS EN 197-1) based grout, with selected fillers and aggregates, and synergistic additives.			
Packaging	25 kg bags			
Shelf life	6 months from date of manufacture			
Storage conditions	<ul style="list-style-type: none"> ▪ Store undercover in containers in dry conditions at a temperature of between +10°C and +27°C in undamaged and unopened original sealed packaging. ▪ The storage containers shall be damp-proof, leak-proof and readily emptied of their contents. ▪ Storage containers shall be marked with the batch reference number, manufacturer's (Sika's) name, net weight and such warnings or precautions concerning the contents as are required. ▪ The material shall not be removed from the store for use in the Works until immediately prior to mixing. ▪ Material shall not be used more than six months after the date of manufacture. 			
Appearance and colour	Grey powder			
Maximum grain size	Declaration	MCHW Requirement		
	$D_{max} 0.8\text{mm}$	$\leq 2.8\text{mm}$		
Density	~2250 kg/m ³			
Total chloride ion content	<0.1% (by mass of cement)			
Compressive strength	1 Day	3 Days	7 Days	28 Days (BS EN 12390-1, 2 and 3)
	~20 N/mm ²	~40 N/mm ²	~70 N/mm ²	~90 N/mm ² *
	<p>* Average of six 70 mm cubes (all ≥ 87 N/mm² with the difference between the highest and lowest values being 3.4% of the average), cast without compaction, and cured at 20°C (damp-cured for 24 hours, then water cured).</p> <p>The results of the compressive strength tests at 28 days fully satisfy the requirements of the Midland Links Specification.</p>			
Modulus of elasticity in compression	~30 kN/mm ²			
	<p>The elastic stability was determined using three 70 mm cubes. For each test, the casting and curing temperatures was at 20°C in accordance with the MCHW. At an age of 28 days, the cubes were placed in water at 20°C, heated at a uniform rate to 45°C in 24 hours. Upon attaining 45°C, the cubes were sealed in plastic bags and then loaded at a compressive stress of 30 N/mm² for six hours at temperature of 45°C. For each test, four strain gauges (type PL-15-11, gauge length 15 mm, gauge resistance 120 ± 0.3, gauge factor 2.04) were placed on the four vertical faces of the cube under investigation. In addition, a further strain gauge was placed on a reference cube. These were connected to a transistorised strain gauge instrument (Automation - Peekel N.V. Type T200), and a Channel Switch box. Measurements were made immediately and 6 hours after loading.</p>			
	Mean Strain (average of 3 determinations)	MCHW Requirement		
	0.73 %	≤ 1.0 %		
Flexural-strength	~10 N/mm ² (after 28 days)*			
	* Tested in laboratory conditions at 20°C. Results may vary in site conditions.			

Expansion	24 Hours	MCHW Requirement	(ASTM Standard C827-01a)
	1.69 %	0.25 to 2.5 %	
Reaction to fire	EuroClass A1		
Yield	Each 25kg bag will yield ~13 litres of mixed grout at the recommended water addition		
Layer thickness	10 to 350mm		
Flowability	Temperature	Efflux Time*	(ASTM Standard C939-02)
	5°C	137 seconds	
	20°C	147 seconds	
<p>* Average of two results. NOTE: Tests completed at temperatures of 5°C and 20°C within 15 minutes of commencement of mixing. Average efflux time of water: 8.2 seconds.</p> <ul style="list-style-type: none"> The flow characteristics between glass plates were assessed using the apparatus and method of pouring specified in the MCHW (HCD Drawing Number K2) at 5°C and 20°C. The mortar / grout was poured in one corner of the apparatus commencing between 18 and 20 minutes after commencement of mixing. The specification requires that the grout / mortar shall rise at least 10 mm above the underside of the top plate at all positions, without signs of segregation, bleeding, effervescence or air inclusions. The specification requirements were fully satisfied for flow between glass plates at 5°C and at 20°C. 			
Material temperature	+5°C minimum / +25°C maximum (on completion of mixing)		
Ambient air temperature	+5°C minimum / +35°C maximum		
Mixing ratio	5.00 litres of water per 25 kg bag NOTE: Potable water from a water company's supply shall be used for mixing. If this is unavailable, the Contractor shall ensure that the water complies with the guidance given in BS EN 1008. Where testing is necessary, the sulfate content of the water shall be tested in accordance with Test No. 1 in TRL Report 447. The water shall not be used if the sulfate content exceeds 1.4 g of sulfate (as SO ₄) per litre. Water from the sea or tidal rivers shall not be used.		
Substrate temperature	+5°C minimum / +35°C maximum		
Initial set time	~220 minutes		
Final set time	~300 minutes		

BASIS OF PRODUCT DATA

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.

FURTHER DOCUMENTATION

Manual of Contract Documents for Highway Works (MCHW) Volume 1 Specification for Highway Works (SHW) Clause 2601.

ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall

refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

NOTES ON INSTALLATION

- The material shall not be mixed or placed in the Works at ambient temperatures of less than 5°C. If for 24 hours before, during or after placing, the ambient temperature falls below 5°C, the Contractor shall maintain the temperature of the substrate and other adjoining surfaces at not less than 5°C for the duration of the curing period (at least 3 days).
- A water content of 5.00 litres per 25 kg bag of Product shall be used. A maximum tolerance of $\pm 1\%$

of the water content (i.e. 4.95 to 5.05 litres) shall be maintained throughout the Works.

- Only full packs of mortar as supplied shall be mixed. On-site proportioning shall not be permitted.
- The temperature of the mortar on completion of mixing shall be between 5°C and 25°C.
- The mortar shall be poured in one corner of the plinth. The addition of mortar to the sides of the plinth shall only be permitted after the mortar has flowed completely under the plinth.
- No internal metal shims shall be allowed to remain in the hardened bedding mortar except where described in Appendix 26/2 of the Works instruction.

SUBSTRATE PREPARATION

The substrate should be prepared by suitable mechanical preparation techniques, such as high pressure water jetting, breakers, blast cleaning, scabbling, etc. The substrate shall be flushed clean with water 2 hours before placing and maintained wet (i.e. saturated surface dry) until placing commences. Immediately before placing the grout, remove (using a sponge or with compressed air) all excess or standing water from the substrate and within any formwork, cavities or pockets. The underside of the base plate shall be thoroughly cleaned and a mechanical key created to improve bonding / adhesion. Paint, powder coatings, rust, mill scale, etc., and chromium oxide passivation layer on stainless steel, will significantly reduce the bond / adhesion strength.

SUBSTRATE QUALITY / PRE-TREATMENT

Concrete, Mortar and Stone

Surfaces must be sound, clean, free from ice, oils, grease, standing water and any loose or friable particles and any other surface contaminants. The concrete 'pull off' bond (tensile adhesion) strength should be >1.0 MPa.

Steel and Iron

Clean, free from oil, grease, paint, powder coatings, rust, mill scale, etc., and chromium oxide passivation layer on stainless steel, all of which can significantly reduce the bond / adhesion strength.

Rubber

'Rubber' is a generic term and the composition can vary greatly. Any rubber components should be thoroughly cleaned with a suitable solvent to remove any surface residues that might impair bonding / adhesion. It is always recommended that a trial is conducted to confirm suitability (i.e. by measuring bond / tensile adhesion strength) before use on a project.

Shutter / Formwork

All formwork should be of adequate strength, treated with release agent and sealed to prevent leakage. Sealing can be achieved by using Sikaflex®-11FC+ sealant beneath or around formwork, and between joints. 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 grout head of 150 to 200 mm can be maintained throughout the grouting operation.

MIXING

Pour 5.0 litres of clean water into a suitable mixing vessel for each complete 25 kg bag of PAREX® 2601 High Performance Bedding Mortar to be used. Slowly add the powder to the water whilst continually mixing. Mechanical mixing should be carried out using either a high torque slow speed drill with a grout stirrer, or a grout mixer set on slow speed. **This material is not suitable for mixing by hand.** It is of utmost importance that the product is mixed thoroughly enough that a grout consistency is obtained without the addition of further water. Fresh grout should be allowed to briefly (i.e. for 1 minute) stand until the air entrapped by mixing has been released.

NOTE: High speed or colloidal mixing will cause thixotropy, leading to loss of flow and should therefore be avoided.

APPLICATION

The grout should be placed as soon as possible (and within 25 minutes of commencement of mixing). To ensure no air pockets are formed, continuous placing is important, pouring from one corner of the plinth / formwork. The addition of mortar to the sides of the plinth shall only be permitted after the mortar has flowed completely under the plinth. Do not disturb once grouting has been completed. Immediately after placing, the mortar shall be protected to prevent evaporation for at least 3 days.

No internal metal shims shall be allowed to remain in the hardened bedding mortar, except where described in Appendix 26/2 of the Works instruction.

CURING TREATMENT

Freshly placed grout, which is exposed, should be protected from premature drying using an approved curing method (e.g. curing compound such as a Product from the Sikafloor® ProSeal Range, moist geotextile membrane, hessian, polythene sheet, etc.). In cold weather, apply heat blankets to maintain a constant temperature. Curing shall take place for a minimum of 3 days (at least 7 days being preferable).

CLEANING OF EQUIPMENT

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 declared data for this product may vary from country to country. Please consult the local Product Data Sheet for the exact product data.

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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