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## UNIPAK™

### Fast Curing Polyester Resin Mortar

UniPak mortar is a rapid-set, high strength bedding mortar designed to prevent bedding failure, and is suitable for all UK BS EN 124-2 applications.

It can be used on its own or with UniForm chamber extension units which are made from the same two part polyester resin material (a proven material used in highway construction) which sets to form a highly durable, homogenous structure

The resin product avoids many of the problems associated with cement based mortar and allows rapid road opening as it cures in as little as 25 minutes. Operatives simply mix both parts, giving a consistent and repeatable result removing issues of performance loss due to operator judgement or personal mix preferences.

#### KEY ATTRIBUTES

- ✓ Simple installation process using conventional tools
- ✓ High slump resistance mortar
- ✓ Rapid curing time (as little as 30 minutes)
- ✓ Unique colour for inspectors identification
- ✓ Exceeds requirements of CD 534 (formerly HA 104/09)
- ✓ High performance, suitable for all BS EN 124-2 applications

The mortar has a very low slump factor, compared with other mortars, giving excellent support to ironwork in an uncured condition. Its inherent low notch sensitivity means it resists cracking which might be caused by any sharp or angular ironwork.

UniPak has a unique colour so that it can be easily identified and comes in three tub sizes (6.5, 12.5 and 25Kg), suitable for fixing small surface boxes up to largest of covers, reducing waste to a minimum.

The system comprises of two components:

- ▶ Fast curing resin-based mortar to replace traditional poor performance cement mortar.
- ▶ Multi-sized packing plates, replacing ad-hoc packing methods with bricks, wood or other unsuitable materials.

#### AVAILABLE ACCESSORIES

- ▶ UniForm chamber extension units

## UNIPAK RANGE

| STOCK CODE | DESCRIPTION                 |
|------------|-----------------------------|
| YPCR/U6.5  | 6.5Kg tub of UniPak mortar  |
| YPCR/U12.5 | 12.5Kg tub of UniPak mortar |
| YPCR/U25   | 25Kg tub of UniPak mortar   |

## TECHINICAL SPECIFICATION

| PRODUCT INFORMATION |  |
|---------------------|--|
| Form                | Granular   |
| Colour              | Salmon   |
| Hazard information  | IRRITANT - Polyester Resin. Consult Safety Datasheet before use                                    |
| Cleaning            | Clean mixing paddle immediately after mixing mortar by rotating paddle in a dry granular substance |
| Packaging           | 25Kg, 12.5Kg & 6.5Kg tubs  |
| Storage             | Store unopened containers in a cool, dry location, away from extremes of temperature               |
| Shelf life          | 9 months in unopened manufacturers containers  |

| APPLICATION INFORMATION |   |
|-------------------------|---|
| Mix ratio               | 1:1 Liquid:Solid as packaged, no part mixing permitted          |
| Application temperature | 1°C to 30°C   |
| Working time            | 15 minutes @ 20°C   |
| Setting time            | 20 - 25 minutes   |
| Time to traffic         | Vehicle traffic - withing 1 hour (depending on site conditions) |
| Bed thickness           | 10 - 50mm   |
| Coverage                | 1 25kg pack covers approximately 1m <sup>2</sup> @ 10mm         |
| Density                 | 2200Kg/m <sup>3</sup>   |
| Shrinkage               | <0.1%   |
| Adhesion Strenght       | > 3 MPa to concrete   |
| Slump Characteristics   | 100mm (non slump)   |
| Mechanical Mixing       | Yes   |

| TIME     | TENSILE STRENGTH     | COMPRESIVE STRENGTH    | FLEXURAL STRENGTH      | NOTCH SENSITIVITY     |
|----------|----------------------|------------------------|------------------------|-----------------------|
| 1 hour   | 9 N/mm <sup>2</sup>  | 60.7 N/mm <sup>2</sup> | 22.3 N/mm <sup>2</sup> | 8.8 N/mm <sup>2</sup> |
| 2 hours  | 10 N/mm <sup>2</sup> | 70.7 N/mm <sup>2</sup> | n/a                    | 9.4 N/mm <sup>2</sup> |
| 3 hours  | n/a                  | n/a                    | 26.1 N/mm <sup>2</sup> | 9.5 N/mm <sup>2</sup> |
| 24 hours | n/a                  | n/a                    | n/a                    | n/a                   |
| 28 days  | 13 N/mm <sup>2</sup> | 87.3 N/mm <sup>2</sup> | n/a                    | n/a                   |

## DIRECTIONS FOR CORRECT USE

### PREPARATION

All substrates must be suitable to receive bedding as per current good working practices. All substrates should be clean, dry, thoroughly sound and free from oils, grease, dust, loose particles or any other contaminants which may interfere with adhesion.

### MIXING (1:1, LIQUID:POWDER RATIO)

Add the contents of the liquid additive tin to its bucket container, then slowly add the contents of the filler bag while mixing thoroughly with a slow speed drill and paddle. Mix for approximately 2 minutes. Extra liquid additive should not be added as this will reduce the hardening properties and slump resistance of UniPak mortar.

**IMPORTANT NOTE:** The mortar will begin to set after approximately 15 minutes, after which do not try to re-mix or wet-up UniPak (which at this point has gone off) with additional resin, as this will result in mortar that will not harden.

### APPLICATION

UniPak mortar can be applied in a bed of 10 - 50mm in a single pass and should be placed typically within 5 minutes of mixing to allow time for adjustments. The mortar must be compacted and not left as laid and the laid mortar bed must be of even thickness in order to ensure even compaction during tamping. Typically the frame should be placed on the mortar bed without voids (where UniPak Plates are not employed). Tamp the frame in place to achieve the required level. Any exposed mortar should be dressed to envelope the manhole or gully frame but not trowelled smooth. All works should be carried out in line with advice laid out in the relevant sections of the Design Manual for Roads and Bridges. An alternative method of supporting the frame on UniPak wedges and packing mortar under the frame can be employed where preferred or where the mortar working time is too short to use the above typical frame levelling method.

### RESTRICTIONS

Speed of set and strength development will be affected by site and substrate temperature. Warm conditions will accelerate setting and cold conditions will slow setting. Protect freshly placed material from freezing, until set. In adverse weather conditions, UniPak mortar should not be used if the temperature is below 3°C on a falling thermometer or below 3°C on a rising thermometer. Please also refer to the IMPORTANT NOTE in the mixing section above.

### NOTE

- ▶ *Department of Transport Design Manual for Roads and Bridges Volume 7 Section 2 Part 2 HD 27/04 states:*  
"3.11 Mortars for bedding iron work such as manhole cover frames during repairs may be trafficked when the strength is expected to be 20 N/mm<sup>2</sup>. For rapid construction, this strength should be achieved within 2 hours."
- ▶ *Department of Transport Design Manual for Roads and Bridges Volume 7 Section 2 Part 5 HA 104/09 states:*  
"6.1 Chamber tops and gully tops should be bedded upon bedding materials with the following properties:
  - a. The material should be non-shrink. Use of other materials may be considered in consultation with the Overseeing Organisation;
  - b. The material should have a minimum workable life of 15 minutes;
  - c. The compressive strength of the material should exceed 30N/mm<sup>2</sup> in 3 hours;
  - d. The tensile strength of the material should exceed 5N/mm<sup>2</sup> in 3 hours;"
- ▶ *National Roads Authority Manual of Contract Documents for Roadworks Volume 1 Clause 507.17 states:*  
"17 Frames for chamber covers and gratings shall be set in cement mortar designation (i) complying with clause 2404 or a proprietary quick-setting mortar of equivalent strength. Covers and gratings located within the carriageway, hardshoulder or hardstrip shall be set in mortar with the following properties: with the following properties:
  - a. The material shall be non-shrink;
  - b. The material shall have a minimum workable life of 15 minutes;
  - c. The compressive strength of the material shall exceed 30N/mm<sup>2</sup> in 3 hours;
  - d. The tensile strength of the material shall exceed 5N/mm<sup>2</sup> in 3 hours."

