CI/SfB (43)Y Yt3

MAY 2006
PRODUCT DATA SHEET

ARDEX S 21

Rapid Hardening Floor Tile Bedding Mortar

Features

Conforms to EN 12004 C1 F

For fixing floor tiles, pavers, natural stone, etc.

Versatile - use with sharp sand to form ramps, pre-level sub-floors, etc.

Internal or external applications

Fluid/pourable consistency - solid bedding easily achieved

Rapid hardening - grout and walk on after 3 hours

BSI REGISTERED UKAS QUALITY MANAGEMENT 003
Reg No. FM 1207

ARDEX UK LIMITED
Homefield Road, Haverhill, Suffolk CB9 8QP UK.
Telephone: +44 (0)1440 714939
Fax: +44 (0)1440 716660
Technical Services Fax: +44 (0)1440 716640
Email: technical.services@ardex.co.uk
ARDEX online: www.ardex.co.uk

ARDEX S 21

Rapid Hardening Floor Tile Bedding Mortar

DESCRIPTION
The BS EN 12004 C1 F designation for ARDEX S 21 classifies the adhesive as a "fast setting cementitious adhesive". ARDEX S 21 is a special rapid hardening, pourable bedding mortar for floor tiles in internal and external locations. It is especially suitable for fixing large tiles, ceramic and brick pavers, terrazzo tiles and natural stones, etc. Tiles bedded in ARDEX S 21 can be grouted and subjected to loads 3 hours after fixing at normal temperatures. It is particularly suitable for use in situations where the tiling has to be grouted and put into use shortly after bedding, or where low temperatures would unduly extend the setting time of normal cement-based adhesives. ARDEX S 21 is a grey powder based on special cements, high quality synthetic resins and fillers, which is mixed with water to produce an easily applied mortar with a working time of approximately 30 minutes. The mortar adheres strongly to cementitious bases such as concrete, cement/sand screeds etc.

ARDEX S 21 may also be used in conjunction with ARDEX E 90 to provide an elastic and water repellent mortar bed. The use of ARDEX E 90 admix is recommended when fixing large flat backed tiles and smooth backed, dense and fully vitrified ceramics, porcelain, vitreous mosaics etc. The inclusion of ARDEX E 90 will enable tiles to be fixed to concrete or cement/sand screeds with underfloor heating. For further advice on fixing tiles to underfloor heating systems, contact the heating system manufacturers or ARDEX Technical Services Department.

SURFACE PREPARATION
ARDEX S 21 adheres to dry or moist sub-floors, such as cement and sand or concrete screeds, providing they are sound, clean and free of barrier materials. **NOTE:** The requirements given in BS 5385 : Part 3 regarding the age of backgrounds prior to tiling. Dense, smooth and impervious surfaces, e.g. terrazzo, can be primed with ARDEX P 82 prior to fixing tiles in ARDEX S 21, however in wet or external locations fix directly to the cleaned impervious surface using ARDEX S 21 with ARDEX E 90.

MIXING
ARDEX S 21 powder is added to clean water in a clean container whilst stirring and mixed thoroughly to give an easily worked mortar.
The mix proportions by volume are:-

Approximately 4 1/2 parts ARDEX S 21 powder:
1 part water.
A 22kg bag requires approximately 3 1/2 litres of clean water.

The mortar is immediately ready for use and has a working time of about 30 minutes at a temperature of 20°C.

The consistency may be adjusted from a semi-dry mix to a more fluid mix to suit the application. A 22kg bag may be mixed with up to a maximum of 4 1/2 litres of water for levelling sub-floors and bonding the sand filled mortar. The ARDEX S 21 can be mixed with ARDEX E 90, a 22kg bag of ARDEX S 21 requires a 2kg bottle of ARDEX E 90. The 2kg ARDEX E 90 should be diluted with 2 litres of water, however with large format tiles up to an extra 1/2 litre of water may assist solid bedding. ARDEX S 21 should be applied at temperatures above 5°C.

THICKNESS
Floor tiles can be bedded in ARDEX S 21 mortar, minimum bed thickness 2 to 3mm, the bed thickness being determined by the size of the notched trowel used. For pre-levelling the sub-floor, the mixed ARDEX S 21 mortar is suitable for beds up to 10mm thick. For applications over 10mm, the mortar is filled as follows:-
3 parts ARDEX S 21 mortar to 1 part coarse sharp sand (0-5mm) by volume, whilst for particularly thick applications 1 part ARDEX S 21 mortar with up to 1 part coarse sharp sand (0-5mm), by volume to give a semi-dry consistency. With damp sand less mixing water should be used.

APPLICATION
Bedding Technique. The workability of the ARDEX S 21 allows the tiles to be fixed in a single operation so that no voids are left beneath the tiles, eliminating the need for buttering. Use the 8 x 8mm square notched trowel blade, Pajarito No. 49, fitted to the Pajarito Trowel Handle, for a 2.5-3mm bed and the 10 x 10mm square notched trowel blade, Pajarito No. 44 for a 3-4mm bed. The former is suitable for fixing flat backed tiles, quarries, etc., whilst the latter is useful where large sized tiles, or tiles with keyed back profiles, are to be bedded. ARDEX S 21 has an open time of not less than 10 minutes when tested in accordance with BS EN 12004. For optimum performance under typical UK site conditions tiles should be fixed within 10 minutes. When the mixed mortar begins to firm up the material must be discarded. Do not add more water after the initial set has occurred. When fixing tiles with dense smooth backs, or when a water repellent bedding is required, incorporate ARDEX E 90 in the ARDEX S 21.

Levelling Sub-Floors and Forming Falls.
Where the cement and sand or concrete sub-floor requires pre-levelling, prior to fixing ceramic tiles etc., the ARDEX S 21 mortar can be used, including sand/aggregate where necessary, to obtain the required levels. The ARDEX S 21 mortar should be mixed and applied to the prepared sub-floor and floated out to the required level. Where the ARDEX S 21 has to be filled with graded sand etc., for levelling very uneven substrates, a bonding coat of the unfilled ARDEX S 21 mortar should be applied immediately prior to applying the sand filled ARDEX S 21 mortar. Where the base is dense, smooth and impervious the bonding coat should consist of ARDEX S 21 with the addition of ARDEX E 90. The levelling bed should be allowed to set and harden prior to fixing the ceramic tiles etc. Where a fall is required the procedure described above can be adopted to form falls using the standard mix, or bonding a sand filled mix of appropriate workability. Where a particularly thick application is required, e.g. to form a fall from 30mm down, a 22kg bag of ARDEX S 21 can be mixed with 4 litres of water and up to an equal volume of coarse, sharp sand can then be blended in to form a mortar with a screeding consistency to be applied to the bonding coat, as described above.

GROUTING
Tiles fixed with ARDEX S 21 may be trafficked and grouted after three hours at 20°C.

COVERAGE
Approximately 1.8kg of powder/m²/mm - i.e. a 22kg bag is sufficient for fixing approx. 2 1/2m² of tiles with a bed thickness of 5mm and approximately 4m² of tiles with a bed thickness of 3mm.

PACKAGING
ARDEX S 21 is packed in paper sacks incorporating a polyethylene liner - net weight 22kg.

STORAGE AND SHELF LIFE
ARDEX S 21 contains a reducing agent to control the level of Chromium VI when mixed prior to use. ARDEX S 21 must be stored in unopened packaging, clear of the ground in cool dry conditions and protected from excessive draught. If stored correctly, as detailed above, and used within 12 months of the date shown on the packaging, the activity of the reducing agent (added to control the level of soluble Chromium VI) will be maintained and this product will contain, when mixed with water, no more than 0.0002% (2ppm) soluble Chromium VI of the total dry weight of the cement content of this product. ARDEX S 21 must not be used after the end of the declared storage period.

PRECAUTIONS
ARDEX S 21 contains more than 20% Portland cement and, therefore, in line with current legislation, is classified as irritating to eyes and skin. For this reason the following precautions should be observed:- Avoid contact with skin and eyes; in case of contact with the eyes, rinse immediately with plenty of water and seek medical advice; wear suitable gloves and keep the product out of the reach of children. Avoid generation of airborne dust during mixing.

For further information consult the relevant health and safety data sheet.

TECHNICAL DATA

Bulk density of powder	
approximately	1.4kg/litre
Weight of fresh mortar	
approximately	2.1kg/litre
Initial Set (Vicat) DIN 1164	
approximately	1/2 hour
Final Set (Vicat) DIN 1164	
approximately	1 1/2 hours
Compressive Strength (DIN 1164)	
After 1 day	8.0 N/mm²
After 28 days	30.0 N/mm²
Tensile Bending Strength (DIN 1164)	
After 1 day	3.0 N/mm²
After 28 days	10.0 N/mm²
Ball Pressure Hardness (Brinell)	
After 3 hours	8.0 N/mm²
After 1 day	23.0 N/mm²
After 28 days	70.0 N/mm²

PROPERTIES TESTED TO THE REQUIREMENTS OF BS EN 12004

Adhesion Strength (DIN 18156-2)
Greater than 0.5 N/mm² under all test conditions.

Early Tensile Adhesion Strength
0.5 N/mm² after not more than 24 hours

Open Time: Tensile Adhesion Strength
0.5 N/mm² after not less than 10 minutes

CE

ARDEX UK Ltd
Homefield Road, Haverhill, Suffolk, CB9 8QP

04

BS EN 12004
Rapid hardening, pourable floor tile bedding mortar for fixing large tiles, ceramic and brick pavers, terrazzo tiles and natural stones etc. For internal and external applications.
Cementitious mortar C1