BUILDING TRUST

PRODUCT DATA SHEET

Ronafix®

Polymer Admixture for Thin Section High Strength Waterproof Mortars and Fine Concretes

DESCRIPTION

Ronafix® is a single part modified styrene butadiene liquid additive for cement mortars which enhances physical and chemical properties, allows mortars to be placed in thin section, provides waterproofing and resistance to frost and promotes adhesion to building surfaces. Mortars containing Ronafix® are used for a wide range of applications where thin high strength high performance mortars are required. Typical minimum application depth is 6 mm. Ronafix® is supplied as a single component white liquid. According to its specified use within mortars it is diluted with water and added to cement, sand (and aggregate) to provide the required performance characteristics. As a priming or bonding coat Ronafix® is used with cement only to provide adhesion between substrate and mortar.

USES

- Floor screeds
- Concrete repair
- Waterproof renders
- Slurry coats / levelling and protective
- Heavy duty floor toppings
- Protection of steel reinforcement
- Bedding and bonding mortars
- Tanking and waterproofing
- Spatterdash

CHARACTERISTICS / ADVANTAGES

- Mortars can be applied in thin section
- High compressive, tensile and flexural strengths
- Monolithic adhesion to building substrates
- Cured mortars are waterproof and resistant to freeze / thaw cycling
- Mortars, toppings and renders are more resistant to mild chemical attack
- Proven track record since 1969
- Low VOC

PRODUCT INFORMATION

Packaging	5 litres drum, 30 litres drum or 220 litres drum
Appearance / Colour	Milky white
Shelf Life	9 months from the date of production
Storage Conditions	Stored properly in undamaged and unopened original sealed packaging in the temperature range +5 °C to +30 °C. Protect from direct sunlight and frost.

TECHNICAL INFORMATION

Mortar mix design

Ronafix® Mix Designs

Application	Ronafix® mix	Thickness/Notes
Floor screeds and screed repairs	A	6 mm–50 mm
Floor screeds and screed repairs	A1	26 mm+
Floor toppings and topping repairs	B1	26 mm+
Floating floor screeds	F	38 mm+
Concrete repair	D	-
Concrete repair	A	-
Renders	E	Watertight and tanking
Renders	A	Weatherproof
Bedding brick slips, copings	C	6 mm–12 mm typical
Fine concretes	G	25 mm+ typical
Slurry coats	SC	1 mm–3 mm typical

Ronafix® Mix Designs	Cement	Sand	10 mm Aggregate	Ronafix®/ Water
Mix A/m³	500 kg	1250 kg		90 litres/ 90 litres
By Volume	1	2		1 : 1
Mix A1/m³	500 kg	1500 kg		45 litres/ 140 litres
By Volume	1	2.5		1 : 3
Mix B1/m³	500 kg	750 kg	750 kg	45 litres/ 140 litres
By Volume	1	1.25	1.25	1 : 3
Mix C,D,E/m³	500 kg	1250 kg		140 litres/ 40 litres
By Volume	1	2		3 : 1
Mix F/m³	500 kg	1500 kg		45 litres/ 135 litres
By Volume	1	2.5		1 : 3
Mix G/1.4m³	500 kg	1000 kg	1000 kg	45 litres/ 140 litres
By Volume	1	1.5	1.5	1 : 3
Slurry Coat /m³	500 kg	500 kg		350 litres Ronafix®
By Volume	1	1		

Indicative performance of mortar mix

1. Compression, Bond and Shear Bond Strength.
Maximum laboratory strengths are achieved by casting and curing cubes in ideal working conditions; site strengths will be lower.

Ronafix® Mix Design	Mix A	Mix A1
Age	**compression stength /shear bond trength**	**compression strength / bond strength**
7 days	50.5 N/mm² /9.3 N/mm²	38.6 N/mm² /
28 days	52.5 N/mm² /18.1 N/mm²	44.9 N/mm² /3.4 N/mm²

2. Dynamic Modulus BS 1881 : Part 5 :1970

Electrodynamic Method

Days	Ronafix® Mix A	Ronafix® / Ferrocrete	Ronafix®/ Concrete	Control
1	25.0 KN/mm²	29.5 KN/mm²	39.0 KN/mm²	15 KN/mm²
7	24.8 KN/mm²	29.5 KN/mm²	41.3 KN/mm²	30 KN/mm²
28	24.8 KN/mm²	29.0 KN/mm²	41.0 KN/mm²	40 KN/mm²

3. Heat Ageing.

Heat ageing tests are employed to obtain data which has a bearing on long term performance. A general guide is that 1 week at 70 °C approximates to 5 years.

3:1 mortar + 9 litres Ronafix®/50 kg cement.

Control 3:1 mortar. Temp 70 °C

Days	Flexural Strength Sample/Control	Tensile Strength Sample/Control
28	10.5/7.0 N/mm²	3.5/0.7 N/mm²
56	15.5/4.9 N/mm²	3.0/0.0 N/mm²
112	14.7/5.5 N/mm²	2.0/0.0 N/mm²
364	14.1/5.4 N/mm²	2.3/0.0 N/mm²

4. Water Permeability

3:1 mortar Gauging liquid 5:4 Ronafix/water, w/c ratio 0.32

Time	Top Surface	Laitence Removed	Accepted Level
0–10 mins	0.007	0.028	0.250
10–30 mins	0.003	0.019	0.150
30–60 mins	0.000	0.000	-

5. Water Vapour Permeability

Samples : 73 mm dia x 11 mm. 25 °C and RH 75 %

2:1 sand/cement control	42.20 gm/m²/day	-
3:1 sand/cement control*	46.90 gm/m²/day	-
3:1 sand/cement p/c = 1:20	3.60 gm/m²/day	92.3 % Reduction
3:1 sand/cement p/c = 1:10	3.90 gm/m²/day	91.7 % Reduction
3:1 sand/cement p/c = 1:7	1.88 gm/m²/day	96.0 % Reduction

6. Freeze/thaw cycling.

3:1 mortar, p/c = 1:10. 24 hours -18 °C/+20 °C

Flexural Strength Cycles	Sample 1	Sample 2	Control 1	Control 2
0	10.8 N/mm²	11.6 N/mm²	7.2 N/mm²	6.0 N/mm²
15	-	-	4.5 N/mm²	3.2 N/mm²
30	10.5 N/mm²	-	0.0 N/mm²	0.0 N/mm²
60	-	11.0 N/mm²	-	-
120	10.9 N/mm²	10.5 N/mm²	-	-

7. Thermal Coefficient of Linear Expansion
Prisms : 165 x 50 x 50 mm

Temperature Range

per °C x 10^{-6}	+20 °C to +60 °C	-20 °C to +20 °C
Control	12.8	12.7
Ronafix® sample	12.9	12.8

8. Water Penetration

No water penetration for 3 days at 30 metre water head.

9. Water Immersion. BS 12 : 1971
Dumbell specimens. 3:1 sand/cement. p/c 1:10

Days	Initial	28	112	168
Tensile	3.5	3.2	4.9*	3.4
control	1.4	3.4	3.9*	3.8
Adhesion	3.1	2.2	3.3*	2.6
control	1.1	1.5	2.5*	2.2

*tested dry N/mm^2

10. Fire Resistance,
Sample a : Glass Panawall (Insulite) Ronafix® Mix C Stability : 77 minutes
Sample b : 70 x 70 x 25 mm Ronafix® mortar panel. 3:1 sand/cement p/c ratio 1:10. 60 minutes. 900 °C. Sample degraded 1–3 mm.
Sample c: 12 mm Ronafix/sand/cement render bonded with Weldmesh. Maximum furnace temperature 1335 °C at 80 minutes.

11. Steam at 100 °C.
Samples : 250 x 25 x 25 mm sand/cement. p/c 1:10
Steam jet played on surface for 1 hour. Flexural strength tested after 1 and 5 cycles. No loss or gain in strength.

12. Shrinkage 100 °C.
Samples : 300 x 75 x 75 mm prisms

p/c ratio (control)	w/c ratio 0.40	shrinkage % 0.07
1.18	0.34	0.02
1.13	0.34	0.01
1.9	0.30	0.01

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 DOCUMENTS

Ronafix® Priming Coat
In most situations Ronafix® mortars are bonded to the substrate; exceptions are floating screeds using mix design F and brickwork pointing mortar using mix design A. The bonding/primer coat is a mix of Ronafix® and cement in equal proportions measured by weight or volume. The same cement is used in the primer coat and the mortar. The primer coat is applied to the surface after preparation and (in most cases) after damping the surface with clean water. The mortar must be applied to the primer coat before it dries. If it does dry it must be either removed or thoroughly cross hatch scratched and reapplied.

Working Time and Mixing
Mortars containing Ronafix® should be used within the same time scale as conventional mortars; Ronafix® does not act as an accelerator or retarder. In warm conditions Ronafix® modified mortars may achieve a false set on the surface as a result of the polymer film drying. Reworking the mortars without the use of extra liquid will overcome this.
Ronafix® mortars and primers will remain workable for 30–45 minutes depending on material and ambient temperature. In warm conditions this time may reduce.

Hardening and Strength Gain

Typically at 20 °C Ronafix® mortars and fine concretes will have gained reasonable strength after 1–2 days. For heavy stress applications refer to technical data for rate of strength gain. When overlaying with floor finishes or applying paints, coatings or other materials which may be affected by retained moisture within the screed, the relative humidity at the surface and moisture levels must be measured until sufficiently low to accommodate the floor finish.

LIMITATIONS

Mix Components of Ronafix® Mortars

For standard applications Ronafix® is used with cement, sand and water or with cement, sand, aggregate and water. The mix design is determined by the application and standard mixes are contained in this data sheet. Ronafix® has been tested with cements conforming to BSEN197 CEM1 42.5 (and others) and sands to BS882. To ensure optimum performance sands and aggregates used must be clean, and well graded. Mortars and fine concretes based on aggregates with excessive fines will produce a higher water/cement ratio and may result in shrinkage cracking, curling, de-bonding and possible application failure. This is of particular concern when laying Ronafix® B1.

Notes :

1. Cements containing calcium chloride should not be used.
2. Any pigments added must be inorganic and not contain carbon black. The rate of addition should be less than 5 % by weight of cement.
3. When colour matching allow mortar to fully dry out before comparison.
4. When colour matching white cement and coloured sands may be used.
5. Do not attempt to add Ronafix® to mortars which are already plasticised.
6. Ronafix® mortars are not to be used below 5 °C; if work must proceed at low temperatures consult the Sika Technical Department.
7. Ronafix® mortars can be spray applied; consult the Sika Technical Department.
8. The mix designs quoted assume a strong sound substrate; consult the Sika Technical Department when applying material to surfaces which are particularly porous or low strength.

Batching Ronafix® Mortars

The performance of Ronafix® modified mortars is dependent on correct site batching of the mix components. Cement, sand and aggregate must be properly measured by weight (using scales) or by volume (using gauge boxes) and the correct proportion of Ronafix® and water then added. The amount of water used must be adjusted according to the moisture content of the sand and aggregate; the mix designs quoted are based on dry sands and aggregates. Mixes based on damp/wet sand and aggregates will require the addition of less water than the standard mixes quoted; in all circumstances the quantity of water added must be kept to the minimum compatible with workability and to achieve good compaction.

Chemical Resistance

Ronafix® modified mixes have better resistance to chemical attack than control samples but they should not be used where a two pack resin system or chemical proof brick is normally laid.

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 Material Safety Data Sheet (MSDS) containing physical, ecological, toxicological and other safety-related data.

VOC DATA

< 10 g/litre when tested in accordance with USEPA Method 24.

APPLICATION INSTRUCTIONS

SUBSTRATE QUALITY / PRE-TREATMENT

The substrate on which a Ronafix® mortar is being placed must be structurally sound and stable and suitable to receive a high strength mortar. Any defect or weakness in the substrate may result in failure of the topping or mortar placed in contact with it. Surfaces should be scabbled or mechanically abraded to expose the aggregate and provide a mechanical key. The substrate must be cut back to allow the minimum thickness of mortar to be placed without feather edging. Depending on mix design and application the minimum application thickness for a Ronafix® modified mortar is 6 mm.

All grease, oil and other contamination which may prevent good adhesion must be removed by steam or chemical washing and cleaning. Loose dirt and deleterious material must be removed, preferably by vacuuming. For floor screeds and toppings the recommendations given in BS8204 Part 3 : 1993 should be followed to assess the suitability of the substrate and maximise the performance of the screed/topping. Testing should be carried out after surface preparation is complete. Where sufficient preparation cannot be carried out or where good adhesion cannot be assured it may be necessary to mechanically secure the mortar to the substrate. This may involve fixing a suitable reinforcing mesh to the substrate, with spacers, and applying the mortar through the mesh. Specific design advice should be obtained from the Sika Technical Department. After preparing surfaces the substrate is damped with clean water, soaking for up to 24 hours if necessary, and excess water removed. The surface must remain damp.

Surface Preparation - Reinforcing Steel
When repairing concrete around exposed reinforcing steel, the concrete should be removed along the length of the steel until clean steel has been exposed. Exposed reinforcing steel must be cleaned to remove loose rust and scale by wire brushing the face of the bar and using emery cloth or sand paper on the sides and rear of the bar, or similar. When levels of chloride exceed 0.4 % ion concentration steel must be blasted back to bright steel; in these circumstances the Sika Technical Department should be consulted. The minimum repair depth around reinforcing steel is 15 mm.

Priming Concrete (and Steel when Present)
Surfaces receiving the Ronafix® modified mortar must be primed with a priming coat of 1:1 Ronafix® : cement. Reinforcing steel must receive two wet on wet coats of primer, ensuring that the first coat is not removed by the application of the second. The Ronafix® mortar is applied to the wet/tacky primer; if the primer dries it must be either removed or thoroughly scarified and reapplied.

MIXING

Ronafix® modified mortars can be mixed by hand or machine. Machine mixing will more easily provide a mortar with even dispersion of mix components and a lower water/cement ratio. The use of a forced action mixer (eg. Creteangle or Screedmaster) will provide optimum performance; free fall mixers cause the mortar to ball up with a resultant reduction in performance and must not be used. For optimum performance, dry mix the cement, sand (and aggregate). Damp the mix with a small quantity of water and then add the full amount of Ronafix®. Continue mixing, adding water up to the specified amount until the required workability has been achieved. Depending on the quality of mixer used and the moisture content of sands and aggregates it may not be necessary to add the full amount of water specified in the mix design. When using an efficient mixer, a mixing time of 2–3 minutes is normally sufficient. Do not overwork the mix as this will entrain air and may affect performance. Once mixed the mortar should be use as quickly as possible.

Curing Ronafix® Mortars
To minimise moisture loss and resultant crazing and cracking Ronafix® mortars must be properly cured, especially in conditions of strong drying winds, high temperature and direct sunlight. Mortars should be cured using either spray applied Monocure 50 (suitable for overcoating and painting) or tight fitting polythene. Curing should commence as soon as possible after finishing the mortar when to do so will not damage the surface and continue for 24–48 hours.

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CLEANING OF TOOLS
Clean all tools and application equipment with clean water immediately after use.

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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.