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Altro Pol™

Additive for increasing strength of cementitious systems
Technical and installation data sheet

November 2016

Product description

Altro Pol is a complementary part of the Altro flooring package, facilitating subfloor design and repair, in readiness to receive resilient flooring systems or synthetic resin floor finishes.
Altro Pol is a stabilised styrene butadiene copolymer designed to enhance the physical properties of cement based floor screeds and repair compounds. It contains integral antifoam and antioxidant agents.

The incorporation of Altro Pol in cementitious compositions imparts greatly improved flexural strength, which together with the high bonding and fast-curing capacity allows the production of thin section seamless floor screeds with excellent durability and overall properties.

Altro Pol is supplied as a white mobile liquid. It is readily diluted with water and then used to gauge the screed mixture of cement and aggregates to provide the desired performance characteristics.

Thickness

The minimum recommended design thickness are as follows:

- 6mm bonded
- 50mm unbonded
- 75mm floating

Typical applications

- Faster curing to allow early overlayment
- Thin section floor screeds
- Smoothing screeds to even out the surface of damaged or tamped finish concrete
- Levelling screeds to receive other finishes
- Screeds of varying thickness to install falls for drainage purposes
- Underlayments for resilient floor coverings and resin finishes
- Patching of worn or damaged concrete

Advantages

- Reduced drying time
- Easy to use single component, gauged as required
- Thinner screeds with excellent durability and impact resistance
- Superb adhesion, maintained even in wet conditions
- Integral antifoam so no additions on site are necessary

Sustainability

Altro's steps to sustainability program seeks to optimise our performance with respect to the planet's resources. Please refer to www.altro.com for further information.

Typical physical properties

Altro Pol™ strength/cure values, guide only				
The following data is based on laboratory tests against casting and curing cubes in optimum conditions. Site results may vary according to working conditions and batch control of the mixes and thickness.				
Mix design	**Performance**	**Day 1**	**Day 7**	**Day 28**
Altro Pol – 4 and Altro Pol – 5	Compressive Strength – N/mm^2	37	59	71
	Tensile Strength – N/mm^2	-	5.7	6.7
	Flexural Strength – N/mm^2	-	9.8	11.5

Packaging

Altro Pol is supplied in 25 and 200 litre containers.

Guide coverage

The following chart shows standard mix references, application mix drying times and yield etc.

Altro Pol mix designs					
Altro Pol – 4					
Application and use	**Thickness**	**Substrate**	**Preparation**	**Bonder**	**Mix design**
Heavy duty floor screed (Resin overlayment) Yield – 7.5m^2 @ 12mm	10mm to 25mm	Concrete BS 8204, Part 1 or stable sound substrate	Mechanical (to expose clean sound aggregate)	Altro Prime standard variant or Altro Proof (wet into wet)	Portland Cement: 50kg Sharp washed sand: 70–90kg 3mm to 6mm grano agg: 60–75kg Altro Pol (neat) 7 litres Water (clean) to suit
Altro Pol – 5					
Application and use	**Thickness**	**Substrate**	**Preparation**	**Bonder**	**Mix design**
Heavy duty thick section floor screed (Resin overlayment) Yield –3m^2 @ 30mm	25mm+	Concrete BS 8204, Part 1 or stable sound substrate	Mechanical (to expose clean sound aggregate)	Altro Prime standard variant or Altro Proof (wet into wet)	Portland Cement: 50kg Sharp washed sand: 70–90kg 6mm to 10mm Grano agg: 60–75kg Altro Pol (neat) 7 litres Water (clean) to suit
Coverage rates are dependent on surface profile and porosity.					

Storage

The containers should be stored unopened in covered accommodation and protected against frost, direct heat and sunlight. For storage temperatures of 5°C to 25°C, the shelf life will be 12 months in the original, unopened containers.

Substrate requirements and preparation

New concrete: The base slab should be constructed in accordance with the recommendations of BS 8204: Part 1 and preferably any falls required should be incorporated in the design. Any services should be contained within the base concrete and not allowed to intrude into the floor screed.
A damp proof membrane should be installed beneath the slab in accordance with the requirements of CP 102. The base concrete should be a minimum of C35 grade with a cement content of at least 300 kg/m^2 and be at least 14 days old before the floor screed is to be applied. The concrete SHOULD NOT contain a water-repellent admixture (surface curing membrane).

The surface of the base concrete should be prepared by mechanical treatment to remove all laitance. Contained shot blasting is the preferred method but the extent of treatment should be such that the coarse aggregate is cleanly exposed in order to provide a good mechanical key. High intensity scabbling is not favoured because it can cause micro cracking to weaken the underlying surface.

Old concrete: All substrates should be cleaned and mechanically treated as described above to remove any surface contamination such as oil, rubber or flaking paint. For surfaces heavily contaminated with oil or grease deposits, the bulk of the contamination should first be removed mechanically.
The surface should then be thoroughly cleaned by steam lance or with degreasing solvents, followed by thorough washing with detergent and clean water before wet vacuum cleaning the entire surface. The effectiveness of the cleaning can be assessed by a water spot test. A drop of water from a syringe or eyedropper is applied to the floor from a height of about 10mm. If the drop remains intact and does not spread out or soak into the concrete within a few minutes then adhesion is likely to be impaired and further floor preparation is necessary.

Where it is not possible to clean the concrete sufficiently to assure adequate adhesion, a mechanical key should be formed by anchoring a fine reinforcing mesh over the contaminated surface and applying the Altro Pol screed to encapsulate the mesh entirely.

The surfaces of precast units should be left as cast and should be thoroughly prepared by contained shot blasting to remove all adhering dirt and laitance.

Mechanical scabbling should be avoided since it may well damage the units.

After preparation, the surfaces should be vacuumed to remove all traces of dirt and dust. The surfaces should then be protected against further contamination until the floor screed is to be laid.

Planning

Before proceeding with the installation, careful consideration should determine the best way of installing the Altro system. Time spent at this stage will be invaluable towards the success of your installation.

Application

The following application guide is based on laboratory and simulated site conditions. However, when installations conditions differ appreciably from those detailed by Altro, the performance characteristics of both mixing and laying may not be as expected. To achieve the best results at all times please endeavour to establish the correct conditions which in turn will allow the materials to be laid effectively, and meet your customer's expectations.

Installation conditions

Altro Pol can be safely used at ambient temperatures from 5°C to 30°C. However at the higher end of this temperature range, both working life and open time for trowelling will be greatly reduced and particular attention will need to be given to curing to prevent premature drying-out and cracking (do not attempt to lay below 5°C).

Product installation
Priming / bonding

Screed thickness (6mm to 30mm): Screeds within this range of thickness should be bonded to a prepared substrate using Altro Prime standard two pack epoxy primer or Altro Proof two part surface damp proof membrane. The Altro Pol should always be laid into a tacky Altro Prime or tacky second coat of Altro Proof if a DPM is required, refer to the relevant technical and installation data sheets.

Screed thickness (30mm to 50mm): There is an option to use Altro Prime, Altro Proof or Altro Pol slurry primer. The Altro Pol slurry primer is prepared by blending together 1 volume of Altro Pol to 1 volume of clean water to 3 volumes of fresh Portland cement. The Altro Pol should be diluted first with water and then the cement slowly added progressively, whilst stirring continuously using a slow speed electric drill fitted with a paddle blade. The mixed primer should be of creamy consistency and it is good practice to pour it through a fine sieve before use to remove any lumps of undispersed cement powder. The primer will have a usable working life of at least 2 hours at 20°C.

About one or two hours before the floor screed is to be applied, the base should first be saturated with clean water and then all excess water removed by squeegee or vacuum. The primer should be thoroughly worked into the surface of the dampened concrete base by brush or roller, ensuring that it displaces all air and wets out the entire surface particularly in the depth of the texture. Care should be taken to avoid ponding of the primer.

The floor screed needs to be applied before the primer has dried out, so the priming operation must be balanced against the rate at which the floor screed is batched and laid. The rate at which the primer dries out must be assessed on site, since it will depend on ambient temperature and humidity as well as the porosity of the concrete. If the priming coat has dried out too far it can act as a release membrane, in which case it should be removed or at least heavily scored to create a mechanical key.

Product installation

Remember to always use the correct PPE.

A forced action mixer, such as a rotating pan or trough type, should be used. Free fall mixers are not recommended because the mortar tends to ball up and so prevents full dispersion. For maximum performance the cement and aggregates should first be blended dry. A small proportion of water should be added whilst continuing to mix followed by the full amount of Altro Pol. Additional water should then be added progressively until the desired workability is attained.

Please note: It may not be necessary to add the full amount of water given in the mix design section depending on the type of materials used. Care needs to be taken to ensure that any dry material adhering around the sides and base of the mixer is blended fully into the mix.

Normally a mixing time of 2 to 3 minutes should ensure a homogeneous mix. Prolonged mixing must be avoided since this may cause entrapment of air to the detriment of the finishing characteristics and eventual performance of the screed.

The fully mixed mortar should be spread out over the primed surface, preferably between battens set to the intended thickness, compacted thoroughly, struck off to level and then the surface closed with a float or trowel. Because the polymer quickly skins on the surface, over-trowelling must be avoided since this would disfigure the finish. The trowelling must therefore be completed in a single operation and care must be taken to eliminate all bubbles or open patches on the surface

Curing

As soon as possible after trowelling and when the screed has hardened sufficiently not to be damaged, the surface must be protected against drying out by placing polythene sheeting directly onto the screed. Care must be taken to ensure that the sheeting is in complete contact with the screed: otherwise condensation may occur in the air space between, leading to disfigurement of the surface or to blanching of the colour if the screed is pigmented.
The freshly laid surface should be particularly protected against draughts and exposure to direct sunlight before the curing medium is applied.

Drying

All resilient flooring and synthetic resins must be installed in accordance with their relevant British Standards. These standards state that the relative humidity within the base screed must be below 75% RH prior to the installation of the coverings.

The addition of Altro Pol to a cementitious screed considerably reduces the drying time of the screed. These times are indicated on the mix design chart overleaf and are dependent upon the screed thickness, the room temperature, the water content of the mix and the levels of air circulation. The times quoted are at 15-20°C; lower temperatures may require a longer curing period.

If the schedule does not allow sufficient time for the thicker designed screeds to dry out, the programme may be accelerated by the application of Altro Proof surface damp proof membrane to the screed surface as a moisture barrier. Prior to overcoating, the surface preparation of the screed should be carried out as per conventional concrete surfaces.

Joints

Although the main floor can be laid seamless, any movement joints in the base slab should be carried through the Altro Pol screed. On suspended floors a joint should be introduced in the screed over support positions to accommodate stresses due to deflection. Isolation joints should also be introduced around the perimeter of the floor slab(s) and around columns, manholes and other fixtures. All joints should be filled with a tough sealant to accommodate movement and provide support to the joint arises. Altro Expand is a purpose-designed sealant for such applications.

Protection

Whilst of an extremely durable nature these floor systems must be thoroughly protected from the rigours and abuse that exist during the ongoing contractual works.

Disposal

Due diligence must be adopted if accidental spillages occur. Recover using absorbent granules, transferring into a suitably marked container. Disposal of all empty containers and accidental spillages should be in accordance with the local waste disposal authority.

Please refer to the most up-to-date technical documents, including safety data sheets, for the Altro resin variant prior to beginning your installation.

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NOTE: "Altro Ltd" ("Altro") endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, where Altro has no control over the selection of its products for particular applications, it is important that any prospective customer, user or specifier, satisfies him / herself that the product is suitable for the intended application. In this process, due regard should be taken of the nature and composition of the background / base and the ambient conditions both at the time of laying / applying / installing / curing of the material and when the completed work is to be brought into use.

However, as site conditions and the execution of the work are beyond our control, we accept no resultant liability.

Altro's policy is one of continuous research and development and we reserve the right to update our products and information at any time without prior notice.

If you'd like any more information or guidance please get in touch, we're here to help.
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