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AltroFlow™ EP

AltroFlow 1000 & AltroFlow 2/3000
1- 3 mm self-smoothing epoxy flooring
Technical and Installation Guide

NOVEMBER 2013

Product Description
FeRFA Type 4/5

AltroFlow EP is a three-part solvent-free epoxy resin based self-smoothing floor topping, which produces a smooth, attractive and easily cleaned seamless floor.
AltroFlow EP has a high gloss finish but can be sealed with UVR WB for an aesthetically pleasing matt finish.

AltroFlow EP 1000 – 1mm
AltroFlow EP 2000 – 2mm
AltroFlow EP 3000 – 3mm

Standard Colours

AltroFlow EP is available in a range of 26 standard colours.
Bespoke colours are available within constraints.
In common with other epoxy products lighter colours will be prone to cosmetic yellowing on exposure to UV light.
Please speak to Altro Technical Services before planning an installation in any of the safety colours or white.

Typical Areas of Use

- Production halls (dry operations)
- Clean rooms
- Commercial corridors and offices
- Plant rooms
- Laboratories
- Dry storage areas
- Packing areas

Advantages

- Ease of Installation
- Ease of cleaning
- Good chemical and stain resistance
- Fully bonded to the substrate
- Excellent decontamination (certified)
- Provides a seamless floor finish (substrate joints must be cut through)

Sustainability

AltroFlow EP contains up to 25 % post-consumer recyclate.
Altro 6 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.

Chemical Resistance

AltroFlow EP affords resistance to a range of commonly used chemicals. However, premature contact with chemicals (including water) during the curing process may give rise to discolouration, staining and variation in gloss.
In all cases of chemical spillage, it is essential that the spillage be immediately removed and the surface washed down with clean water, removing water by wet vacuum after operation. Although some chemicals may cause discolouration, this may not affect the durability and integrity of the resin screed. Please refer to Altro and FeRFA Guidance Note No.3 for further information.

Typical Physical Properties

Slip Resistance	We do not recommend AltroFlow EP in areas where slip resistance is a concern		
Speed of Cure		Light Foot Traffic	48 hours @ 20°C
		Full Cure	7 days @ 20°C
Application Temperature			10°C to 25°C
Usable Working Life			30 minutes @ 20°C
Taber Abrasion	C17 wheels 1000 cycles 1kg	Average weight loss	0.1284g
Radiological Decontamination	BS 4247		Class: Excellent

Packaging

AltroFlow EP 1000 is available in a 16.6kg, three-part composite pack.
AltroFlow EP 2/3000 is available in a 24kg, three-part composite pack.

Coverage

Altro Consolidating Primer 24m² per 5kg unit
AltroFlow 1000 – 10.7m² per 16.6kg unit.
AltroFlow 2000 – 6.7m² per 24kg unit
AltroFlow 3000 - 4.5m² per 24kg unit

AltroSeal™ UVR-WB Clear (optional cosmetic matt finish)
Single coat 42m² per 5kg unit

Material usage is dependent upon temperature, surface profile and porosity; stated coverage rates should be referred to for guidance only and cannot be relied upon to determine exact quantities.

Although stringent quality assurance processes are employed, when colour consistency is required, a single batch should be used.

Storage

Ensure that the product is received in good order and store in a dry, frost-free environment, ideally between 15°C and 20°C for at least three days before laying.
It is important to maintain the aggregate temperature during storage. Low temperature in the aggregate will adversely affect the product application.
Excessively high and low storage temperatures will affect the laying performance of the product.

Suitable Substrates

AltroFlow EP may be applied to a variety of substrates including, but not limited to, concrete, polymer-modified cementitious screeds, terrazzo and 25mm WBP plywood (consult Altro for further guidance). For all proprietary subfloor systems refer to the manufacturer for recommendations and seek further guidance from Altro.
FeRFA, The Resin Federation, does not recommend Calcium Sulphate, Anhydrite or Hemi-hydrite screeds for overlayment with synthetic resin surfaces.

Substrate Requirements

Substrates should be dry, structurally sound and free from contamination, friable materials or laitance which may affect either the adhesion or penetration of the resin system.
All residues of old paint coatings and dust must be removed.
Substrates to achieve 26N/mm² compressive strength (BS EN 12504-2:2001) and surface tensile strength 1.5N/mm² (BS EN 13892-8:2002). Substrates must include an effective damp-proof membrane and contain residual moisture not greater than 5% by weight (75% R.H.) to BS 8203:1996.
Thin-bed synthetic resin systems follow the surface of the substrate, so it is essential that the surface regularity of flatness conforms to or exceeds BS 8204.2:2002 class SR2 (+/- 5mm under a 2 metre straight edge). Any deviation from this may require a surface improver to be applied which must be suitable to receive an epoxy resin overlay.
Please consult Altro or FeRFA Guide to the Specification and Application of Synthetic Resin Flooring for further information.

Substrate Preparation

Surface preparation is the most vital aspect of resin flooring application. Inadequate preparation will lead to loss of adhesion and failure. The substrate in question will dictate the method of preparation. In the case of a concrete floor, preparation by dust enclosed diamond floor grinder may be appropriate, or if of a sufficient area for economic reasons, should be lightly shot blasted to leave a textured surface free from contamination.

If the floor has been treated with a cementitious surface improver, then the surface should be prepared in accordance with the manufacturer's recommendations, or abraded with an STR machine followed by thorough vacuuming.

Treatment of local repairs such as cracks and holes, improvement or modification of levels and removal of high spots, should be undertaken prior to the flooring installation.

Application onto cold substrates can give rise to pinholes in the finished system if the ambient temperature rises during application causing micro pockets of air in the concrete substrate to expand and be displaced through the resin.

Ambient and substrate temperatures should be raised prior to installation, and kept constant during application

Please consult Altro or FeRFA's Guide to the Specification and Application of Synthetic Resin Flooring for further guidance.

Planning

Before proceeding with the installation, careful consideration should determine the best way of installing the Altro system. Efforts should be made to minimise day joints and optimise the open time of the product (i.e. minimise the distance between mixing and laying).

It is best to also consider the effect of external influences on the final installation (i.e. direction of light from windows etc.). Time spent at this stage will be invaluable towards the success of your installation.

The AltroFlow EP floor system is designed to be laid at a nominal 1-3 mm thickness dependent on grade. Altro recommend that stainless steel mixing, laying and application tools are used in this process. Metal transfer from mild steel tools may result in discolouration of lighter colours which will be unacceptable to your customer. Please contact Altro for further guidance.

Application

The following application guide is based on laboratory and simulated site conditions. However, when installation 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

Apply in well ventilated areas. Both the slab and air temperature should be between 10°C or up to 25°C.

It is not advisable to mix and lay epoxy resin products outside the range 10°C to 25°C. Ambient conditions should be maintained at least 3°C above dew point or below 75% RH during the initial stages of cure. At site temperatures below 10°C cure times will be substantially increased unless some form of external heating is used. It must be recognised that the concrete slab temperature will generally be lower than the air temperature, often as much as 10°C, and this will govern the rate of cure. As the resin flooring cures, in condensing conditions moisture vapour may condense onto the surface and cause 'blooming', a permanent clouding of the surface.

Do not lay the AltroFlow product on a raising thermometer as this can give rise to pinholes. Raise the substrate temperature prior to application and maintain the temperature of the substrate during application.

Mixing Equipment

- Slow Speed Drill (200-500rpm), such as MM17 *
- Mixing paddle, such as MR3
- Mega Mixer MM22 with MR3 Paddle
- Stainless mixing vessel, such as RM65 drum *

* All tool number references relate to Refina Ltd 01202 632 270

Priming the Substrate

In order to achieve a uniform finish, prevent bubbles and maximise substrate adhesion a primer should be used.
An Altro primer should be selected which is suited to the installation, and appropriate for the nature and moisture content of the substrate (seek further guidance from Altro).
For flow systems Altro Consolidating Primer is recommended which is low in viscosity and able to penetrate the surface of the slab.
For substrates with greater than 75% RH BS 8203:1996 an effective damp-proof membrane should be laid such as AltroProof™. If AltroProof DPM is used this may be installed instead of a primer coat.
The appropriate Altro primer should be applied in accordance with the Product Datasheet.
Do NOT seed the primer with aggregate, experience shows that this can lead to pinholes from entrapped air.
Ensure that the substrate is well sealed and that all hungry areas are addressed before proceeding to install the system.
If the over-coating time period for the primer is exceeded, the surface should be lightly abraded and vacuumed before further coats are applied.

Product Installation

Using a slow speed drill and whisk, thoroughly mix the base colour for 30 seconds until uniform. Pour all the hardener contents into the base bucket and mix thoroughly for a further 90 seconds. Transfer to a suitable clean mixing vessel. The aggregate should be added gradually into the pre-mixed binder, whilst continuing the mixing action, and mix for a further 2-3 minutes. Excessively vigorous mixing should be avoided as this can lead to undesirable air entrainment. Care should be taken to ensure that any material adhering to the sides, bottom and corners of the mixer is thoroughly blended in. If the mixing area is not adjacent to the laying area the time required to transfer the mixed material will reduce the open installation time.
Remember to always use the correct PPE.
Decant all of the contents of the mixing vessel onto the floor and spread to the desired depth using a clean stainless steel trowel or a pin rake set at the desired depth.
Spike roller the area immediately, NOT beyond 20 minutes @ 20°C. Do not exceed this time between gauges.
Care should be taken to ensure the mixing vessel is kept free of any build-up of contaminants which could fall off and contaminate the floor.

Over coating

In common with other single colour high gloss finishes, AltroFlow may exhibit scratching with traffic and abrasion, this is particularly prominent in darker colours.
Any undulations and imperfections will stand out in specific lighting conditions. This effect can be minimised by finishing the floor with a matt seal which will diffuse the light and hide undulations.
To achieve a cosmetic matt finish, the application of a single coat of AltroSeal UVR-WB can be applied not more than 24 hours at 20°C following the application of the AltroFlow EP.
Additives at the surface of the AltroFlow EP will require removal prior to the application of the AltroSeal UVR -WB seal coat. This is to ensure effective intercoat adhesion.
Clean the surface of the AltroFlow with AltroSolve EP or Altro Siliclean without allowing ponding. Do not re-use paper towels as this will have the effect of spreading any contaminants across the surface of the floor causing orange peeling in any subsequent coating.
Pour the contents of the hardener into the base unit and thoroughly mix using a slow speed drill and paddle for two minutes. Apply a very thin coat using a short nap synthetic roller applying the product to the floor from a paint tray.
Heavy application of this seal will result in an opaque appearance of the finished floor; therefore, care is required in its application.
Enough time should be given to allow the AltroSeal UVR-WB to reach its full chemical cure. Physical drying of the surface alone is not indicative of the full cure properties including wear and chemical resistance.

Joints

The spacing of movement joints must be determined by the design of the subfloor. All live movement joints in the subfloor must be continued through the resin flooring. In all instances the type and positioning of movement joints should be agreed at the design stage between all parties concerned. Please refer to Altro or FeRFA's Guide to the Specification and Application of Synthetic Resin Systems for further guidance.
All joints should be filled with AltroExpand™ flexible jointing compound. Please see AltroExpand Datasheet for further information.

Protection

Whilst of an extremely durable nature these floor systems must by thoroughly protected from the rigours and abuse that exist during the ongoing contractual works.
The resin floor should reach full chemical cure in 7 days at 20°C. Untreated felt paper will suffice as protection from light traffic, however if protection is required from other trades then the following protection option should be considered. Where heavier access is required then a more suitable medium to take the loadings, such as shuttering ply or Correx by Cordek, should be placed on top of the untreated felt paper. The resin system should have cured for 48 hours prior to placing the protection. No polyethylene sheets, linseed-treated hardboard, print or dyed card should be placed in contact with the resin surface. All joints in the protection medium should be taped, and all accidental spillages should be recovered immediately by removal and reinstatement of the protection. Damage will occur to the system if ignored.

Cleaning (during installation)

All tools and equipment should be regularly cleaned using AltroSolve™ EP to reduce build-up and maintain the quality of the installation.
Ensure that the correct PPE is worn at all times.

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.

Cleaning Guidance

Optimum slip resistance can only be maintained with regular cleaning. Resin floors require mechanical cleaning, mop cleaning will not be effective. Steam cleaners and/or hot pressure cleaners should not be used on the floor or walls.
A cold/ambient pressure washer may be used if required, but the pressure should not exceed 1400psi. Warm water will offer improved cleaning, but the water temperature should not exceed 60°C.
Correct maintenance and entrance matting should enhance the longevity of the floor.

- Sweep or vacuum the floor to remove debris
- For normal cleaning, dilute an alkaline detergent such, as AltroClean™ 44 or similar, by 1:40 in clean water
- Alternatively, dilute by 1:20 for infrequent heavy cleaning
- Liberally apply the water and detergent solution to the floor, scrubbing with a deck scrubber or slow-speed (< 400rpm) scrubbing machine fitted with an Altro UniPad™ or similar
- Pay particular attention to areas where residues may accumulate, such as internal corners of perimeter coves and around columns etc.
- If possible, allow the detergent solution to remain on the floor for several minutes to break down deposits, but not sufficiently long to allow the solution to evaporate
- Remove the solution by wet vacuum recovery and follow this with a fresh water rinse, or rinse the solution into drains if permissible
- It is important that all detergent residues are removed from the textured surface of the floor. Detergent may become slippery which affects safety, or sticky which attracts and holds more dirt

AltroClean 44 and Altro UniPads are available through Resins Sales Desk.
Please obtain the correct MSDSs from Altro prior to beginning the installation.

To Order E-mail ResinSalesDesk@altro.com
Call 01300 320620
Fax 01300 321122