



**PATTERN IMPRINTED CONCRETE  
SUPPLIES LIMITED**

Unit 2, Red Shute Hill Ind. Est.  
Hermitage, Nr Newbury  
Berkshire, RG18 9QL

## PICS Exposed Aggregate Concrete

Exposed Aggregate is a decorative concrete which is achieved by carefully selecting a Colourmix colour and a decorative Aggregate, then chemically retarding the concrete surface and finally removing the top 1-4mm of cement matrix by a washing process.

PICS Exposed Aggregate is an attractive decorative concrete finish with the following benefits and features:

- Very low maintenance
- High wear resistance.
- Many and varied decorative alternatives.
- Good anti-slip properties.
- No weed growth.
- No shrinkage or trip hazards.
- Can be designed to suit a specific locality.
- By carefully selecting the Aggregates and Colourmix many effects can be achieved.
- By inlaying Picspave bands and borders, designs can further enhance the stunning effects created.

### **Sub-base Preparation**

- A sound sub-base should be placed as per the specifications of the engineer.
- The sub-base should be compacted to the required specification and should be free of pooled water and any other debris.



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# HATCRETE

COLOUR TECHNOLOGY FOR CONCRETE

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- The surface should be closed and the sub-base should be blinded with sand if necessary.
- Concrete Slip membranes should be used where appropriate i.e. in all cases except on steep slopes.
- Slip membranes should be run up the sides of absorbent shutters or wet blocks/forms before pouring.
- Shuttering should be straight and true.
- Correct falls should be used throughout.
- Shuttering should be constructed so as to not move under the pressure of wet concrete.
- Shutter pins and stakes should be flush with or below the height of the formwork.
- Shuttering should be set up to allow for correct contraction joints as specified by the Engineer.
- Contraction joints may be cut later but expansion joints need to be allowed for where necessary under guidance from the project engineer.
- Prior to concreting all gullies, drains and block-work should be protected by painting with PICS Wall Gel.



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### Concrete Specification

- Concrete is specified as “strength” to suit application or to match the job specification.
- Concrete will be air entrained for frost resistance.
- Concrete will contain fibres and plasticizers to aid cohesion. (Concrete will appear a bit hairy for the first few weeks)
- Concrete will be supplied in the slump range 85-110mm target to suit.
- Concrete will be supplied as Air Entrained min ...C.....to.....C..... quality.
- Aggregates will be frost proof and durable to suit the application.

### Concrete Placing

The concrete should be placed without the use of any vibratory equipment as this will segregate the concrete and result in the exposed aggregate appearing patchy in nature.

Where necessary (such as stair faces and around rebar's) the local use of a poker vibrator is recommended to compact the lower  $\frac{3}{4}$  of the pour depth which is then topped with un-vibrated concrete to form the visual layer.

Concrete should be struck off and screeded in such a way that there is no possibility of puddles forming on the hardened surface.

A closed surface is required as the Retarder will fill any openings on the surface of the concrete, this will result in an inconsistent etching depth being achieved in these areas and the possibility of large aggregates being removed from the surface during the washing stage.



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Where concrete abuts drains it should be left at least 3-5mm high to allow for height loss in the washing process.

Care should be taken when troweled concrete is adjoining gullies, so that no low spots are formed to hold water next to the gully.

The concrete surface should be floated using steel floats and there should not be any high or low spots on the surface.

Edges should be placed and trowelled first.

Care should be taken to minimise all trowel marks from the surface – if these are not minimised they will still be evident when the concrete surface is removed **taking care not to push the surface aggregate down below the depth of the required retardation.**

Only pour as much concrete at one time as you can wash off in the time frames available which will vary dependent on temperatures.

No more than 2 hours should elapse between deliveries of a multi load pour to avoid cold joints forming as these can be visually very poor.

M3 may need to be altered to the conditions and size and experience of laying team.

If the concrete arrives dry the water may be added under technical direction.

If the concrete arrives with the slump in excess of 140mm then it should be rejected and returned.



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## PICS Exposed Aggregate Concrete

### Factors Affecting Choice of Depth of Etch

- The shape and size of the aggregate.
- Larger aggregates will require a deeper etch to create the best visual effect.
- More angular aggregates also require a deeper etch to expose enough of the aggregate.
- Clients choice.
- This also has some bearing as some will prefer a deep etch whilst others will prefer a lighter effect.

### Factors Affecting Choice of Retarder

Retarder is available in different depths of etch to suit your requirements. These are colour coded by pigmenting the product to identify the different depths of retardation.

As a general rule the following grades are appropriate to PICS supplied Pieri retarder.

Green – Lightest etch – 6mm stone size

Blue – Medium light etch – 6-10mm stone size

Yellow – Medium etch – 10-14mm stone size Grey

Deepest etch – 14-20mm stone size



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## **PICS Exposed Aggregate Concrete**

Once a depth of etch has been chosen, PICS Retarder can be selected taking into account the following factors. These may change the grade required as a result of differing factors affecting the concrete set time:

- Strength of concrete. Stronger concrete will set faster and develop more heat and be more resistant to the effect of the retarder so a stronger grade may be required.
- Type of cement. Blended cements will be slower setting and may require a lighter grade of PICS Retarder.
- Concrete develops strength according to heat, in hotter temperature a deeper grade may be required.
- Amount of direct sunlight on the surface, as direct sunlight could result in surface warming and could cause the surface to set faster requiring a stronger PICS retarder or an earlier wash off.
- Depth of the slab. A deeper slab has the potential to develop more heat as it hardens and may require a stronger grade of PICS Retarder.
- Anticipated time of pouring/wash off. Slabs poured in the morning can be washed off the same day in summer, whilst slabs cast in the afternoon may need to be left overnight.
- Consider the effects of sun and shade on wash time.



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### Applying the PICS Retarder

- The PICS Retarder should be well mixed / shaken before use and should be continually agitated to limit any product separation in the drum.
- The surface retarder should be applied in accordance with the specifications of the PICS Retarder manufacturer.
- Generally spray applied, once no bleed water remains on the surface, typically between 1/2-2hrs from final trowel.
- The PICS Retarder should be placed evenly over the surface.
- Aim for complete coverage. The PICS Retarder takes 2 hours to work on the surface.
- Note: If one part of the pour is in strong summer sun and another part in shade this should be noted and the part in the sun washed first and if necessary the part in the shade washed with a suitable time delay, to allow the set to “catch up” to ensure uniformity of etch depth.

### Removing the surface layer and exposing the aggregate

- Dependent on the temperature and direct sun exposure, the surface layer should be removed between 4 – 30 hrs. Same day washing will be needed if the surface is in direct hot sunlight.
- Before jet washing commences wet the whole area down first as this will aid removal.



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- The PICS Retarder will not kill the set completely as the top layer will start to hydrate over time and removal of this layer will become more difficult the longer it's left.
- The washing should be completed within a 2 hour period to ensure consistency.
- The PICS Retarded layer should be removed with a stiff brush to start with and then a high pressure washer if needed; the pressure washer used should be uniform and of a 'V' shape spray in order to ensure consistency of removal of the surfaces.
- All the top layer should be removed from the surface and care should be taken not to leave this material in one position for too long as this could harden over the coming hours. The washed off material needs to be collected and disposed of in the correct manner as this contains cement that could set at a later.
- Wash the surface with PICS Acid Wash, this will remove any final Cementous particles from the surface of the Aggregate's. PICS Acid Wash can also be used if there are any areas that need further exposing on the aggregates by removing the cementous surface.

### Cutting Joints and Cleaning

- Contraction joints should be cut into the slab as soon as possible in line with normal concrete practice.
- Each bay should be a maximum of twice as long as the width, 2 to 1 ideally and no more than 1.5 times as long as the width 1.5 to 1.
- Joints should go to at least one 50% depth of the slab thickness.



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- “T” shaped joints should be avoided, preferably they should cross. If unavoidable then cut all the way through the slab on the joint being intersected in order to isolate each section and avoid a transfer crack.
- Cut joints as soon as concrete can be cut without spalling
- If necessary the slab can be cleaned to remove any efflorescence that may spoil the colour with PICS Efflorescence Remover should be used to achieve this.

### Sealing of the Concrete

- It is recommended that the surface of the concrete be sealed to protect the concrete from staining.
- One of the PICS Sealant range should be used in order to obtain optimum results.
- Sealer options include PICS High Solid or Picseal or alternatively PICS Permaseal which is a water based sealant.
- Joint sealing is optional.



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