

Resin Bound Cracking



If you have cracks in your system could be due to a number of reasons. This is something that can be prevented for every project shown below as well as what to do in the event of a failure.

Prevention

Reflective Cracking from Different Types of Adjoining Substrates:

Examples would be adjoining a tarmacadam base with a concrete base or extending a concrete base with a cellular grid base. Differing substrates can also mean their curing profile - where both are concrete, but a new slab is laid next to an existing aged slab. Different substrates will behave differently when curing, reacting to a load being exerted on them and thermal change. These changes create movement, which creates tension and subsequently cracks can appear in the resin bound surface.

Reentrant Cracking:

Reentrant Cracking is by far the most misunderstood cause of cracking in resin bound surfacing - but is more common than you think. I asked for a little help from The Paving Expert himself, Tony McCormack, about this very problem only recently. His reply is below, and I would recommend visiting his very well-informed website www.pavingexpert.com. 'Reentrant cracks are stress cracks and they are often found in bound constructions where an acute or right-angle intrusion occurs. It's all down to physics. The presence of an acute angle allows stress forces within the structure to focus and become concentrated on a single point. Stresses will always look for the shortest path to relieve the pressure, and whenever there's an intrusion such as MH cover or internal corner on an edge course, the stress forces will aim for that and generate a crack to relieve the pressure.

Application on to Surfaces not Designed to be a Base:

Resin bound surfaces must be applied on to a hard surface, such as tarmacadam or cellular grids (available from Vuba). But not all hard surfaces are suitable. Block paving or crazy paving are not designed to be a base to an in-situ screed such as resin bound surfacing. The design of these surfaces is that they will camber and move to some degree as part of the nature of the system - but that can and does cause cracks to appear in resin bound surfacing. Some people

make the decision to go ahead in a garden or patio area with limited use, but that is at the discretion (and risk).

Reflective Cracking Caused by Expansion Joints or Existing Cracks:

It is possible to overlay concrete substrates, but beware! You are overlaying a slab that likely has induced joints, or day work joints, which are designed to move to prevent cracking within the concrete bays. When these are overlaid with resin bound surfacing, the movement of the joint can reflect through into the surface as a crack. In addition, if a concrete slab has not been designed correctly, cracks can appear at points of tension throughout the slab and they could reflect through into the resin bound surface.

Failure or Subsidence of a Sub-Base and / or Base:

Make sure your surface is only being used for what it is intended for. For example, pedestrian only areas to only take pedestrian traffic, vehicular traffic to not exceed 7.5 tonnes unless at design stage this was looked into. If for example, cranes, skips or any other unusual/heavy vehicle needs to go on the surface then we recommend boards are placed over the surface to disperse the weight but ultimately to be avoided completely as we cannot guarantee it won't fail from this.

Chemical Contamination or Spills:

Do not spill chemicals onto your surface or any cleaning products not recommended by Vuba as these may react with the surface and cause the stones to come loose from breaking down the resin. The best way to clean and maintain your surface is with a power wash of only water as regularly as needed.

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Solutions or Remedials

The fail safe way is to remove all of the existing substrate and replace with a new, open grade tarmacadam surface. If that's not possible, you can distinguish between different substrates using an expansion joint trim (more information below) or segregate areas using a block in the form of an internal border. Lastly, if you do plan to overlay different substrates, you can carry out remedial work to the joint - using an epoxy liquid and/or a jointing mesh.

Fine hairline cracks can be repaired using a thickened resin to limit continuation of the crack. However, prevention is the best strategy when it comes to reentrant cracking. And we'd recommend to limit any intrusions that break the shape of a resin bound area.

Removal and replacement using a tarmacadam substrate or a cellular grid base would be our recommendation. But there is remedial action you can take if that is not an option. A recent project was undertaken by one of our customers whereby they applied two methods of preventing future cracks appearing in their resin bound surface. The first method they employed is to repair existing cracks using a high strength epoxy mortar Epicrete (available from Vuba), and then sealed the joint using an epoxy primer and sealer (Epiprime) with the application of a fibre reinforcement mesh across the crack / joint.

For joints believed to be too large to repair, or if they are of a structural nature and so their movement is needed as part of the structure of the base, an expansion joint can be installed. You can see (right) an example of an expansion joint which is set in place over the location of the joint, and the resin bound surface is applied up to.



Example of joints needed.



Example of 2 different substrates which would require a join.



Example of cracking in resin bound.



Movement joint with applied resin bound surface.

If in doubt of any of the above then please contact the technical team:

Paul: paul.cooper@vubagroup.com

Milly: milly.sheffield@vubagroup.com