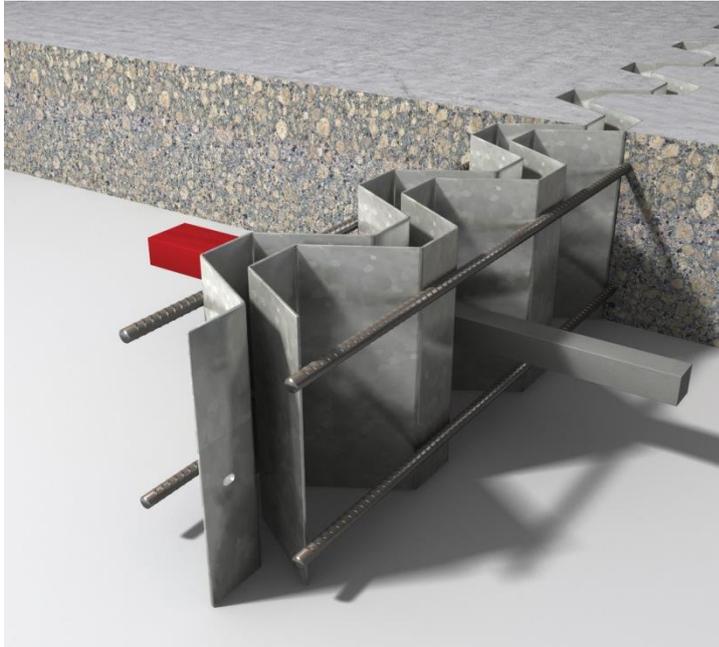


permaban *Signature*[®]

Frequently asked questions about our armoured joint with disruptive face technology.

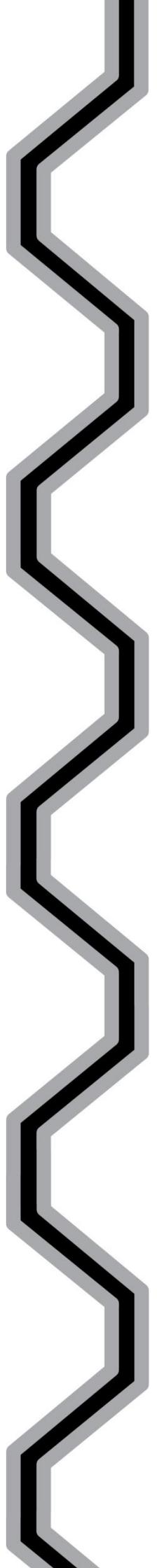


What is 'disruptive face technology'?

Traditional armoured joints consist of two parallel faces. As the joint opens, passing wheeled traffic drops into the joint, generating a high impact force that can damage not only the joint, but the materials handling equipment. By disrupting the face of the joint - effectively forming interlinking fingers - wheels pass from the approach slab to the leave slab without dropping into a gap. At the point of transfer, the wheels will momentarily be on both sides of the slab simultaneously. The shape of the disruptive face has been carefully designed to accommodate a range of wheel types and joint openings

Why should I use Signature instead of AlphaJoint?

AlphaJoint has been the industry standard method of protecting construction joints for many years. It's the traditional way to protect the joint arris from breakdown through impact damage from materials handling equipment. However, in situations where the traffic is directional and perpendicular to the joint, small, hard-wheeled trucks in particular are liable to disruption and damage as they drop in to the joint. Signature is specifically designed to enable trucks to pass over the joint up to 40mm wide, in any direction, without creating impact forces. Perfect applications are across the back of dock levellers, transit aisles, doorways, etc. Signature is also an ideal solution for large panel steel fibre jointless floors, where the construction joints are particularly prone to wide openings.



Can Signature be used in jointless and post-tensioned floors?

Absolutely. These types of floor construction are particularly prone to large joint openings. As such, there is a significantly higher risk to materials handling equipment if using a parallel face joint in these situations.

How does Signature compare to sinus joints and plate-style joints?

Signature's design and unique features overcome the problems presented by sinus joints and plate joints.

- Because of its full-depth corrugation, Signature has strength all the way down, so is better able to support loads at the very edge of the slab. Sinus joints are typically only corrugated part-way down, which creates a point of weakness in the joint.
- Signature is designed to operate at openings up to 40mm, both in terms of smooth passing of traffic and load transfer – whereas sinus joints tend to be limited to joint openings of 20mm or less. Sinus joints are also considerably wider than Signature which means they can be problematic to finish, especially if not aligned perfectly. Because Signature, at just 2mm, is so much thinner, this isn't a problem.
- Some plate joints comprise flat plates fixed to the top of a conventional armoured joint. Because it's not possible to see under the plate, getting the right concrete compaction under the plate can be challenge, and this can result in a weak joint.
- Plate-style sinus joints are actually three joints, not one! Because each side of the plate is a straight joint, this means there are two straight joints to monitor and maintain, as well as the sinus shape itself. This means more risk of joint damage than if a single straight joint had been used.

The steel is only 2mm wide. Is it strong enough?

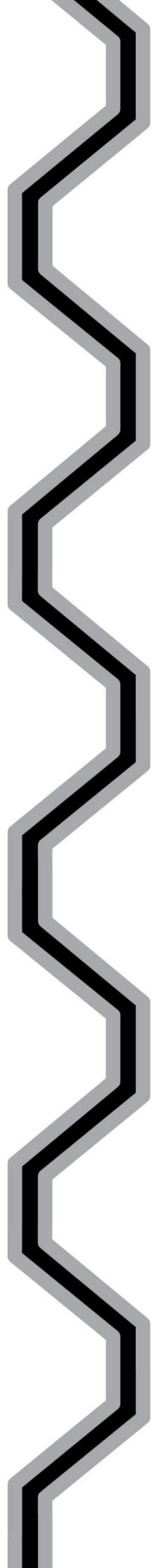
Traditional armoured joints work by using steel to protect the joint arris against impact damage. Being a disruptive face joint, wheels traverse smoothly over the surface of Signature without creating impact forces. As the steel doesn't need to withstand impact, it only needs to be of sufficient thickness to be robust enough during installation.

Is Signature proven to work?

Since its launch in 2012, Signature has been successfully installed in all kinds of buildings, all around the world, with very happy clients. Some examples include:

- A waste transfer station for Serco in the UK
- A clad-rack cold store and freezer store for Cargill in Nicaragua
- A logistics centre for industrial and electronics company Sonamia in France
- An aeronautical manufacturing facility for Safran in Morocco
- A retail warehouse for PriceSmart in El Salvador

Please take a look at our website or ask us for more case study details which demonstrate Signature's proven performance.



How does using Signature affect warehouse staff?

Specifying Signature for new builds and upgrading existing floors with Signature AR enables employers to eliminate joint impact, one of the major causes of noise and whole body vibration that MHE operators are subjected to. This can greatly assist in compliance to Control of Noise at Work Regulations 2005 under the Noise at Work Directive 2003/10/EC and Control of Vibration at Work Regulations 2005 under the European Physical Agents (Vibration) Directive (2002/44/EC), in addition to maintaining MHE speeds and reducing back injuries to operators.

What is the load transfer capacity?

Signature incorporates standard 20mm square dowel bars. While these determine the bending capacity of the slab, it is more usual for the slab depth and concrete strength/type to be the controlling factor. The product specification sheet includes load transfer figures for common combinations.

Why is this joint offered with square dowel bars instead of plate dowels?

Square dowel bars have a long history, and when used in conjunction with our Permasleeve they provide for lateral movement, as do plate dowels. The critical factor to their performance is their accurate alignment. The dowels are supplied loose with the product, and must first be fixed into the product using the clips provided: doing so will ensure the dowels are positioned correctly. Incorporating plate dowels into Signature would create congestion to the point that we would have concerns about the consolidation of concrete under the dowel.

Can the joint be used on external slabs?

Signature is supplied galvanised as standard, so it is resistant to rust and can be used on internal and external slabs.

Can it be used as an expansion joint?

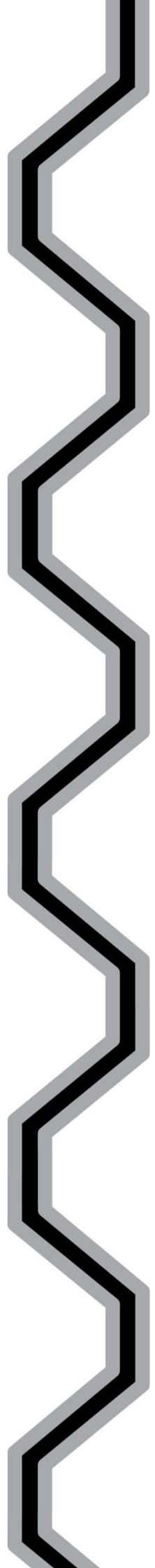
This is technically possible and a solution should be available soon. The joint is supplied partly pre-opened, but can be set to the desired width, but without a foam filler.

Is Signature available in stainless steel?

Yes, as a special order, which may have an extended lead time. The exposed face of the joint is only 2mm per side, considerably less than a conventional armoured joint, so unsightly rust blooming is therefore considerably reduced. We have carried out weathering tests on galvanised Signature and, because of the nature of the galvanization process, the exposed (non-galvanized) top face of the joint wasn't affected by rust at all.

What sizes is the joint available in?

Signature is available in a full range of sizes from 125mm to 300mm.



What accessories are available?

A full range of Ts, 4-ways and corners are being developed.

What is the best method of installation?

Two methods are recommended. Signature is fully compatible with our AlphaFix installation system. Alternatively, the rail can be set to height with timber wedges under the dowels and secured using welded pins.

Which 'way up' do I install the joint?

The dowels, when installed, rest on a length of rebar. If the dowel does not sit on the rebar, the joint is upside down.

All Permaban joints are designed to allow a gap underneath them. This means that the dowel within each product is set below the centre-line of the joint. If you're unsure, you can measure this on site. Measure from the edge of the joint to the dowel on both sides: the bigger distance will always go to the top.

How do I ensure the dowels are correctly aligned?

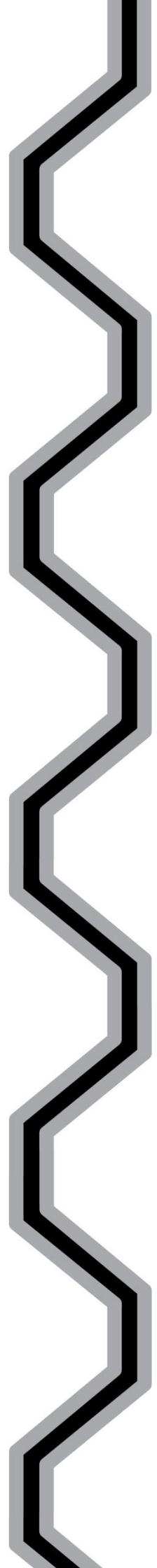
Misaligned dowels can cause stresses in the concrete as it cures which result in cracking, so correct dowel alignment is very important. Signature incorporates square dowel bars and Permasleeve dowel sleeves – however, these are supplied loose and must be fixed into the product before installation begins. Specially-designed clips are provided for this purpose, and it is very important to use these to ensure correct dowel alignment. Unlike round dowel bars, our square dowel bars with Permasleeve allow two-way lateral slab movement while still preventing vertical movement, and will absorb small installation variances.

Why is Signature delivered with a pre-installed gap?

This is to guarantee a free opening of the joint without creating stress. The gap is 5mm along the straight edges, and it's 2.5mm along the diagonal vertices. This provides a sufficient gap to allow shrinkage when the lateral movement is greater than the horizontal shrinkage.

What would happen if the gap becomes filled with concrete, which could happen during a pour?

In practice this rarely happens, and this should not be a point of concern. The gap is small enough to prevent large aggregates from entering during the pour. During finishing works, concrete laitance could be dragged across the top of the joint and into the gap – however, the viscosity of any laitance will be high enough so that it will not flow too deep into the gap. Any laitance that enters the joint will have low compressive strength, so will not prevent lateral movement from occurring, or inhibit the joint from opening – it will break off and fall down as soon as the joint begins to open and be trafficked. Tapping the joint with a rubber mallet has the effect of speeding the process up.



Can Signature be installed on floors which will be covered with resin after the concrete floor is installed?

Potentially, Signature can be used with a resin finish; however this is very market-specific. In the UK, a contractor would typically pour the concrete below than the finished floor level and the top of the joint. The concrete would typically only be float or pan finished, but not powerfloated as it then requires grinding so that the resin will bond to the concrete.

Because of Signature's shape, special preparation would be needed, and there would be maintenance implications too; so if you are planning a resin floor we'd suggest you contact us first so we can discuss it with you and advise you.

What is the concrete compaction like along the joint?

Signature is designed to minimise congestion around the anchorage bars and dowels. Compaction is optimised by using a vibrating poker along the joint, as is best practice with any other type of joint.

How do I make sure the edge is finished properly?

Signature has a more complex profile than standard armoured joints, so it does require a little more care and attention to achieve optimum results. Any overspill should be cleared from the second side of the joint. Hand-trowel the edge into the bulk of the slab and power trowel exactly as you would for any other construction joint. Some paste will inevitably spill over on to the second side of the joint. This breaks off easily and cleanly and must be removed before the adjacent pour is cast.

Can I grind across a Signature joint?

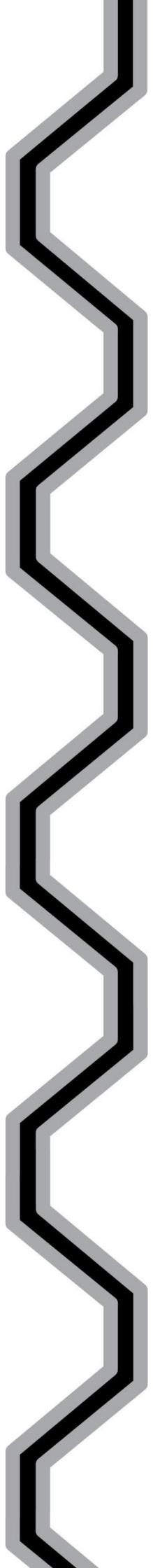
Signature has a 2mm wide face compared to 10mm for a typical armoured joint - so grinding the surface is generally less of an issue.

How do I apply a joint sealant?

It is rare that sealants would be required with Signature. Joint sealants are used to support the arris, prevent debris from entering, and to protect against high heels, etc, dropping into the gap – these are unlikely to be issues in the places where Signature is usually installed.

On installation, the gap between the plates is only 5mm at the peak and 2.5mm on the sides. Filling with foam, apart from being challenging, would not look neat once the joint opened as it wouldn't fall away.

The key success to finishing signature is not to bury it and more importantly, not to finish the concrete low of the joint. If a joint sealant is deemed necessary, consult Permaban for our advice as to the most appropriate solution.



How does Signature perform at intersections with saw cut joints?

Unlike conventional armoured joints which have a studded top strip, Signature has more regularly bonding to the face of the slab. It also has a one-piece, full-depth plate. As such, there is no risk with flying ends and unanchored sections becoming loose. Saw cuts should be carried through the joint.

For further help, call our technical team on +44 1752 895288