Hydraulically Bound Material Information
The use of HBM’s can significantly reduce costs and environmental impacts in many pavement, hardstanding and reinstatement projects. HBM is a quality material that has been used in the UK and around the World with great success for decades. HBM is covered and compliant with national approved codes, specification and guidance documents.

Allasso provide a range of allpave hydraulically bound material on a supply and lay or supply only service from our centres and on a national contracting basis using our production plants capable of producing in excess of 400 tonnes per hour. We can provide full technical support and laboratory testing, making best use of site won or locally available aggregates.

The term HBM covers a wide selection of products with a vast array of source material and binder options all with unique properties.

‘Reduce your costs and environmental impact by using HBM’

- Soil or Aggregate + Hydraulic Binder(s) + Water = HBM

The term HBM defines a material that hardens under the presence of water, creating interlocking bonds which allows the material to gain strength over time.

There are over 80 different combinations of hydraulic binders set within two HBM families defined as quick hydraulic and slow hydraulic.

- Quick hydraulic defines a material that is Portland Cement based. CBGM (Cement Bound Granular Material) is an example of a quick hydraulic material.
- Slow hydraulic defines a material where the binder needs an activator such as quick lime. FABM (Fly Ash Bound Material) is an example of a slow hydraulic material.

Quick hydraulic materials develop high early life strength with up to two thirds of the materials strength gained at 7 days.

Slow hydraulic materials gain strength much slower with strength gain accelerating between 7 - 28 days and beyond.

Allasso have developed a slow hydraulic material that can extend storage, handling and working times of slow hydraulic materials for up to 8 weeks prior to compaction, please see allpave SH Storage for more information. This system offers distinct operational advantages.
In addition, within the two defined families of quick and slow hydraulic materials there are options to utilise alternative hydraulic binders such as Pulverised Fuel Ash (PFA) or Ground-Granulated Blast-furnace Slag (GGBS) together with Portland cement to provide a 'medium hydraulic' material. These materials utilise a pozzolanic reaction as cement replacement.

The pozzolanic reaction converts a silica-rich precursor with no cementing properties, to a calcium silicate, with good cementing properties. 'Medium Hydraulic' materials develop higher early life strength than slow hydraulic materials, however there is a protracted strength gain when compared to quick hydraulic materials. This can have the advantage of significantly reducing the risk of reflective cracking whilst providing increased ultimate strength.

The below chart illustrates the typical strength gain of the hydraulic families.

![Typical HBM Strength Gain by Family](chart)

'**A Sustainable Solution**'

HBM can be manufactured using primary aggregates or up to 100% recycled aggregate material with the optional benefit of using site won source aggregate. This reduces disposal and haulage costs and with an on site plant operational outputs can be greatly increased reducing programmes and costs. HBM's allow once low value materials to be used as a premium product by improving the structural properties and 'upcycling' the source material.

The performance and strength properties of HBM can be designed to meet almost any site requirement. The quality of the source aggregate, binder type and quantity of addition are key factors in the ultimate performance of the HBM material. allpave hydraulically bound material is available in a wide range of performance and strength classes with bespoke material design available.

[www.allassorecycling.co.uk](http://www.allassorecycling.co.uk)
‘A solution to Asphalt Waste Containing Coal Tar Disposal’

Asphalt and surface dressing materials contained coal tar until the 1980’s. Now the material is classified as hazardous and as such carries a huge disposal cost. Allasso’s allpave hydraulically bound material is an Environment Agency approved method of treating the waste for re-use, eliminating disposal costs, allowing the re-use of the quality aggregate once more.

Allasso possesses the necessary waste permits for compliance with the EA Guidelines.

Our coal tar solution won the National Highways Excellence Award for Sustainability in 2015.

Judges Comments

‘An innovative solution enabling the reuse of previously considered unusable materials.’

Specifications

Changes in specification over the last 10 – 15 years allow for performance based flexible composite pavement design. The changes in specification remove the need for thick capping/subbase layers and allow designers to select materials based on performance. The use of HBM can lead to a reduction of up to 60% of the pavement thickness. Today any pavement over 80msa must have a bound foundation.

The key documents specifying HBM manufacture and use

**BRITISH STANDARD**

- BS EN 14227 - Hydraulically Bound Mixtures

**DESIGN MANUAL FOR ROADS AND BRIDGES**

- IAN 73/06 - Design Guidance for Road Pavement Foundations
- HD/26/06 - Pavement Design

**SPECIFICATION OF HIGHWAY WORKS**

- Series 800
- Series 900

**SPECIFICATION AND GUIDANCE DOCUMENTS**

- TRL Report 611 – A guide to the use and specification of cold recycled materials for the maintenance of road pavements.

We can offer full technical and operational assistance

- Consultancy
- Testing
- Delivery

please contact us at info@allassorecycling.co.uk or 01933 420555.
HBM - The Benefits

- Cold process with the ability to use recycled materials, the use of HBM significantly contributes to C02 reductions and green procurement targets
- Can contain up to 100% site won recycled aggregate content
- Reduced construction times
- Reduced Pavement thicknesses
- High Performance Pavement Material
- Reduced Cost
- HBM’s are approved nationally for use
- Can be manufactured on site with our >400 Tonne per hour mobile plants
- HBM’s can be laid with readily available construction plant and can be used with bound and unbound materials

The below provides an illustration of how HBM can replace unbound stone and asphalt layers in a variety of applications to provide a superior, more cost effective pavement.

Footway including Light and Heavy Vehicle Crossovers

<table>
<thead>
<tr>
<th>Conventional Construction</th>
<th>HBM Construction</th>
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<tr>
<td>Surfacing</td>
<td>Surfacing</td>
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<tr>
<td>Binder</td>
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<td>Sub-Base</td>
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</table>
Conventional Construction

| Block Paving | Bedding Sand | Sub-base/Capping |

HBM Construction

| Block Paving | Bedding Sand | HBM |

HBM in New Construction

HBM in Highway Maintenance
Highways Maintenance Haunch Repairs

HBM Footway Reconstruction
Allasso offer full technical consultancy, design, testing and operational support. Please contact us to see how **allpave** can help you achieve a superior, cost effective and sustainable pavement or for technical and operational assistance please contact us at info@allassorecycling.co.uk or 01933 420555.

For material specific information, please see our **allpave** material data sheets available to download on our website.