

## Information sheet on placement of emvau-mix

<b>What is emvau-mix?</b>	<b>emvau-mix</b> is a quality-controlled construction material for road and footway construction. <b>emvau-mix</b> is produced using approved MV-bottom ash (bottom ash from municipal waste incineration), with the addition of hydraulic binding agents. It is an industrial by-product of waste incineration.
<b>What rules have to be observed in the placement of emvau-mix?</b>	<b>Environmental protection:</b> The material complies with the requirements for reuse of mineral waste.  In Hamburg and Lower Saxony, the limit values that apply are those of the LAGA Technical Rules (Joint Waste Commission of the Federal States), Instruction Sheet M20, Category Z 2.  In Schleswig-Holstein the limit values that apply are those of the Technical Supply Requirements for Aggregates (TL Gestein-StB), placement category Z 2 (HMVA 2).  Construction physics properties: The use of <b>emvau-mix</b> in public building works is subject to the regulations of the competent highways departments in Hamburg (ZTV/St-Hmb.), Lower Saxony and Schleswig-Holstein.  Confirmations of possible applications in public construction measures in Hamburg, Lower Saxony and Schleswig-Holstein are available on request at all times.  The use of <b>emvau-mix</b> for private building works depends on the individual requirements for the building measure in question (ZTVE-StB; ZTVT-StB; ZTV P-STB; RSTO).  It is recommended that the public regulations be taken as a basis.
<b>What form does quality control take?</b>	<b>Independent quality control:</b> asphalt labor Arno J. Hinrichsen GmbH & Co. KG, Wahlstedt  <b>Internal quality control:</b> Betotech Stade GmbH, Stade.
<b>Is proof of suitability under construction law required?</b>	According to the German Institute for Construction Technology, Berlin, there are no special construction law requirements for the areas of application mentioned.
<b>Where can emvau-mix be used?</b>	In highway, road and path construction, for creating surfaced areas in industrial and commercial complexes (car parks, storage spaces) and other traffic areas such as airports, port areas, goods transport centres. <ul style="list-style-type: none"><li>• as a bound second load-bearing layer under an impermeable covering layer, e.g. asphalt or concrete. In Hamburg it is permitted under pavement only if the MV bottom ash comes from the MVB or MVR plants (low salt content),</li><li>• for soil consolidation with cement in accordance with ZTVE-StB,</li><li>• as a hydraulically bound load-bearing layer (consolidation/HGT in accordance with ZTVT),</li><li>• as a foundation course in building construction or as a substitute for lean concrete.</li></ul>
<b>What placement thicknesses are usual?</b>	As a load-bearing layer usually 15 - 25 cm thick. The asphalt thickness depends on the individual traffic load.

**What advantages does emvau-mix offer?**

- Tractor-trailer units and construction machinery can drive on it immediately after placement,
- Long workability time of up to 5 hours, even under unfavourable weather conditions,
- The good stability of the freshly placed material permits immediate application of further layers, e.g. hot-mixed asphalt,
- Good environmental properties if properly installed,
- Quality control ensures perfect quality,
- No problems with later removal of the structure, thanks to take-back guarantee (see below for explanation).

**What placement conditions should be observed in particular?**

The distance between the base of the fill material and the highest expected groundwater level should be at least 1 m. In cases of direct contact with fittings susceptible to corrosion, a minimum distance of 50 cm must be maintained.

For precautionary environmental reasons, **emvau-mix** must not be used:

- in unsurfaced road construction
- under a water-permeable covering
- for filling ditches
- in designated or planned drinking water conservation areas and water priority areas (I - III B)
- in areas subject to frequent flooding
- in locations with unfavourable hydrogeological conditions
- on areas of sensitive use, e.g. children's playgrounds, sports grounds
- in drainage layers etc.

Use in unsurfaced construction roads is permitted if, on completion of the building phase, the road is surfaced with one of the above mentioned covering layers or removed again (see below, "Take-back guarantee").

**What additional placement information needs to be observed?**

**Placement equipment:** Grader, asphalt unit, manual placement  
**Compaction:** Rubber-tyred roller, smooth roller or vibration roller, plate vibrators  
**Grooving:** When fresh, at 5-m intervals; under asphalt with a thickness of  $\leq 14$  cm (BK SV, I-IV) at 2.5-m intervals; in this case a longitudinal groove should also be provided where the width is more than 8 m; depth at least 35% of intended placement thickness  
**After-treatment:** If not capped immediately, keep moist for approx. 2 days or spray entire area densely with a bitumen emulsion  
**Weather:** If frost is expected, **emvau-mix** – like all other hydraulically bound construction materials – should not be placed or should be specially protected from exposure to frost, e.g. by covering over.

Placement of **emvau-mix** should always be undertaken by qualified specialist companies.

**What are the most important technical parameters?**

Size range:	0 to 32 mm
Optimum moisture content:	14 – 16%
Density as delivered:	1.45 - 1.65 Mg/m <sup>3</sup>
Density as installed:	1.90 - 2.10 Mg/m <sup>3</sup>
Degree of compaction:	at least 98%
Compression strength after 28 days:	
Guide value in preliminary test	approx. 7 N/mm <sup>2</sup>

**What is the take-back guarantee?**

The separate take-back guarantee provides security in respect of future changes to the structure.

**emvau-mix** broken up into lumps (maximum edge length 25 x 25 cm) will, against payment of take-back costs, be accepted for reprocessing if constructional measures or other factors make removal necessary and there is no possibility of reusing the material on site within a short space of time.

HSK guarantees that the take-back costs will be no higher than if some other material had been used and had to be removed and reprocessed in an approved recycling unit. This avoids the uncertainty of unpredictable take-back costs.

**Position: 01/2006**