

Information sheet on placement of emvau-schlacke

What is emvau-schlacke?

emvau-schlacke (MV bottom ash) is a quality-controlled construction material for road and footway construction that is made from waste incineration bottom ash. It is an industrial by-product of waste incineration.

What rules have to be observed in the placement of emvau-schlacke?

Environmental protection:

The material complies with the “Requirements for reuse of mineral waste – Technical rules” laid down by LAGA (Joint Waste Commission of the Federal States).

In Hamburg and Lower Saxony, the limit values that apply are those of the LAGA Technical Rules, 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), Category HMVA 2.

Construction physics properties:

emvau-schlacke meets the requirements for aggregate-specific properties in accordance with the Technical Supply Requirements for Aggregates (TL Gestein-StB) and mixture-specific properties in accordance with the Technical Supply Requirements for Construction Material Mixtures and Soils (TL SoB-StB).

The use of **emvau-schlacke** 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 **emvau-schlacke** for private-sector construction measures depends on the individual requirements for the relevant construction measure (e.g. ZTVE-StB; ZTVT-SoB-StB; ZTV-SoB-StB; ZTV P-STB; RStO). Close approximation to the public-sector rules is recommended.

What form does quality control take?

Quality control in accordance with TL G SoB-StB:

- **Internal quality control:**
asphalt labor Arno J. Hinrichsen GmbH & Co. KG, Wahlstedt
- **Independent quality control:**
HEIDEN LABOR für Baustoff- und Umweltprüfung GmbH, Roggentin

Is proof of suitability under construction law required?

According to the German Institute for Construction Technology, Berlin, there are no special construction law requirements for the areas of application mentioned.

Where can emvau-schlacke be used?

The main areas of use are in highway, road and path construction, and 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:

- as a non-bound load-bearing layer and as a frost protection layer under an impermeable covering layer, e.g. asphalt or concrete. In Hamburg it is permitted under pavement only if the **emvau-schlacke** comes from the MVB or MVR plants (low salt content),
- as fill material for construction of noise barriers (sealed),
- as substructure material for road embankments,
- as levelling material for recultivation of landfill sites,
- as a foundation course in building construction,
- as a hydraulically bound load-bearing layer (see placement instructions **emvau-mix**).

What advantages does emvau-schlacke offer?

- High load-bearing capacity, also suitable for heavy goods vehicles,
- Construction independent of weather conditions reduces likelihood of weather-related stoppages and delays,
- Combined placement in frost-protection layer and second load-bearing layer makes for faster working, increases load-bearing capacity and leads to substantial cost reductions,
- 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-schlacke** 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 promptly surfaced with one of the above mentioned covering layers or removed again (see below, "Take-back guarantee").

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

What placement thicknesses are usual?

The layer is approx. 15 - 30 cm thick depending on design load and subsoil.

The asphalt thickness depends on the individual traffic load.

What are the most important technical parameters?

Size range:	0 to 32 mm
Optimum moisture content:	12 – 16%
Density as delivered:	1.40 - 1.50 Mg/m ³
Density as installed:	1.80 - 2.00 Mg/m ³
Degree of compaction:	
Limit value layer thickness \geq 25 cm	D _{PR} \geq 103%
Deformation modulus:	
Limit value layer thickness \geq 25 cm	EV ₂ \geq 130 MN/m ²
Practical values from test zones	EV ₂ \geq 160 - 180 MN/m ²
For layer thickness \geq 25 cm	EV ₂ /EV ₁ \leq 2.2

What is the take-back guarantee?

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

emvau-schlacke will, against payment of take-back costs, be accepted for reprocessing if constructional measures or other factors make subsequent 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.

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