

Fraunhofer-Institut für Bauphysik IBP

Forschung, Entwicklung,  
Demonstration und Beratung auf  
den Gebieten der Bauphysik

Zulassung neuer Baustoffe,  
Bauteile und Bauarten

Bauaufsichtlich anerkannte Stelle für  
Prüfung, Überwachung und Zertifizierung

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IBP Report HTB-020Kf-e/2019

## **Characteristic Values and Round Robin Test of Cellular Glass Aggregates (KRS) – Summary**

Reference number: P 52-5- 5.121-2010/17

Carried out on behalf of:

German Institute for Building Technology (DIBt)

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This report consists of

1 page.

Stuttgart, December 16, 2020

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## **1. Initial situation**

The use of cellular glass aggregates as load-bearing thermal insulation under the ground slab is regulated by national and European approvals. For the determination of the mechanical and building physical characteristic values, existing standards for insulation and aggregates apply which are specified in the approvals. Due to the special mechanical properties of cellular glass aggregate (very light, broken structure, coarse graining up to 80 mm), deviations from the test specifications are required for individual test methods. Within the framework of this research project, the procedures should be improved and described more precise. The aim is to increase the comparability of the tests.

## **2. Realisation**

In the period from 2017 to 2019, laboratory tests were carried out on two different cellular glass aggregate samples at the Fraunhofer Institute for Building Physics and the Forschungsinstitut für Wärmeschutz e.V. Munich (FIW). The tests were performed within the framework of the research project "Characteristic values and Round Robin Test on Cellular Glass Aggregates (KRS)" funded by the German Institute for Building Technology (DIBt). The following parameters and procedures were examined: Material pretreatment, determination of bulk density (EN 1097-3), determination of particle size distribution (EN 933), determination of particle density (EN 1097-6), determination of compression behavior (EN 826), determination of thermal conductivity (EN 12667), determination of water absorption (EN 12087).

## **3. Results**

On the basis of literature search, coordination between the laboratories involved and comparative measurements, proposals could be developed for the measurements of characteristic values of cellular glass aggregates for adapted test specifications and procedures. For all methods, good agreement was achieved in the measurement results of the two institutes after the adjustments. The proposed changes apply both to the equipment and test frames used and to the test procedure. When defining new test equipment, special attention was paid to ensuring that it could also be procured cost-effectively by the manufacturers.

## **4. Conclusion**

The proposed modified measuring procedures and test vessels provide a basis to adapt the tests within the scope of the factory production control and external monitoring, and thus make them more comparable. This applies not only to the tests carried out by the testing institutes but also to the tests carried out by the manufacturing companies themselves.