Document Control Sheet

<table>
<thead>
<tr>
<th>1. ISBN or ISSN</th>
<th>2. Type of Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Final report</td>
</tr>
</tbody>
</table>

3a. Report Title
Final project report Carbon Concrete Composites – C³
Joint research project V2.11 – Environmental compatibility of C³
Subproject C3-V2.11-I – Characterisation studies and leaching tests for determination of the environmental compatibility of C³

3b. Title of Publication

4a. Author(s) of the Report (Family Name, First Name(s))
Prof Dr.-Ing. Müller, Christoph
Dipl.-Ing. Reiners, Jochen
Dr Spanka, Gerhard

4b. Author(s) of the Publication (Family Name, First Name(s))

5. End of Project
31.08.2019

6. Publication Date

7. Form of Publication

8. Performing Organization(s) (Name, Address)
Bundesministerium für Bildung und Forschung (BMBF)
53170 Bonn

03ZZ0328A

10. Reference No.

11a. No. of Pages Report
23 (+ 8 p.attachment)

11b. No. of Pages Publication

12. No. of References
1

13. Sponsoring Agency (Name, Address)

14. No. of Tables
10

15. No. of Figures
23

16. Supplementary Notes
Will be presented together with the other final reports of the joint research project V2.11

18. Abstract
In addition to the structural properties the environmental compatibility of construction products becomes increasingly important. The aim of the joint research project V2.11 “Environmental compatibility of C³” was to create a broad, scientifically validated database by means of leaching and irrigation tests (laboratory and field tests) on carbon concrete test specimens with different concrete coverage of the carbon fibres and with different levels of reinforcement of the carbon fibres in order to ensure environmental compatibility of the composite building material “carbon concrete”. In the field tests the influence of specifically generated cracks in the carbon concrete test specimens on the environmental behaviour was further investigated. The project V2.11 is of overriding importance for the whole C³ project because in Germany very high demands are placed on the environmental compatibility of construction products, open questions regarding this aspect may be an “exclusion criterion” for new, innovative technologies.

The work of the VDZ gGmbH in the joint research project “Environmental compatibility of C³” focused on characterisation studies on dry mixed fine concretes, cement/binders, fillers and carbon fibres as well as on leaching tests according to the European long term tank test DSLT (DIN CEN/TS 16637-2:2014) on unreinforced and reinforced fine concrete specimens. The “DSLT” leachates of the four carbon fibres studied indicate that they release practically no polycyclic aromatic hydrocarbons to the leachate. The “DSLT” leachates of the unreinforced and carbon fibre reinforced fine concretes have shown that only very small quantities are leached out for most of the parameters and the limiting values of the model building code technical building rules are complied with. Furthermore it was found that no significant difference of the leaching behaviour of the unreinforced and the reinforced fine concretes occurs for the individual parameters. The results available so far suggest that the new material carbon concrete can be classified as environmentally compatible and that no further environmental tests are necessary. This could avoid unnecessary testing costs for the industry concerned.

19. Keywords

20. Publisher

21. Price