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Numerical benchmark campaign of COST Action TU1404 – microstructural modelling

Supplementary material
Model 3 - Micromechanical homogenization

Mateusz Wyrzykowski[1], Julien Sanahuja[2], Laurent Charpin[2], Markus Königsberger[3*], Christian Hellmich[3], Bernhard Pichler[3], Luca Valentini[4], Túlio Honório[5], Vit Smilauer[6], Karolina Hajkova[6], Guang Ye[7], Peng Gao[7], Cyrille Dunant[8], Adrien Hilaire[9], Shashank Bishnoi[10], Miguel Azenha[11]

[1] Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland
[2] EDF, R&D MMC, France
[3] TU Wien, Austria
[4] University of Padua, Italy
[5] Université Paris-Est, Laboratoire Navier (UMR 8205), CNRS, ENPC, IFSTTAR, France
[6] Czech Technical University in Prague, Czech Republic
[7] TU Delft, The Netherlands
[8] Department of Engineering, University of Cambridge, UK
[9] EPFL, Lausanne, Switzerland
[10] IIT Delhi, India
[11] ISISE, University of Minho, Portugal

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1 Introduction

In this document the input data for the Model 3 - Micromechanical homogenization model used in the numerical benchmark [1] is presented as a supplementary material.

2 Input data - model 3

From the experimental campaign described in Section 2 in [1] the water-to-cement ratio (w/c=0.30) and the evolution of the heat of hydration (as presented in Fig. 2 in [1]) are used together with densities according to Table I in order to determine the phase volume fraction evolutions. Elastic phase properties are given in Table I. The deviatoric hydrate strength of ordinary Portland cement mixes is age- and composition-independent and amounts to 69.9 MPa as determined based on independent experiments from Pichler and Hellmich [2].

Table 1. Material constants of micromechanical phases from [2].

Material phase	Young's modulus [GPa]	Poisson's ratio [-]	Density [g/cm³]
Cement clinker	139.3	0.3	3.109
Hydrates	29.16	0.24	2.073
Water	0	-	1.000
Air	0	-	0

References

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* Corresponding author (this supplementary material): Markus Königsberger, E-mail: mkonigsb@ulb.ac.be