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Discussion

Reply to the discussion by William J. Hime of the paper "Modeling the effects of solution temperature and concentration during sulfate attack on cement mortars"☆

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We would like to thank Dr. Hime for his discussion. It was indeed an error on our part not to have included the chemical analysis of the cement. This is included below in Table 1.

Our objective in this study was only to determine possible relations between the performance of the specific PC mortar and the temperature and concentration of the attacking solution. The models and the equations that we have proposed are not directly applicable to every type and composition of cement.

Additional limitations, such as the models being limited to the specific specimen size and shape used and the use of only one sort of physical parameter to express deterioration, have also been mentioned in the paper.

We have only tried to bring out an analysis of a complicated phenomenon such as sulfate attack using some fundamental relationships in chemistry. It is hoped that further studies in this direction would lead to the development of more generalized models that could be used for performance predictions in every, or at least most, situations. Another benefit is from a research point of view, in that the data from nonstandard test methods can be interpreted in a more reliable fashion.

Table 1
Composition and physical properties of cement used in the study

Compound/property	
CaO (%)	64.60
SiO_2 (%)	20.63
Al_2O_3 (%)	5.03
Fe_2O_3 (%)	2.80
C_3S (%)	62.00
C_3A (%)	9.00
SO_3 (%)	2.67
Alkalis (%)	0.50
Fineness (cm^2/g)	3600
Specific gravity	3.15

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