

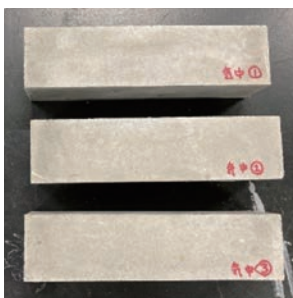
ジオポリマーモルタルの適切な初期養生条件とCO₂排出量の評価

Requirement of Appropriate Initial Curing Method for Geopolymer Mortar and Evaluation of CO₂ Emissions

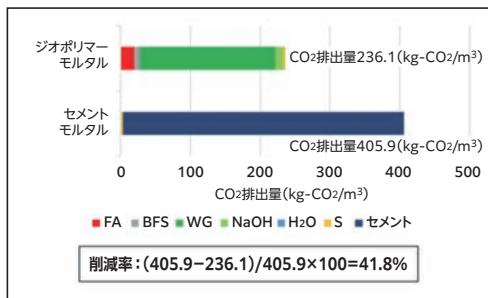
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練り混ぜ状況



硬化後の試験体



CO₂排出量とCO₂削減率

概要

ジオポリマーは、一般のセメントに比べて製造時のCO₂排出量が少なく、各種副産物を有効利用でき環境に配慮された材料である。本研究は、ジオポリマーの適切な初期養生条件を考案しCO₂排出量の評価を行うことを目的とする。ジオポリマーは給熱養生により活性フィラーとアルカリ溶液の反応が促進して早期の強度発現が促される。養生温度が高く、最高温度保持時間が長いほど、養生直後の強度が増進する。本研究では、温湿度を可変させた各種環境条件下で初期養生（成型後6時間）を行い強度発現に十分な初期養生の条件を考案した。またジオポリマーモルタルのCO₂排出量を算出し、セメントモルタルと比較したときの削減率を求めることでCO₂排出量削減の効果が明確になると考える。本研究では原単位の引用元を土木学会の成果報告書に絞り、CO₂排出量の計算を行うことで、引用元と計算結果に整合性のとれたCO₂排出量が確認できた。

Abstract

Geopolymers are an environmentally friendly material that emits less CO₂ during production than regular cement and effectively uses various by-products. This study aims to devise an appropriate initial curing method for geopolymers and evaluate CO₂ emissions. When geopolymers are cured with heat, the reaction between the active filler and the alkaline solution is accelerated, promoting early strength development. The higher the curing temperature and the longer the maximum temperature retention time, the greater the strength immediately after curing. In this study, initial curing (6 hours after molding) was performed under various environmental conditions with varying temperatures and humidity, and the conditions for initial curing sufficient for strength development were devised. We also believe that the effects of reducing CO₂ emissions will become clear by calculating the CO₂ emissions of geopolymer mortar and determining the reduction rate compared to cement mortar. In this study, by limiting the source of the unit citation to the results report of the Japan Society of Civil Engineers and calculating the CO₂ emissions, we could confirm that the source of the citation and the calculation results were consistent with the CO₂ emissions.

関連するSDGs



Related SDGs

