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## #9333 Summary

SUMMARY REVIEW EDITING

### Submission

Authors	Steve W.M Supit, Rilya Rumbayan, Adriana Ticoalu
Title	Performance of Cement Mortar Containing Micro and Ultrafine Metakaolin Binders
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### Submission Metadata

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## Title and Abstract

Title	Performance of Cement Mortar Containing Micro and Ultrafine Metakaolin Binders
Abstract	<p>Research into the usage of locally available construction material is essential and beneficial in ensuring a cost-effective construction project. One of the natural resources that be used as supplementary cementitious material is metakaolin. This research aims to investigate the performance of mortar reinforced with micro- and ultrafine metakaolin based on compressive strength and water absorption tests. Locally sourced metakaolin was mixed in cement mortar after calcined at 800°C with a variation amount of 0%, 5%, and 10% by wt. The tests were conducted on the 50mmx50mmx50mm cube specimens after water curing at 7 and 28 days, following the ASTM-standards. Results show that specimens containing 10% of micro- and ultrafine-metakaolin (MK-10 and UM-10) exhibited the highest compressive strength and better water-resistance characteristics when compared to control mortar. In this case, the addition of 10% ultrafine metakaolin (UM-10) reached the highest compressive strength value with approximately 121% and 100% higher than the compressive strength of control mortar on the 7th and 28th day, respectively. Additionally, the water absorption of UM-10 at 28 days was found to be 86% and 30% lower than PCC and MK-10, respectively. Furthermore, X-Ray Diffraction (XRD) and Thermogravimetric graphs of pastes with micro- and ultrafine-metakaolin indicate a reduction of CH; therefore, the production of more CSH gel. The densification of cement paste with ultrafine-metakaolin is also confirmed by nitrogen adsorption analysis indicating ultrafine-metakaolin's inert filler effect in forming a denser matrix.</p>

## Indexing

Keywords	Metakaolin; compressive strength; water absorption; X-Ray diffraction; thermogravimetric analysis; nitrogen adsorption.
Language	en

## Supporting Agencies

Agencies	KEMENRISTEK-DIKTI
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## References

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