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# Performance of Polymer Modified Asphalt Mixture Using Gypsum Filler

Rindu Twidi Bethary, Dwi Esti Intari & Siti Asyiah

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## Abstract

Road infrastructure is a means of transportation that is quite important in developing the economy in a region, so it is necessary to increase the quality and quantity of materials used and to add or modify the material used in the asphalt mixture by using gypsum powder waste and polymer asphalt. This study was aimed to determine the performance of the polymer-modified asphalt mixture using gypsum powder filler on the Asphalt Concrete Wearing Course (AC-WC) layer. The method used in this study was a laboratory experiment with Marshall testing with variations in the content of gypsum powder fillers, namely 0, 1,

2 and 3%. The results showed that the addition of gypsum powder filler could increase the value of the void in the mixture and the void in mineral aggregates, but it can reduce the value void filled with asphalt, stability and flow values. This affected the specific gravity and reduced durability of the asphalt mixture, but it provided the benefit of being able to accelerate the stiffening of the asphalt and make the asphalt mixture more, resulting in resistance to deformation damage.

Keywords

**Polymer asphalt** **Gypsum** **Filler**

**AC-WC**

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ICCIM 2021, 26 July 2021, Jakarta, Indonesia

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# Preface

This new volume of Lecture Notes in Civil Engineering contains the proceedings of the Second International Conference of Construction, Infrastructure, and Materials (ICCIM 2021). This book presents the latest development in civil engineering on a global scale. It highlights the conference scopes, such as Structural Engineering, Construction Materials, Geotechnical Engineering, Transportation System and Engineering, Constructions Management, Water Resources Engineering, and Infrastructure Development. The 55 articles published in this book went through peer-review processes double-blindly and plagiarism check. Manuscript assessments by the expert reviewers were based on the organizer's technical criteria, including technical criteria, quality criteria, and presentation criteria.

The Second International Conference of Construction, Infrastructure, and Materials (ICCIM 2021) was hosted by the Civil Engineering Undergraduate Study Program of Universitas Tarumanagara, Indonesia, on 26 July 2021. The conference brought together national and international experts to share their researches, knowledge, and experiences. ICCIM 2021 carried the theme "Research and Technology in Civil Engineering to Enhance the Sustainability of the Built Environment".

Due to the global COVID-19 pandemic, which has impacted all activities globally, ICCIM 2021 was held as an online conference. ICCIM 2021 online conference aimed to capture a broader range of participants. The Conference was also expected to facilitate researchers, practitioners, and students in their respective fields of expertise to share information and exchange ideas about the current state of civil engineering development.

ICCIM 2021 was supported by Massey University, New Zealand; Universiti Tun Hussein Onn Malaysia, Malaysia; Nihon University, Japan; fib Indonesia; Diponegoro University, Indonesia; Soegijapranata Catholic University, Indonesia; Universitas Sebelas Maret, Indonesia; and Universitas Atma Jaya Yogyakarta, Indonesia.

ICCIM 2021 has received papers from various countries, such as Indonesia, Japan, Thailand, the United Kingdom, the United States of America, the

Philippines, India, Nigeria, and Bangladesh. More than 600 researchers, practitioners, and students from all over the world registered to attend the Conference.

We are likewise grateful to the keynote speakers for bringing the exciting topics to ICCIM 2021: Prof. Roesdiman Soegiarso (Universitas Tarumanagara, Indonesia); Prof. Monty Sutrisna (Massey University, New Zealand); Dr.-Ing. Joewono Prasetijo (Universiti Tun Hussein Onn Malaysia, Malaysia); and Dr. Tam Chat Tim (National University of Singapore, Singapore).

We would also like to extend our appreciation to the supporting institutions. Secondly, thank you to the sponsors for the utmost support and kind contribution: PT. Waskita Karya (Persero) Tbk, PT. Pamapersada Nusantara, and PT. Bank Negara Indonesia Tbk.

Many people have worked very hard for the organization of this Conference. Special thanks are needed to the Organizing Committee, Steering Committee, Editorial Board, and Scientific Committee. All of whom have generously worked to make this Conference rich in content and pleasant for the attendees. We would also like to thank all the authors who have contributed to the success of this Conference.

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**Prof. Dr. Monty Sutrisna** is Professor of Construction and Project Management at Massey University, New Zealand. He is currently Head of the School of Built Environment at the same institution. His expertise includes Construction and Engineering Management, Construction Productivity, Construction Procurement and Contracts, Construction IT and other Advanced Technologies applied in Construction, Construction Project Management, Decision Making Modelling/Support, and Knowledge-Based Systems and Artificial Intelligence.

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