Hanaa Mohammed

بسم اللّه الرحمن الرحيم

مركز الشبكات وتكنولوجيا المعلومات

قسم التوثيق الإلكتروني

Safaa Mahmoud

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم باللّه العظيم أن المادة التي تم توثيقها وتسجيلها

علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

MECHANICAL PROPERTIES OF SYNTHESIZED SLAG BASED GEOPOLYMER CONCRETE

By

Khaled Moustafa Hussien Shibl

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Structural Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Mechanical properties of synthesized slag based Geopolymer concrete

Key Words:

Slag; Silica fume; Fly ash; Geopolymer concrete; Mechanical properties

Summary:

Mechanical properties of slag based geopolymer concrete has been studied with partial replacement of ground granulated blast furnace slag with silica fume, fly ash, and metakaolin. Compressive strength was studied at the ages of 7,28, and 90 days while splitting, flexural, and bond strength between reinforcement bars and concrete were studied at the age of 28 days. Different replacement percentages of silica fume, fly ash and metakaolin were used instead of slag for 15 concrete mixes with addition to two more concrete mixes with cement and the other is a mixture of cement and slag for comparing purposes. Results revealed that using ground granulated blast furnace slag as a base material gave the highest compressive and indirect tension strength at all ages. However, partial slag replacement with fly ash and metakaolin showed more bond and flexural strengths compared to mixes with no replacement percentages.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.
I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Khaled Moustafa Hussien Date: / / 2022

Signature:

Dedication

To my Mother & father,
The reason of what I became today,
Thank you for your love, support and care.
Thank you for always considering education a priority.

To my grandfather's soul
who has always believed in me, pushed me
and motivated me.

To my great professor,
Dr. Osama Hodhod
Thank you for taking the lead
in a very tight time
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To my great professor,
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besides being a tutor
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in all fields of life.

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Thank you my family, my friends and relatives for always believing in me, thank you for being so proud of me, this has been always an ignition
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