الآية

قال تعالي :

((قالو سبحانك لاعلم لنا إلا ماعلمتنا
إنك أنت العليم الحكيم))

صدق الله العظيم

Dedication

I dedicate this work with sincere regards and gratitude to my parents and family, for their support in bringing out this study.

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I wish to express my true thanks, first of all, to ALLAH who helped supported, and guided me by every mean during the stages of this work.

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ABSTRACT

In this research concrete mixes were tested to investigate the effect of (Acacia tortilis Gum) extracted from west of Kurdofan and evaluate the efficiency on fresh and hardened concrete for trying to produce a concrete with high workability and high strength.

In this research, the use of Acacia tortilis Gum after it proved not to fit for use within the food, where it was became a grinding gum in the form of powder and then added in different proportions of the weight of the amount of cement.

Four types of concrete mixes were cast in the form of cubes were studied. They were listed as follows:

(i) M1 is standard mix without any additive;
(ii) M2 is concrete mix after adding 0.25% Acacia tortilis from cement weight;
(iii) M3 is concrete mix after adding 0.5% Acacia tortilis from cement weight;
(iv) M4 is concrete mix after adding 1.0% Acacia tortilis from cement weight;

The research was shown that the effect of Acacia tortilis began runny in the concrete mix M2, resulted in the segregation.

In the concrete mix M3 had turned out gave the ratio, which gave good workability and high compressive strength.

While in the concrete mix M4 gave very low resistance with high workability.

Compressive strength was measured on seven and twenty eight days, and showed that the resistance decreased when additive increased to ratio over 0.5% Acacia tortilis. It was concluded from this research that the workability can be obtained without effecting on the compressive strength of concrete by adding 0.5% of Acacia tortilis Gum (M3).

المستخلص

في هذه الدراسة تم إجراء إختبارات لخلطات خرسانية لدراسة اثر صمغ السيال المستخلص من غرب كردفان و معرفة فعاليته على الخرسانه الطازجة والمتصلدة لمحاولة إنتاج خرسانه تمتاز بقابلية تشغيل جيده ومقاومة عاليه.

تم في هذه الدراسة إستخدام صمغ السيال بعد أن أثبت عدم صلاحيته للإستخدام ضمن المواد الغذائية ، حيث تم طحن الصمغ حتى صار في شكل بدره ومن ثم أضيف بنسب مختلفة مقدارها من وزن الإسمنت.

صبت أربع أنواع من الخلطات الخرسانية في شكل مكعبات لدراستها. وتفاصيلها كالأتى:-

أ. (M1) وهي الخلطة الأساسية (المرجعية) بدون أي إضافات.

ب. (M2) وهي الخلطة الخرسانية بإضافة 0.25% صمغ من وزن الأسمنت .

ج. (M3) وهي الخلطة الخرسانية بإضافة 0.50% صمغ من وزن الأسمنت.

د. (M4) وهى الخلطة الخرسانية بإضافة 1.00% صمغ من وزن الأسمنت.

أظهرت الدراسة أن أثر صمغ السيال بدأ واضحا"على العينة M2 ذات نسبة أن التماسك بين مكونات الخلطة ضئيل جدا" مماتسبب في إنفصال الحبيبات المكونة للخلطة.

أما في العينة M3 فقد إتضح أنها النسبة التى أعطت قابلية تشغيل جيدة ومقاومة عالية.

بينما في العينة M4 ذات النسبة فنتجت عنها مقاومة ضئيلة جدا" مع قابلية تشغيل عالية.

قيست مقاومة الضغط للمكعبات في أعمار 7 و28 يوم ,وإتضح أن هذه المقاومة تقل بمعدل طفيف وذلك كلما زادت نسبة المضاف عن 0.5% .

قد إستخلص من هذه الدراسة أنه يمكن الحصول على قابلية تشغيل جيده بدون التأثير على مقاومه الضغط عن طريق إضافة نسبة 0.5% من صمغ السيالM3 .

List Of Abbreviation (symbols)

PFA	Fly ash
OPC	Ordinary Portland cement
PPC	Portland Pozzolana Cement
BS	British Standard
EN	Euro Standard
WR	Water Reducer
SR	Set Retarding
SA	Set Acceleration
HRWR	High-Range Water Reducing
C_3S	Tricalcium silicate
$Ca(OH)_2$	Calcium hydroxide
C_2S	Dicalcium silicate
$C_3S_2H_3$	Calcium silicates hydrate
C_3AH_6	Tricalcium aluminate hydrates
f_c	Cylindrical compressive strength
F_{cu}	Cube compressive strength
E_c	Elastic modulus of concrete
G	Shear rigidity
K	Bulk modulus

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