



أجندة طالب الدراسات العليا

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التخصص : مواد البناء

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أسماء لجنة المناقشة:

1. استاذ مساعد دكتور قيس جواد فريح ، الجامعة التكنولوجية/هندسة البناء والإنشاءاترئيسا
2. استاذ مساعد دكتور اقبال نعيم كوركيس ، الجامعة التكنولوجية/ هندسة البناء والإنشاءات ..عضوا
3. استاذ مساعد دكتور احمد سلطان علي ، جامعة النهرين / كلية الهندسةعضوا
4. استاذ مساعد دكتور وليد عبد الرزاق عباس ، الجامعة التكنولوجية/هندسة البناء والأنشاءات...عضوا و مشرفا

جامعة بغداد / كلية الهندسة .

اسم المقوم العلمي: استاذ مساعد دكتور زينة خضير عباس

جامعة كربلاء / كلية الهندسة.

اسم المقوم اللغوي: مدرس دكتور شاكر فالح شاكر

عنوان البحث للرسالة او الاطروحة:

“Production and Properties of Geopolymer Attapulgite Bricks”

“انتاج وخصائص طابوق الاتبلكايت الجيوبوليمري”

عناوين البحوث المستتلة:

1. Alkali Activated Brick At Low Temperatures Based on Iraqi Attapulgite.
 2. انتاج الطابوق الجيوبوليمري من مواد محلية(مقدم لجهاز التقييس والسيطرة النوعية كبحث براءة اختراع).
- تقدير المناقشة : جيد جدا عالي .



Abstract :

مستخلص البحث :

This study concludes investigation of the possibility of clay bricks product by geopolymerization process. Prepared mixes of locally Attapulgitic clay were grinding to less than 250 μm with different concentration of NaOH solution (i.e., 4, 6 and 8 Mole), and formed using iron mold by applied (13-14) kN of load.

Brick samples were prepared in two groups; group 1 which contained 270 samples that subjected to curing process at (80, 100, and 120 $^{\circ}\text{C}$) for 24 hr, while group 2, 270 samples, also was subjected to burning process at (400, 500, and 600 $^{\circ}\text{C}$) for 3hr. In addition, two reference mixes with 60 samples (0% of NaOH), were prepared, namely (Ref.1) which were burned at optimum temperature of (500 $^{\circ}\text{C}$), whereas (Ref.2) were burned at normal burning temperature for production of clay bricks, i.e.1000 $^{\circ}\text{C}$.

Shape and dimension, compressive strength, water absorption, and efflorescence tests were carried out according to Iraqi standard No. 24 for 1988. Simultaneously, longitudinal shrinkage, bulk density, and modulus of rupture tests were performed according to British standard No. 84 for 19734. In addition, microstructure tests (SEM and EDS) were performed for brick samples of optimum mixes, and Ref.1 set.

It was concluded that the optimum percentage of NaOH and the preferred burning temperature were 4 M and 500 $^{\circ}\text{C}$, respectively. Where, the bricks obtained with these parameters was have (13.9 MPa) compressive strength, which exceeded twice times the compressive strength value of reference mix (Ref.1); i.e. (3.9 MPa). These parameters gave bricks with engineering properties within (class B) requirements of Iraq's standard for clay building bricks.

The improvements were up to 256 %, 12.66 % and 80.95 %, for compressive strength, water absorption, and modulus of rupture, respectively. The reducing in burning temperatures reach to about 50 %, whereas the compressive strength of brick that product at 500 $^{\circ}\text{C}$ was equivalent to 90 % of that reference mix (Ref.2) strength's, which was burned at 1000 $^{\circ}\text{C}$.