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用碱活性矿渣、粉煤灰水泥制作的预置骨料混凝土的特点

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摘　要：研究评估了以碱活性水泥灌浆料作为粘结剂制备的预置骨料混凝土的特性。本研究考虑了各种矿渣和粉煤灰的二元混合物，不以细骨料作为填充材料，同时考虑了不同的溶液与固体的比例。本文研究了新鲜和硬化的灌浆料以及硬化的预置混凝土的性能，以及预置混凝土的抗压强度、超声脉冲速度、密度、吸水率和总空隙。结果表明，碱活性水泥灌浆料比传统水泥灌浆料具有更好的流动性特征和抗压强度。因此，预置骨料混凝土的机械性能得到明显改善。与吸水率和孔隙率有关的结果显示，碱活性预置骨料混凝土的抗渗水能力更强。另外，本文讨论了基于超声波脉冲速度值的填充能力，以评论碱活性水泥灌浆的包裹能力。

关键词：碱活性水泥；预置混凝土；填充能力

Characteristics of Preplaced Aggregate Concrete Fabricated with Alkali-Activated Slag　Fly Ash Cements

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Abstract　This study assesses the characteristics of preplaced aggregate concrete prepared with alkali-activated cement grout as an adhesive binder. Various binary blends of slag and fly ash without fine aggregate as a filler material were considered along with different solution-to-solid ratios. The properties of fresh and hardened grout along with the properties of hardened preplaced concrete were investigated, as were the compressive strength, ultrasonic pulse velocity, density, water absorption and total voids of the preplaced concrete. The results indicated that alkali-activated cement grout has better flowability characteristics and compressive strength than conventional cement grout. As a result, the mechanical performance of the preplaced aggregate concrete was significantly improved. The results pertaining to the water absorption and porosity revealed that the alkali-activated preplaced aggregate concrete is more resistant to water permeation. The filling capacity based on the ultrasonic pulse velocity value is discussed to comment on the wrapping ability of alkali-activated cement grout.

Keywords　Alkali-activated cement; Preplaced concrete; Filling capacity

1.引言

" "

GGBFS F GGBFS

Davidovits 20 70

60 1908 Ku¨hl

1930-1950 Purdon

1950 Glukhovsky

Idrissi

Aboulayt

Idrissi / / / /

Gullu

Idrissi

Li

Li

40

2.样品准备

0.5

1 10%
30% 50% 0.7
2 30% 70%
0.6 0.7 0.8 0.9

3.结果

3.1

1 30%

T30
50% T30

T30

30% 40%

T30 2

0.6 0.9

T30 96%

T30

35s CC

T30

3.2 PAAC

PAAC

CC F0S100

166% PAAC

PAAC

PAAC PAAC

UPV UPV

50%

PAAC

PAAC

PAAC

-

PAAC

- PAAC

3.3 PAAC

UPV

Thunuguntla

UPV

CC

100% CC

PAAC

F0S100 CaO

C-S-H C-A-S-H

UPV

UPV

FS0.6 160

UPV

PAAC

PAAC

UPV

3.4 PAAC

PAAC

PAAC

CC

10% PAAC

PAAC

F0S100 C-A-S-H

Ismail

4.讨论

PAAC

PAAC

R-square 0.976

PAAC

R-square 0.93

0.9 PAAC CC

CC

PAAC

PAAC

PAAC

PAAC

PAAC CC

5.结论

(1)

30%

(2

(3) UPV

PAAC UPV

UPV

(4)

PAAC

(5) PAAC

PAAC

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