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عنوان مقاله:

Influence of Bi-directional Fibreglass Grid Reinforcement on Drying Shrinkage and Mechanical Properties of Lightweight Foamed Concrete

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خلاصه مقاله:

This experimental work is about the study of drying shrinkage followed by strength testing of lightweight foamed concrete (LFC) specimens with the confinement of woven fiberglass mesh (FGM) at three different densities. The LFC specimens were wrapped with 1-layer to \mathcal{W} -layer(s) of FGM for cube and cylinder specimens and in beam specimen, it was centrally spread along the longitudinal axis. The specimens were cured under air storage conditions and the drying shrinkage test was carried following ASTM CIAY/C IAYM specification on three prism-shaped 'YammxYammxYamm' specimens. NORAITE PA-ι foaming agent was used to produce the desired density of LFC. All of YYF specimens were tested for mechanical properties of LFC. The cast specimens were put to test at Ydays, YAdays and ۵۶ days. In compression strength test, cube dimensions of 100mm side following BS EN 17890-7:7009 were adopted. The flexural strength was conducted on 'i...mmxi...mmxa...mm' beam specimens following BS ISO 19Yo-A:Yoo9. The specimens '100mm in diameter and Y00mm in height' were tested for split tensile strength considering ASTM CF95/ CF95M-oFe1 specifications. The result showed that confinement with 15-g/mY (GSM) of FGM significantly restricts the drying shrinkage of LFC specimens compared to control specimens and it decreases with the increases in layer(s) from I-layer to \u00c8-layer(s) and density of LFC. The testing of the mechanical properties of LFC showed a direct proportionality between strength and LFC density and confinement layer(s). The failure pattern observed in all specimens was either by debonding or splitting of fibers of FGM. Thus, LFC at 19.0kg/mm density confined/reinforced with ^w-layers of FGM conquers the good performance in drying shrinkage and strength properties while the poor .performance was shown by the unconfined LFC at 900kg/mm density

كلمات كليدى:

drying shrinkage, Durability, Foamed concrete, Strain, Textile Fabric

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