

## Production of Friendly Environmental Material as Building Element from Plastic Waste

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**Abstract :** The basic goal of this study is the production of cheap building elements from plastic waste. environmentally friendly and of good thermal insulation. The study depends on the addition of plastic waste as aggregates to the mixes of concrete at different percentages by weight (12 percentages) to produce lightweight aggregate concrete the density (1095 - 1892) kg/m<sup>3</sup>. The experimental work includes 120 specimens of concrete 72 cubes (150\*150\*150)mm, 48 cylinder (150\*300) mm. The results obtained for concrete were for local raw materials without any additional materials or treatment. The mechanical and thermal properties determined were (compressive strength, static modulus of elasticity, density, thermal conductivity (k), specific heat capacity (C<sub>p</sub>), thermal expansion ( $\alpha$ ) after (7) days of curing at 20 0C. The increase in amount of plastic waste decreases the density of concrete which leads to decrease in the mechanical and to improvement in thermal properties. The average measured static modulus of elasticity are found less than the predicted static modulus of elasticity and splitting tensile strength (ACI 318-2008 and ACI 213R-2003). All cubes specimens when exposed to heat at (200, 400, 600 0C), the compressive strength of all mixes decreases gradually at 600 0C, the strength of lightweight aggregate concrete were disintegrated. Lightweight aggregate concrete is about 25% lighter than normal concrete in dead load, and to the improve the properties of thermal insulation of building blocks.

**Keywords :** LWAC, plastic waste, thermal property, thermal insulation

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