

## **The utilization of aluminum waste as sand replacement in concrete**

### **Abstract**

Development activities in construction sector have caused serious problems throughout the world as the natural resource depletion and produce large amounts of waste. In Malaysia, the main problem appeared when most of the waste was abandoned and not recycling. Such conditions can cause serious problem such as environmental pollution. This research utilizes aluminum waste as sand replacement in concrete. The use of these materials not only helps in the natural resources such as sand, aggregate, cement and other building. However, it also helps in reducing the manufacturing cost of the concrete. In addition, the reduction in the cost of waste disposal, saving manpower and protect the environment from the effects of pollution are the benefits derived from the use of waste materials. A study was conducted on the use of recyclable aluminum materials, as sand replacement material in concrete mix with replacement of 1%, 2% and 5%. Lab tests, including slump tests, compressive strength and water absorption were conducted in this study. As a result, samples containing 1% aluminum waste has better performance in terms of strength and containing 5% aluminum waste has good resistance to water absorption. Using aluminum waste in concrete is an interesting way in recycling waste thus can reduce waste disposal on sites and also can conserve the natural resources.

### **Keywords;**

Aluminum Waste, Concrete, Construction Material, Environmental Pollution, Recycle Material