

## ABSTRACT

The universal need to conserve resources, protect the environment and well using the energy must necessarily be felt in the field of concrete technology. Recycling of construction waste and demolition as a source of aggregates for concrete production, has attracted growing interest in the building industry.

In Algeria, the exhaustion of natural aggregate deposits and difficulties in establishing new quarries require to seek new sources of supply to meet the aggregate needs for large projects launched by the Algerian government (East West Highway, the construction of one million housing etc ....).

In this context, this work is conducted in order to answer the concerns of lack aggregates for concrete. Its objective is also the recovery of the fraction of inert demolition materials and mainly as a source of concrete aggregates for the construction of new hydraulic concrete.

This experimental study presents the results of physical and mechanical characteristics of natural and recycled aggregates, as well as the influence of these recycled on the properties of fresh and hardened concrete. The characterization of materials showed that recycled aggregates presented an heterogeneity. However, the limit prescribed by the regulations in force does not disqualify these materials for use in concrete.

The strength, compressive and tensile splitting as a of time, without concrete admixtures based aggregates recycled with different combinations granular, are acceptable compared to those of natural concrete. The mechanical performances highlight that the recycled aggregate concrete can provide resistance to 28 days under compression within 25 to 35 MPa without any adapted technology.

The study consists in comparing the properties of a concrete of reference at the fresh and hardened state, those of the concretes incorporating of recycled aggregates in substitution of a voluminal fraction from sand, gravels and both whole with rates of substitution of (30%, 50%, 100%).

**Key-Words:** aggregate, recycling, demolition, concrete, mechanical strength.