

SUS-CON

SUStainable, innovative and energy-efficient CONcrete, based on the integration of all-waste materials



PARTNERS



SUS-CON is a R&D Collaborative Project funded by the EC through its 7th FP. The 4-year project started in 2012 with the aim of **developing new concepts and technology routes for the integration of secondary raw materials** (aggregates and binders) **in the production cycle of concrete** (for both ready-mixed and pre-casted applications) to manufacture a **sustainable, innovative and energy-efficient concrete** made with 100% secondary materials.

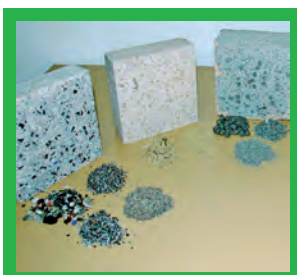
The **key objectives** and **challenges** of the Project were:

- to **reduce the embodied energy and CO₂ footprint of concrete** by replacing traditional binders with novel binders from secondary materials;
- to produce **novel lightweight aggregates from secondary materials**;
- to combine novel aggregates and binders in **an energy-efficient lightweight concrete made of 100% secondary materials** with improved thermal insulation properties;
- to add **additional performance demands** (i.e. thermal insulation) in the design methodology.

Several eco-sustainable concretes recipes, based on innovative aggregates and binders from secondary raw materials, have been suitably designed and developed, targeting specific products. **Pre-casted** (50 panels and 1.000 blocks) and **ready-mixed** (screeds) SUS-CON prototypes have been industrially produced by European construction companies and the **highly compatibility of SUS-CON concretes with existing production processes** was demonstrated. In addition, performances of SUS-CON prototypes were tested in terms of mechanical, thermal, acoustic insulation properties and fire resistance. The SUS-CON solutions were installed on **3 real demo buildings** located in three different European sites (Spain, Turkey and Romania).



Decision-support tool
for the design of SUS-CON
concrete
(<http://www.sus-con.eu/suscon-dss/>)



Novel SUS-CON concrete
with 100% secondary
materials



GEO panels made of
SUS-CON concrete
($\lambda=0.165$ W/mK)



GEO blocks made of
SUS-CON concrete
($\lambda=0.155$ W/mK)



Fire resistance tests on GEO
panel (EI240)



Application of GEO panels
and GEO blocks on real
buildings