High performance Lightweight aggregate for concrete from the recycling of urban waste

NUMIX

The main objective of the proposed project is to find new applications of mixed plastic wastes in the construction sector, so reducing the percentage destined to incineration or landfill. The proposed approach is based on the development of two products. The first product is a polymeric foam to be used in the construction sector as an aggregate for lightweight concrete instead of expanded clay. The second one is represented by homogeneous flakes to be used as aggregate for mortar and as raw material for the expanded granules. The most important target groups are industries working in the filed of plastic recycling, concrete producers, end-users of the products in the construction market. The main projects phases are: 1. the industrialisation of the extrusion process for the expanded granules 2. the start-up a new industrial extrusion line for manufacturing densified flakes 3. the validation of the new type of aggregate and the preparation of a technical-commercial schedule for the two products 4. the environmental compatibility analysis in view of Environmental Product Declaration and ECO-Label certification 5. the dissemination activities for market replication across Europe

Benefits

Reduction of the plastic waste destined to landfill and incineration, production of eco-sustainable products for building field.

Results

- Realization of a final product made of recycled plastic waste that could be a valid substitute of expanded clay in building sector;
- Recycling of mixed plastic waste elsewhere destined to landfill or incineration (1 million tons/year at the end of the project);
- Reduced water consumption for the lightweight concrete with respect to the use of traditional expanded clay (2.91% for the new lightweight aggregate vs 18% for expanded clay);
- The potential market for the developed products (both in form of expanded granules and densified flakes) is strictly related to the building industry and concrete production market, being such products destined to substitute one of the ingredient of the lightweight concrete. Based on a study conducted on the Italian market, the production of aggregates for light concrete is about of 400,000ton/years.
- Patenting of the new building material in form of densified flake.

Partners and coordinator

CENTRO DI PROGRETTAZIONE, DESIGN E TECHNOLOGIE DEI MATERIALI [1]  Italy
Contact

CENTRO DI PROGRETTAZIONE, DESIGN E TECHNOLOGIE DEI MATERIALI
7 Strada Statale SS7 Appia km 706+030, c/o Cittadella della Ricerca
Brindisi
72100 Brindisi Puglia
Italy

Contact point

Name: Ms. Alessandra Passaro
E-mail: alessandra.passaro@cetma.it
Tel: +39-0831-449407

Budget

Overall budget: 1.275.556,00 € (EU contribution: 52,00 %)

In brief

Sector: Recycling
Duration: 01/07/2009 to 30/06/2012
Contract number: ECO/08/239110
Website: http://www.numix-ecoinnovation.eu/

Tags:
building
plastic
recycling

Media coverage

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