



Project Information Sheet

High performance lightweight aggregate for concrete from the recycling of urban waste (NUMIX)

Programme area:	PLASTIC WASTE RECYCLING
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Website:	www.numix-ecoinnovation.eu
Benefits (max. 150 characters incl. space):	Reduction of mixed plastic waste destined to landfill and incineration, production of eco-sustainable products for building field.
Keywords:	Recycling, plastic urban waste, construction
Sector:	E38.3.2 - Recovery of sorted materials
Type of solution	Production of: 1.: expanded granules to be used as aggregate for lightened concrete, substituting the expanded clay; 2.: densified flakes to be used as aggregate for mortar and as raw material for product 1.
Duration:	01/07/2009 – 30/06/2012
Budget:	€ 1.275.556 (EU contribution: 52.4%)
Contract number:	ECO/08/239110/SI2.535262

Summary

The **main objective** of the proposed project is to find new applications for mixed plastic wastes in the building sector, so reducing the percentage of plastic wastes destined to incineration or landfill. The proposed approach is based on the development of two products:

- expanded granules to be used as an aggregate for lightweight concrete in place of expanded clay,
- densified flake 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 field of plastic recycling, concrete producers, end-users of the products in the building market.

The **main projects phases** are:

1. the industrialisation of the extrusion process for the expanded granules;
2. the increasing of the productivity of one of NUMIX partners for the manufacturing of 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.



Expected and/or achieved results

The most important results obtained in the first 20 month of project are listed in the following.

- The market scenario was defined and the potential Lead Markets for the proposed project products/processes was defined.
- The industrial processes and equipments were defined, ensuring suitable productivity and products properties.



Figure 1 - Samples of expanded granules

- A complete characterization of NUMIX aggregates according to the existing European standards was carried out. In particular test based on EN 12667, demonstrated thermal conductivity of NUMIX aggregates is about 25% lower than expanded clay.
- Some first validation products were manufactured. In particular a screed coat for thermal-insulation applications was manufactured.



Figure 2 - Screed coat containing NUMIX aggregates

- Actions specifically aimed at mobilizing a wide market uptake. Several contacts were established with companies involved in the plastics recycling and building sector.