



LIFE GREEN SINKS - Realization of green composite sinks substituting organic and mineral primary materials by recovered waste

LIFE12 ENV/IT/000736



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Project description:

Background

The use of composite kitchen sinks is growing rapidly. Among the three main types, (polyester/acrylic, quartz composite and granite-based) quartz composite – 60-70% quartz and 30% resin filler – provides a much more durable surface than polyester/acrylic. However, to date, in the manufacture of quartz composite sinks, no use is made of secondary raw materials. Furthermore, quartz composite sinks are made using Methyl methacrylate (MMA) (20-30%) and Poly-methyl methacrylate (PMMA) (10%) fillers, with most of the waste produced in the manufacturing process sent to land-fill as ‘special industrial waste’.

It is estimated that the waste from composite sink manufacturing in Europe amounts to over 3 000 tonnes of minerals, heavily polluted with polymers, and worldwide to approximately 8 million tonnes per annum. Furthermore, the use of quartz and quartz-like primary materials places a heavy demand on the availability of natural mineral resources, and is harmful to the environment.

Therefore, the recovery of waste from composite sink manufacturing would help offset the landfilling of this type of waste, and reduce the excavation of primary raw materials such as quartz and cristobalite (minerals).

Objectives

The project aims to develop the first ‘green sinks’ and to demonstrate the feasibility of 100 % substitution of primary resources by the treatment and recycling of 80% of MMA and PMMA used in the manufacture of composite sinks. The recovered MMA and PMMA will be recycled with other minerals and moulded to form new (composite) sinks.

Specific objectives include:

- The preservation of the environment and primary resources by reducing the requirement for the mining of quartz and cristobalite minerals used in the production of composite sinks;
- The recycling of a large variety of mineral waste (glass, quartz from stone industries), which will comprise 60-70 % of the green sinks;
- Reduced fuel consumption due to a reduced need to transport minerals;
- Reduced land filling of waste material from the composite sink industry.

A Life Cycle Assessment will be carried out on the green sinks and validated according to the ISO 14040 and ISO 14044 methodologies.

Expected results:

- 100% green sinks – with the feasibility of completely substituting MMA, PMMA and mineral fillers with suitably treated secondary raw materials and green additives proven from a technical and economic perspective;
- Proven feasibility of recycling 80% of Delta’s composite sinks waste;
- 20-30 green sink products available for demonstration.

Concrete environmental improvements expected during the project’s lifetime include:

- MMA recycled in green sink lab and pilot trials – c. 12 000 kg;
- PMMA recycled in lab and pilot trials – c. 30 000 kg;
- Mineral waste recycled in lab and pilot trials – c. 28 000 kg;
- Total recycled materials used in the project – c. 44 tonnes;
- Total waste from Delta’s composite sink production diverted from landfill – at least 1 400 kg.

Results

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Environmental issues addressed:

Themes

Industry-Production - Plastic - Rubber -Tyre

Keywords

waste use, building material, plastic, industrial process

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	DELTA srl
Type of organisation	SME Small and medium sized enterprise
Description	Established in 1997, Delta produces and markets built-in kitchen sinks made of acrylic composite material and stainless steel, as well as complementary products such as taps, hobs, ovens and oven hoods in matching colours, shower floors and various other plastic products. It has participated in numerous international fairs and carried out several research projects. It is currently investigating the production of composite sinks from 100% recycled materials.
Partners	None

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Administrative data:

Project reference	LIFE12 ENV/IT/000736
Duration	01-JUL-2013 to 01-JUL -2015
Total budget	1,580,980.00 €
EU contribution	766,990.00 €
Project location	Piemonte, Valle d'Aosta, Liguria, Lombardia, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Toscana, Umbria, Marche, Lazio, Campania, Abruzzi, Molise, Puglia, Basilicata, Calabria, Sicilia, Sardegna

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