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LIFE12 ENV/IT/000736**LIFE+ Environment Policy and Governance project application****Language of the proposal:**

English (en)

Project title:

Realization of green composite sinks substituting organic and mineral primary materials by recovered waste

Project acronym:

LIFE GREEN SINKS

The project will be implemented in the following Member State(s):

Italy All regions

Expected start date: 01/07/2013**Expected end date:** 01/07/2015**LIST OF BENEFICIARIES**Name of the **coordinating** beneficiary: DELTA srl**LIST OF CO-FINANCIERS****PROJECT BUDGET AND REQUESTED EU FUNDING**

Total project budget:	1,580,980 Euro	
Total eligible project budget:	1,533,980 Euro	
EU financial contribution requested:	766,990 Euro	(= 50.00% of total eligible budget)

PROJECT POLICY AREA

Waste and Natural Resources

SUMMARY DESCRIPTION OF THE PROJECT (Max. 3 pages; to be completed in English)**Project title:**

Realization of green composite sinks substituting organic and mineral primary materials by recovered waste

Project objectives:

In the manufacturing of quartz composite sinks until today no use is made of secondary raw materials. Scrap and refuses produced during the production process are for 98 % landfilled as special industrial waste (cod. CER 070213 plastic waste). Quartz composite sinks are made for 20-30 % of MMA, Methyl methacrylate; for 10 % of PMMA, Poly(methyl methacrylate); for 60-70 % of quartz or cristobalite as mineral filler; besides several chemical additives. On a European level, the production implies primary resources consumption of a total of 21.000 ton, comprising 5.880 ton of MMA; 1.470 ton of PMMA; 210 ton of additives; and 13.440 ton of minerals. Waste production amounts to 3.654 ton of minerals heavily polluted by polymers.

Aim of the project is to experiment and demonstrate feasibility of 100 % substitution of primary resources by treated waste and recycling of 80 % of scraps and refuses produced by the process. This will allow to future market introduction of the first Green Sinks in the world.

Recovered MMA and PMMA use in composite sinks would permit a larger recycling of both products and a reduced production of MMA, saving propene used for the acetone component and reducing the employment of hydrogen cyanide; and of PMMA, produced by polymerization of MMA employing double as much as petrol as its weight.

A breakthrough will be achieved with the substitution of mineral filler of composite sinks:

- preservation of landscapes and primary resources by reduced mining of quartz and cristobalite for 1,5 the amount of minerals used in production of sinks (20.677 ton/y at EU level)
- recycling of a large variety of pre- and post-consumer mineral waste (glass, quartz from stone industries a.o.) for an amount equal to 60-70 % of the Green Sinks (13.440 ton/y at EU level);
- reduced fuel consumption for transport of minerals, nowadays rare in Europe, supplied from abroad;
- reduced landfill of scraps and refuses of composite sink industry (2.923,2 ton/y on EU level).

Main project objective is to validate a process by which the stated objectives can be achieved once introduced on the market.

During the project, 33,2 ton waste will be withdrawn from landfills by recycling as mineral filler; 49,8 ton quartz or cristobalite will be saved from excavation; 1410 kg DELTA scrap will be diverted from landfill; 18,5 ton MMA/PMMA will be saved and relative waste diverted from landfill, achieving 7,4 ton saving on fuel consumption for PMMA production.

Actions and means involved:

B: Allowing for the introduction of recovered mineral filler in composite sinks dispersions (action B1), 3 aspects will have to be defined: assessment of optimal mineral filler composition and particle size; developing treatment process for composite sink scrap; study on functionalisation of recycled mineral filler in order to compatibilize with recycled organic materials MMA and PMMA. Collaboration will be sought with a mineral treatment industry and a research institute.

Looping test cycles are carried out for the formulation of dispersions and molding in laboratory (B2) and on a pilot level (B3 preparing formulations, B4 molding). In each of the 12 starting formulations, one secondary raw material is introduced at time, keeping the other components conventionally, as to understand variations in rheology, viscosity, physical and aesthetic characteristics. Varying formulations, composition or granularity of filler and process parameters should result in the validation of the technology which allows a green product with at least the same physical and mechanical characteristics as conventional composite sinks. Measurements in this sense are foreseen during all stages in action B5.

C: A Life cycle assessment on the Green Sinks will be outsourced and an end-evaluation on socio-economic impacts carried out in-house.

D-E: Dissemination activities comprise a project brochure, open day, mid-term seminar, final conference; 5 presentations at fairs and conferences; 2 publications in sector reviews, plant visits and presentations on request, a website, notice board and layman's report. Targeted are end-user group of build-in kitchen industries, sanitary ware industries and customers, peers from the acrylic composite material industries, supplier industries like recycled MMA and PMMA industries and glass recycling industries, scientific community and public authorities. Also networking activities will be performed

with other (LIFE+) projects.

Expected results (outputs and quantified achievements):

The following RESULTS are expected:

- 100 % Green Sinks: technically and economically proven feasibility to substitute MMA, PMMA and mineral filler entirely by suitably treated secondary raw materials, and use of green additives as far as available on the market;
- At least 6 products of the more than 100 available in Delta producible in Green;
- Proven feasibility to recycle 80 % of own composite scrap and sink refuses;
- 20-30 Green Sink Products of 8 different shapes available for demonstration

Concrete ENVIRONMENTAL IMPACTS expected within project life-time are:

- MMA recycled in Green Sinks lab and pilot trials: 14.806 kg;
- PMMA recycled in Green Sinks lab and pilot trials: 3701 kg;
- Mineral waste recycled in Green Sinks lab and pilot trials: 33.178 kg, reducing excavation needs with 49.767 kg;
- Total recycled materials employed in the project: 51.685 kg;
- Total scab from Delta's composite sink production withdrawn from landfill: at least 1.410 kg

DISSEMINATION: 1000 brochures distributed amongst target groups from composites materials and kitchenware sector, scientists and customers; 200 participants informed during an open-day, a mid-term seminar, presentations on request and final conference; project results shown at 5 international conferences and fairs for sectoral stakeholders; at least 7.200 interested people informed by the project website

EXPECTED DIRECT IMPACTS: Within few years after the project, Delta expects to produce its entire collection in Green. This would imply:

- reduced virgin MMA consumption with 588 ton and virgin PMMA consumption with 147 ton, withdrawing the same amounts of MMA and PMMA waste from landfill;
- reduced mineral primary resources consumption with 1.344 ton, reducing excavation needs of quartz and cristobalite with 2.067,7 ton/y;
- Total primary resources savings: 2.079 ton;
- DELTA Composite waste withdrawn from landfill disposal: 288 ton/y

INDIRECT IMPACTS: Future widespread diffusion on the market, would permit to achieve in Europe a reduction in quartz and cristobalite mining of 20.677 ton annually; in primary MMA and PMMA consumption of resp. 5.880 and 1.470 ton. 2.923 Ton of composite waste could be withdrawn from disposal.

Can the project be considered to be a climate change adaptation project?

Yes No

The project is not typically a climate change project.