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LIFE 09+ENV/ES/454



Key Data:

- **Project:**
WoodRuB: utilization of recovered wood and rubber for alternative composite products
- **Funding program:**
LIFE 09+ENV/ES/454
- **Project budget:**
1.838.968 €
- **EC financial contribution:**
918.192 €
- **Duration:**
36 months (2010-2013)
- **Participants:**
9 partners, 5 countries



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NEW APPLICATIONS FOR WOODRUB PROTOTYPES



Action T4 of WoodRub project - Development and testing of new composite - has been characterized by the development and evaluation of new composites made with wood and rubber; as a result of experiments on the reactivity and functionality of the two materials combined with different resins, three different binder matrix systems were selected: consequently, the new composite's implementation has been possible thanks also to the identification of the appropriate process' methodologies.

The subsequent mechanical, disruptive and acoustic tests have been useful in order to evaluate the performance in view of application uses. In this sense, during the first months of 2013 the activities of Action T5 - Implementation and pilot experience - have been carried out and then, various types of prototype have been proposed; subsequently, eight of them, with several intended uses, have been designed and implemented.

1) WOODRUB ACOUSAN: Highways facings



Two different types of acoustic barriers are already available in the market, depending on their function that can be reflective or absorbent. The prototype under development is designed for external application in order to absorb noise generated by highway traffic; more in detail, this will be possible thanks to a sandwich structure, made with particleboards that represents the support for an internal sound-absorbing layer obtained from tires rubber. Specifically, the two external wooden layers differ from each other because of the presence of holes; in fact, they are applied on the barrier side facing towards the road, in order to facilitate the sound absorption, whereas the opposite surface is without them to avoid as much as possible the sound transmission.

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Several benefits are supposed: in addition to a high absorption capacity and to a consequent reduced acoustic reflection demonstrated by appropriate tests, the prototype can also perfectly integrates under an aesthetic point of view in the environment; therefore, it can be suitable for installation in places which require a low visual impact, like landscape or residential areas.

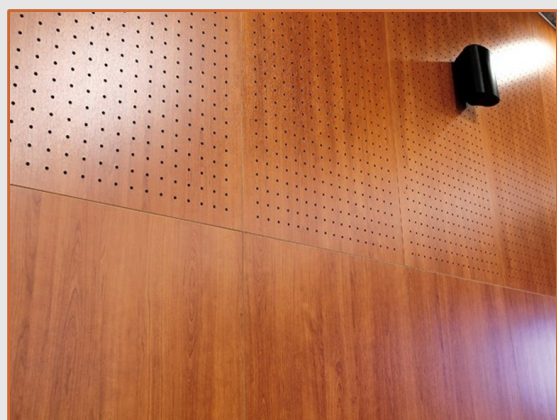
2) WOODRUB ACOUFRAME: Acoustic panels and works walls



The combined use of wood and rubber with the purpose of sound absorption also finds application in indoor environments through the realization of panels applicable in walls and ceilings or suitable for the manufacture of furnishings.

Under a functional point of view the structure is similar to the one used for highways, with the exception that the particleboards are laminated in order to improve the aesthetic appearance of the product and then to make it usable for the indoor environment.

A further application supposed for noise barriers also concerns the working places, both indoors and outdoors.



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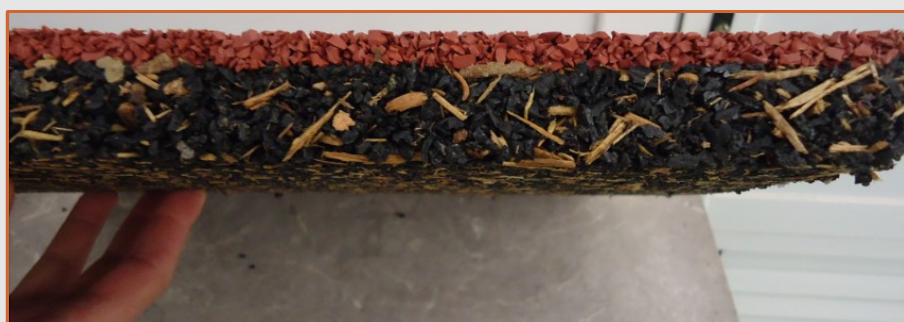


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3) WOODRUB PLAYMAT: Playgrounds



Still regarding the external environment, a further application concerns playgrounds for children who require a cushioned surface in order to minimize the risk of injury caused by a fall. In this regard, within WoodRub project, a product showing a surface layer obtained from rubber granules seamlessly blended and able to withstand wear and atmospheric agents, has been developed; this surface is applied on a thicker pillow layer, made with recycled tire and wood fragments that represents the padding useful to absorb the shock due to a fall.



4) WOODRUB SAFETYMAT: Anti-slip floors and safety cushions



Security is a topic that is taken into account when new prototypes made with rubber and wood are proposed, such as non-slip flooring for the indoor environment or protective cushions for furniture edges and ledges.

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5) WOODRUB PATH: Garden paths



Although there are already different materials employed for the realization of pavements and paths in parks and gardens, the combination of wood and rubber has been particularly suitable for producing tiles, since the surface obtained is uniform, non-slippery and able to cushion the falls, because of a 3 cm thickness. The individual elements can also be made in many shapes and sizes, they are applicable to any surface and they are tailored for different environments.



6) WOODRUB RURBAN: Benches, bins and flower pots



As well as floors and surfaces, even the urban furniture can be made by combining the two materials. Specifically, fragments of rubber of three different granulometric classes and dried wood chips have been used to produce baskets, flower pots and benches for the external environment. Benches, in particular, in addition to test for the evaluation of resistance to environmental conditions, have been subjected to mechanical trials in order to ensure the safety requirements specified by current standards and regulations.

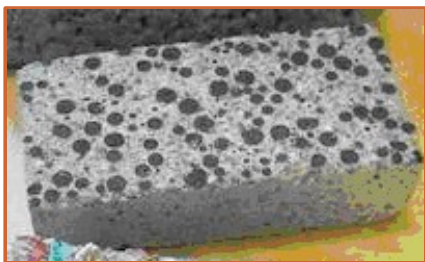
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7) WOODRUB BRICKS: Bricks for internal walls



The use of wood and rubber can also be done together with other materials to produce elements such as bricks that will be used for the construction of interior partition walls. Small and large particles of both materials may in fact be used as reinforcing elements within a matrix of gypsum and/or cement, with a percentage weight varying from 25 to 50%.



8) WOODRUB LAMINRUB: Flooring underlayments



A further application hypothesized but not yet been developed concerns the use of a mixture of wood and rubber in quality of subfloor: rubber in fact, in addition to its versatility and resilience, has good sound-absorbing properties even for a few millimetres thickness; all these qualities should be added to the thermal insulation in case a mixture with wood particles is achieved. This kind of composite is considered particularly suitable for constructions.



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UPCOMING EVENTS

ECOMONDO - 17th international trade fair on material & energy recovery and sustainable development



Ecomondo is the most reliable platform in Southern Europe and in the Mediterranean area for the development and reuse of materials and more in general for the largest industry in the future, also called Green Economy. The fair will take place in Rimini (Italy) from the 6th to the 9th November 2013 and the complete waste cycle is the core business of the event, with a special focus on worn tyre supply chain and on the scraps' selection and recovery.

Various conferences will cover critical topics like, for example, the Waste Life Cycle Assessment.

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DISSEMINATION

20th Annual European Conference on tyre recycling

Focus on the future :
Evolving technologies,
Sustainable products,
New Markets

ETRA 20th CONFERENCE

On March 22th 2013, Keridis and AUTH-LFU presented WoodRub project during The 20th Annual Conference that was held in Brussel, focused on key advances in tyre recycling industries within and outside Europe. More in detail, stakeholders were informed about the environmental and economic importance of waste management, optimal manner for managing resources, and about WoodRub new materials.

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