Improving the sorting, separation and recycling of composite and multi-layer materials

Proposals are expected to develop new or improve existing innovative processes for the sorting, disassembly/separation, recycling and/or the introduction into manufacturing process of materials from products made of composite and/or multi-layer materials and assess the potential barriers for their implementation. They can deal with used products, production rejects or existing stocks such us material recovered from industrial and municipal landfills. Proposals should aim to optimise value retention in the economy, rather than downgrading the composite or multi-layer materials for applications with low quality requirements, as compared to the value of the initial separate materials, especially for applications with high performance requirements. Proposals should also provide recommendations for the design of these applications, products or related materials, based on the lessons learned in the development of these processes, to enable an increase in volume and quality of reuse and recycling of these products. In addition, these recommendations should cover requirements for product information to enable effective identification and management after use (including consumer targeted labelling, where appropriate). The environmental impact (e.g. substitution of virgin plastics, water saving, impact on water quality), social impact (e.g. related to health and safety legislation) and cost of the innovative processes implemented (e.g. recycling processes) should be assessed in a holistic way, taking the entire lifecycle into account. The proposals are expected to provide evidence of the potential market impact that the proposed solutions could bring, including impacts on current economic actors in the chain and anticipated consumer acceptance and changes of consumer attitude (taking into account gender issues, when relevant). To this end, quantitative information on the size of the targeted market is expected. Participation of relevant industrial partners (technology providers, end-users etc.) is considered important. Activities are expected to achieve TRL 5-6 by the end of the project.

This topic is in support of the European Strategy for Plastics in a Circular Economy. Selected projects under this topic as well as projects selected under other topics in

H2020 supporting the Plastics Strategy are strongly encouraged to participate in joint activities as appropriate. These joint activities could take the form of clustering of projects, participation in workshops, common exploitation and dissemination etc. The proposals are expected to demonstrate support to common coordination and dissemination activities. Applicants should plan the necessary budget to cover those activities without the prerequisite to define concrete common actions at this stage.

The Commission considers that proposals requesting a contribution from the EU in the range of EUR 4-5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Composite or multi-layer materials are increasingly used in different applications. Products and materials are getting more and more complex, which affects the ability to retain the value of materials in successive uses. While the combination of different materials may provide unique and desirable properties to products, it also brings challenges for the sorting, separation, recycling or composting of the materials that constitute the products, whether in a compound form or separately. It also complicates their re-introduction into manufacturing processes. A better understanding of these challenges should inform the design of composites and multi-layer materials.

The project results are expected to contribute to:

- increased yield and quality of sorting of products made of composite or multi-layer materials;
- increased recycling of raw materials from products made of composite or multi-layer materials, in terms of volume and/or quality;
- reduced use of virgin raw materials;
- increased knowledge on how to design for reuse and recycling (“circular design”) of products currently made of composite or multi-layer materials;
- increased knowledge on the process environmental footprint, including the net effects on greenhouse gas emissions, of improved sorting, separation and recycling of composite and multi-layer materials.

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