CREATOR
COLLECT • PURIFY • REUSE

Dissemination report

Workpackge	WP4: Benchmarking the material reuse
Lead beneficiary:	MAI
Due date :	**25th June**

Grant Agreement number:	820477
Project acronym:	CREAToR
Project title:	Collection of raw materials, Removal of flAme reTardants and Reuse of secondary raw materials
Funding scheme:	H2020-SC5-2018-2019-2020
Coordinator:	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
Project Website:	www.creatorproject.eu

DISSEMINATION REPORT WP 4

Description of WP results status (Max 1000 Characters)

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Purification of the stream and removing the flame retardants

Description of Tasks results status (Max 1000 Characters)

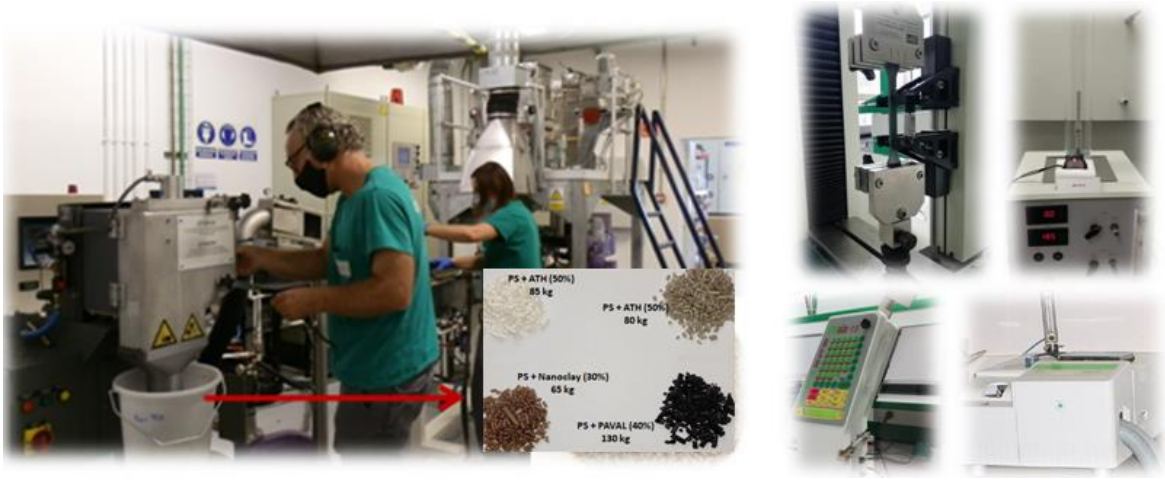
TASK 4.1: Performance optimization of purified materials. (ICT)

The main objective of this task is to study and develop new polymer formulations based on non-halogenated flame retardants. In this task a first selection of green environmental friendly flame retardants (FR) was carried out. Four different FRs additives were selected taking into account their potential use as FR, market availability and price:

- Aluminium trihydroxide (ATH) is the most common non-halogenated flame retardant. However, it presents poor market availability and high price.
- Magnesium dihydroxide (MDH) are also used as flame retardant additive, but it is specially designed for mixing with high melting temperature polymers. Magnesium hydroxide has a higher price than ATH.
- Paval is a mix of metallic oxides and hydroxides obtained during the purification of the aluminium. It can be used as alternative to ATH at lower price.
- Nanoclays have shown their ability to produce synergies when they are mixed with ATH or MDH. This additive is based on inexpensive phyllosilicates.

A complete program for the selected FRs has been carried out. The main idea of the characterisation was getting deep knowledge on the flame retardant mechanism of each additive. In order to get this information, the testing done so far has comprised density, particle size and definition of the water release capacity. The results of the characterization so far have allowed better knowledge of the mechanism associated to each FR additives and their limitations when they are applied to flame retardant formulation.

Based on the defined demands of partners involved in demonstrators manufacturing, different non-halogenated formulations has been prepared. All the materials were prepared by extrusion process, which relies melting the polymer and mixing with the proposed green flame retardants. After the manufacturing the materials, they were submitted to injection moulding for obtaining test samples, which were characterized in terms of thermo-mechanical and fire behaviour.



TASK 4.2: Environmentally friendly re-flame restarted materials (CID)

Description of Tasks results status (Max 1000 Characters)

TASK 4.3: Demonstrator manufacturing (MAI)

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TASK 4.4: Data Generation. (MAI)