

The Polyfire project will develop and scale-up techniques for processing halogen-free, flame retardant nanocomposite materials and coatings based on unsaturated polyester resins and nanoclays. This will enable, for the first time, industrial scale production and exploitation of flame-retardant nano-filled polyester resins, and the replacement of halogenated flame retardant additives. These materials will open up an extensive field of applications in a wide range of industrial sectors, not least construction and mass transport, where flame-retardancy and light-weight are critical. The project will focus on developing turn-key solutions that will be easily integrated into industrial companies, in particular SMEs in Western and Eastern Europe, thereby ensuring maximum impact and benefit to the European community.

The target of this project is to develop and scale-up the nanoclay chemical modification process and the physical mixing and dispersion techniques which will deliver the production of halogen-free, fire-retardant polyester resin on an industrial scale (typically 1000 tonnes per year).

The up-scaled material will be used to produce fibre-reinforced composites and coatings, which will be thoroughly evaluated by a range demanding mechanical, physical and fire tests. Furthermore, the technology will be demonstrated by producing 3 industrial-scale case study components from key sectors such as construction, rail and marine.

The partners will focus on developing materials which can be successfully applied in existing composite moulding processes and coating techniques to make integration easier and therefore maximise commercial uptake. Comprehensive health, environmental and economic impact assessments will be conducted, in parallel with the technical activities, to ensure that the materials and processes developed are sustainable.