Recycling Sytrofoam® to Make Waterproofing Resin, Phase II

Alves Pereira da Silva, Jaqueline

Pelinson, Lucas

Cavalcante dos Reis, Gisele

The Styrofoam® (Expanded Polystyrene) is an odorless rigid cellular plastic that doesn't contaminate the soil, water and air, is 100% reusable and recyclable and can return to the condition of raw material. It features a variety of forms, applications and its main features are lightness and thermal insulation, which increases the consumption of such material on the market. This is the biggest problem. World production of polystyrene is about 2 million tons per year and about 10% is recycled, due to the difficulty of making economically viable reverse logistics, as it is a light and voluminous material. With this reasoning, we identified a new material from the solubilization of Styrofoam® in a mixture of organic solvents, with the primary solvent methyl ethyl ketones (MEK), turning it into waterproof resin that can be applied to surfaces like concrete. We developed a low cost sustainable product, efficient and simple, to reduce. The rigid polystyrene foam insulation is a proven material, not only for its insulating characteristics, but also for its lightness, strength, workability and low cost. Recycling is simpler, involving fewer technological resources and less energy consumption, either electrical or thermal energy, generating no by-product. We tested our product on concrete adopting not very complex procedures and the results were positive about impregnating surfaces using recycled EPS.

Awards Won: