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FABRICATION OF RIGID POLYURETHANE SOLID PLATES WITH THERMAL-ACOUSTICAL ISOLATION PROPERTIES BY PRIMARY RECYCLING FROM SURFBOARD SHAPING PROCESS RESIDUES

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In the development of materials the environmental impact generated since its creation until its discard should be considered, once, it is clear, for the whole society, the necessity to find ways to cohabit in harmony with the environment that surrounds us. In the production of boards for aquatic sports as surf, the preparation of a required board shape of the polyurethane rigid foam blocks generates a great amount of powder and pieces of rigid foam residues that nowadays are discarded without any reuse. Starting from a primary recycling of this residue, which are the polyurethane powder, block pieces and some sawdust from the shaping of surfboard foam blocks, this work propose the preparation of plates obtained by hot compression process for use as component in civil construction works seeking improvements in the properties such as thermal and acoustic isolation of structural components. This residue, milled all together, was sifted and the powder was separated in three granulometries: <150 µm, between 150-250 µm between 250-600 µm. These raw materials were processed varying hot compression process parameters such as compaction pressure, residence time and temperature. A comparative experiment was developed to evaluate which plate has better performance in the thermal isolation, hence a system was built in where heat is conducted trough the air to one side of the plate and the temperature of the other side was measured in different times. Preliminary results revealed that with the use of a simple processing methodology and, without the use of chemical additives, it was possible to obtain homogeneous recycled polyurethane plates and that the residence time showed greater influence than the other parameters in the thermal efficiency due to the densification of the plates. Next steps will investigate the efficiency in the acoustic isolation and the structural properties of this new recycled material.