**Revalorization of aluminum waste and obtaining rigid geopolymer foams**

CSIC together with the University of Jaen has developed a revalorization procedure for residual filter dust in the aluminum industry based on obtaining highly porous amorphous resistant foams. The present invention is useful for the preparation of aluminosilicate geopolymer materials with specific textural, microstructural, mechanical and thermal properties.

Industrial partners from aeronautical, aerospace, metallurgy, construction, and waste management field companies are being sought to collaborate through a patent licence agreement.

**An offer for Patent Licensing**

A material with mineral rock properties

Geopolymeric materials are aluminosilicates with chemical and structural properties similar to mineral rocks.

In manufacturing, the aluminum industry by-product, filter powder, is used as a source of aluminum and foaming agent, together with another by-product, rice husk ashes, as a source of silica, obtaining porous materials consisting of geopolymer.

The materials can be obtained at room temperature as parts shaped with the required dimensions, with dimensional stability over a wide range of temperatures.

During production it is possible to obtain properties required by adding other materials for reinforcement, such as fibers, macromolecules and others to obtain composite materials or "composites" based on geopolymers.

**Main innovations and advantages**

- The process can be controlled allowing a priori to establish the conditions of the material.
- The material obtained is characterized by having a high porosity and very suitable mechanical and thermal properties for a series of applications taking into account its chemical composition, mechanical resistance and porous microstructure obtained.
- The material can be used as a filter and insulating substrate, as a thermal barrier and refractory material up to 1200 °C, as a catalyst support, as an acoustic insulating material, as a light cement, as a material for the immobilization of toxic materials for health and radioactive waste, such as support for deodorants and air fresheners, as a coating and for use in construction as a material for ornamentation and decoration.

**Patent Status**

Priority patent application filed suitable for international extension

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