

## PROCEDURE FOR THE MANUFACTURE OF MONOLITHIC SYSTEMS OF CERAMIC OR CARBONACEOUS NATURE

### DESCRIPTION OF THE INVENTION

The present invention refers to a procedure for the manufacture of monolithic systems of ceramic or carbonaceous nature using the Selective Laser Sintering (SLS) technique.

The procedure according to the invention is characterised by being respectful with the nature of the starting materials and by not requiring the addition of additives and solvents for their processing, thus

saving costs and reducing risks for workers' health. The materials shaped and obtained following the procedure of the invention have a high intrinsic porosity, which is particularly advantageous for ceramic materials, since it avoids the need to perform later activation treatments that use chemical methods or the incorporation of additional additives during the processing for the formation of porosity.

### BUSINESS APLICATION SECTORS

This invention can have different applications, e.g. catalyst support for the chemical industry, absorbents for the removal of pollutants or odours, or dispensers / diffusers of fluids (gases or liquids) in reactors or particulate filters.

### TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- The technology proposed in the patent allows casting ceramic and carbonaceous materials without any technical limitation concerning geometry.
- Given the intrinsic nature of the casting technique, the waste of materials is optimized and only the exact amount of each of them is used; therefore, the surplus can be used.
- The casting process is environmentally-friendly, as it does not use solvents and there are not any stages in the process in which hazardous waste is generated.
- This is an easily-scalable process that does not require an additional expansion of equipment and facilities.
- Automation is simple and does not require the participation of almost any human resources during the process.
- This is a process that does not entail an elevated energetic consumption, what allows reducing productions expenses to the maximum.
- Auxiliary chemicals used in the process can be purchased in large quantities (in bulk), what entails a low cost.

### STATUS OF THE DEVELOPMENT OF THE TECHNOLOGY

Monoliths with the following compositions have been successfully developed up to now:

- Graphite-based monoliths (100 %).
- Cordierite-based ceramic monoliths (100 %).
- Calcium oxide-based ceramic monoliths (100 %).
- Mixed ceramic cordierite/calcium oxide-based monoliths (different compositions).
- Mixed ceramic cordierite/magnesium oxide-based monoliths (different compositions).

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Nowadays, new mixtures of ceramic materials are being developed with catalytic properties what allows the manufacture of monoliths with catalysts. This development approach is very promising and it would complement the line of preparation of ceramic monoliths as physical support for catalysts.

### INDUSTRIAL PROPERTY RIGHTS

This technology is protected by means of a patent application.

- Title: "Procedimiento para la fabricación de sistemas monolíticos de naturaleza cerámica o carbonosa" ("Procedure for the manufacture of monolithic systems of ceramic or carbonaceous nature").
- Application no: P201330489.
- Date of application: 30/03/2012.

Moreover, a PCT application has been submitted in order to expand it internationally.

European Patent: EP2832708 (A1)

### COLLABORATION SOUGHT

Companies interested in the following cooperation agreements are wanted:

- Patent license agreement for the implementation and use of this technology.
- Agreement for the development of the R&D project (technical cooperation).

### RELATED IMÁGES



### CONTACT DETAILS

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