



OO/UC3M/46- FEEDSTOCKS DEVELOPMENT FOR METAL INJECTION MOULDING

Today, more than 90% of used feedstock for MIM in Europe, came from BASF (exclusive patent), with low possibility for change compositions or costs (in Japan or USA, the percentage is quite smaller). In our research group (Powder Technology Group) we can develop new *feedstocks* formulation that can be used directly by the MIM parts manufacturers and fulfilling their composition requirements.

Interest in licensing the applied patent or commercial agreement with technical assistance with companies that would like to incorporate this technology.

Description and special features

In the last 15 years, the processing by MIM has undergone a high development becoming a profitable technology able to produce little parts with complex geometries and the final shape desired. The process can be divided in four main steps: in the first one is necessary to obtain a mixture with the metal powder and binder (usually a thermoplastic polymer) called feedstock which must have rheological characteristics such that allow it to flow and to be injected in the second stage of the process using a plastic injection moulding machine. The parts obtained in that way, composed of metallic powder and polymers, are denominated green parts. The next stage is the binder elimination (known as debinding). This elimination can be done by a chemical treatment, thermal treatment or a combination of both. These parts are called brown parts and they are formed by the metallic powder and a small portion of binder that confers it the enough strength to maintain the shape until, in the last stage, they are submitted to a heat treatment of sintering in which the links between powder particles takes place obtaining a material with densities and mechanical properties in the same range that it obtained by casting and even as wrought material.

Innovative aspects

To develop at a required need, of MIM feedstocks, including processing guide for mixing, granulating, injection, debinding and sintering. Our research group (GTP) has fully experience to develop and to optimize each step in the process

Competitive advantages

Main improvements are the reduction of costs and the manufacturing under demand of alloys.

Technology Keywords

Moulding, injection moulding, extrusión, sintering; Metals and Alloys

Contact Person: María Dolores García-Plaza

Phone: + 34 916249016

E-mail: comercializacion@pcf.uc3m.es