



**HOMOGENOUS FEEDSTOCK FOR METAL INJECTION MOLDING (MIM)  
PROCESS**

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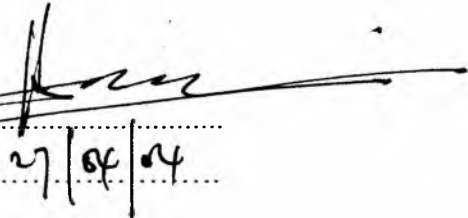
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## ABSTRACT

Metal Injection Moulding (MIM) has become the important production process, which combines the basic principles of plastic injection moulding process with powder metallurgy process. This process is suitable for high volume production of small parts with complex shape at low cost compared to other metal processing such as casting and machining. Each step in MIM process plays a vital role in order to achieve high quality final product. The main application of the MIM process is to produce products of complex shapes having excellent mechanical properties. The study using 316L stainless steel powders with 16  $\mu\text{m}$  particles size and a composite binder system whose main constituents are polyethylene glycol (PEG), which are water soluble binder system and finely dispersed polymethyl methacrylate (PMMA). Feedstocks were prepared by hot mixing process and subsequently compacted by hot-press compaction method to form a specimen with 30 mm diameter and 3 mm thickness. Three different PEG % weight composition; 65 %, 75 % and 85 % with 63 % powder loading were studied. Focus was given to determine the homogeneity of the feedstock. Result show that increasing of PEG % composition would increase the value of viscosity. Under SEM composition, the presence of voids in fractured surface believed to be due to entrapped air during compaction process. This will cause inhomogeneity of the feedstock. The result also show that 75 % PEG composition gives better homogeneity, which is associated with higher density and strength of the green body.

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