

## عنوان مقاله:

Experimental Investigation of Metal Powder Compaction without Using Lubricant

## محل انتشار:

فصلنامه علوم و فناوری ذرات، دوره 2، شماره 3 (سال: 1395)

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## نویسنده:

Seyed Mohammad Zahraee - *Department of Advanced Materials and Renewable Energy, Iranian Research Organization for Science and Technology (IROST), Tehran, Iran*

## خلاصه مقاله:

The main objective of this work was to design a novel device for compaction of metal powders so that the green parts could be ejected with applying a negligible force and without the need for any lubricant in either an admixed form or applied to the die wall. For this purpose a 40 mm diameter one-piece die was envisaged which would elastically contracted 0.076 mm before compaction and after completion of powder compacting operation, it would be allowed to expand, thus releasing the green compact and so it could be ejected with a force near to weight of the compacts. The experiment indicated that this shrinkage value of 0.076 mm was indeed a realistic estimate which provided sufficient shrinkage to cover both: I— The elastic die deformation of 40 mm diameter during compaction which shows 0.0433mm elastic deformation. II—The elastic spring back of the specimen of 40 mm diameter which was 0.0227 mm after completion of compaction and releasing the compaction force. The design also provided sufficient clearance of 0.010mm between the compact and the die wall on release of compacting pressure to allow ejection of compact with a force near to weight of compact while no lubricant was used on the die wall nor admixed with powder

## کلمات کلیدی:

„Powder Compaction,P/M Lubricants,Die Wall Lubrication,Elastic Die Deformation,Elastic Spring Back

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