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July 19th, 1946

TO: M. H. Smith
 FROM: C. F. Benner
 SUBJECT: M/721 - 722
POWDERED METAL GEARS

The powdered metal gears as submitted by you have been tested and results are as follows:

Pilot Lot	Shear Test - lbs. to Break	Special Heat Treatment	Original Sample
1. 25 lbs., 3 oz.	27 lbs., 2 oz.		47 lbs., 14 oz.
2. 29 lbs., 9 oz.	24 lbs., 1 oz.		
3. 24 lbs., 0 oz.			
	Weight of Gear		
8.5047 gr.	8.6200 gr.		9.0159 gr.

All of the above samples with the exception of No. 3 in the pilot line group were tested by applying a gradual load (through the addition of shot in a bucket) to the outside end of the gear while the other end having the hole was retained in a vise. Breakage always occurred through the hole. The No. 3 sample in the pilot lot group was tested by using fish scales for the purpose of correlating earlier test data.

The above data very definitely shows a significant difference in properties and density between the samples as originally submitted and the recent shipment. This difference might be due to analysis, density, sintering, etc. Since no history of the parts is available, definite conclusions can not be drawn.

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