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April 11, 1945

TECHNICAL DEPARTMENT

REPORT ON PRODUCTION TEST NO. 313-66-M

Variation in Canning Yields with "A" and "Z" Slugs

Introduction:

Production records show a considerably higher yield for "Z" slugs than for "A" slugs, the principle difference being because of "non-seats". The purpose of this test was to determine why "Z" slugs produce fewer "non-seats" than "A" slugs. The principle differences between "Z" and "A" slugs are that the "Z" slugs are smaller in diameter and have been subjected to a heat treatment in the canning operation followed by a straightening operation after recovery.

Summary:

It was found that the smaller diameter of "Z" slugs was the principle reason for fewer non-seats. Annealing treatments tend to reduce non-seats somewhat but are of much lesser importance as compared to smaller diameters.

Slugs machined from straight rods, that were machined to slugs without going through regular straightening procedure, tended to warp less in the canning operation than regular slugs.

SUMMARIZED DATA

<u>Type of Slugs</u>	<u>% Non-Seats</u>
"A" Slugs out to "Z" Dimensions	0.15%
Annealed "A" Slugs	3.8%
Slugs from Straight Rods	1.9%
Average Production "A" Slugs	6.0% (approx.)

It is recommended that a definite attempt be made to keep bars straight at the extrusion operation since this appears to be a simple method of improving slug quality.

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Experimental Details:

The following groups of slugs were canned by the standard canning procedure and the number of non-seats recorded. The slugs were checked in a warp gauge, of 1.389" diameter, after the centrifuge and the majority of the slugs which failed to seat also failed to pass the gauge.

TYPES OF SLUGS TESTED

Group I

Unbonded slugs stripped of their aluminum jackets, sent through the straightening operation and canned. These slugs were given an outgassing treatment at 425°C before they were originally canned.

Group II

Slugs machined oversize to 1.363" $\pm$ 0.001", heated to 700°C in the outgassing furnace, straightened, centerless ground to 1.359" $\pm$ 0.001" and then canned.

Group III

Regular "A" slugs machined undersize to 1.350" to 1.355" and canned.

Group IV

"A" slugs that were machined from rods that were straight after outgassing and not passed through the regular straightening procedure.

COMPLETE CANNING DATA

<u>Group</u>	<u>No. of Slugs Canned</u>	<u>No. of Non-Seats</u>	<u>% Non-Seats</u>
I	441	7	1.7%
II	341 (Lot 106)	13	3.8%
III	661 (Lot 104)	1	0.15%
IV	949 (Lots 117 & 128)	18	1.9%
Av. Prod. "A" Slugs			6.0% (Approx.)

K. G. Jones, Chief Supervisor
Metallurgical Section

L. D. Eubank
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SUBJECT Report on Prod. Test No. 313-66-M - Variation in Canning Yields with "AN" & "ZN" Slugs

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