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January 19, 1945

TECHNICAL DEPARTMENT

THIS DOCUMENT CONSISTS OF 2 PAGES NO. 1
OF 10 PAGES

REPORT ON PRODUCTION TEST NO. 315-40-M

Machinability of Heavy Metal

Introduction:

Special machining operations to be performed on heavy metal required that the metal be made more machinable if possible. Information from another site indicated that if the metal is heated, the machinability is improved but the exact temperature for optimum machinability was not known. The purpose of this investigation was to determine the temperature range for optimum machinability of heavy metal.

Summary:

Using the time required to drill a hole under constant speed and feed as a measure of machinability, it was found that the temperature range for optimum machinability of heavy metal was 165 - 175°C.

Procedure:

As a preliminary investigation to determine the approximate temperature range for optimum machinability, heavy metal was heated in a constant temperature oil bath in the range of 140 - 170°C., and the time to drill a 1/8" hole using a constant speed and hand feed was determined. Data are listed below:

The exact temperature range was determined using the conditions enumerated above except that a constant drill feed was maintained.

Data:

Using a hand feed, the time required to drill a 1/8" hole for the various temperatures is listed below:

Temperature	140°C	150°C	160°C	165°C	170°C
Time, Sec.	60	45	50	30	30

The time required to drill a hole 1/4" deep with a #24 drill with constant pressure for various temperatures is as follows:

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Temperature	150°C	160°C	170°C	177°C	178°C	170°C	160°C
Time, Sec.	25	22	20	20	24	20	22

Discussion:

The machinability of heavy metal is expressed in the following curve:

Data for this report were compiled by R. J. Schier.

H. G. Jones, Chief Supervisor

R. C. Grills, Area Supervisor
Metallurgy

RJS/mb

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