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HW-21195

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May 1973

By J.H. Wells 11-19-94

Verified By J.E. Sawley 11-22-94

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File FE-15
8. 700 Files
9. 300 Files
10. Pink
11. Yellow

May 24, 1951

This document consists of
3 pages, No. 11 of
11 copies. Series A

To: O.F. Beaulieu

From: R.J. Anicetti

COPY 1 OF 1

MAGNESIA SPECIFICATIONS AND ESTIMATED QUANTITY

OF MAGNESIA IN THE 234-5 BUILDING CRUCIBLE SHOP

- References:
1. HW 21025, "Program for 234-5 Building Crucible Shop" J.B. Work to R.B. Richards. May 7, 1951
 2. HW 21134, "Trip Report to Los Alamos" P.E. Collins, May 18, 1951
 3. HW 20934, "Proposed Casting and Pouring Crucibles for 130 Model" R.J. Anicetti, April 26, 1951
 4. LA 585, "The Production of Magnesia Crucibles at Los Alamos." Taub and Allison. May 11, 1948

In a letter (1) to R.B. Richards it was stated that--"Anicetti will prepare a separate letter to the "S" Division to serve as a basis for their ordering the appropriate number of dies and quantities of Magnesia."

Confirmation was obtained recently during a trip (2) to Los Alamos that the present magnesia specifications for production of crucibles (3,4) have not changed since issuance of Document LA 585, (4) dated May 1948. This letter is issued, therefore, to cover specifications for Magnesia and to serve as a basis for the quantity of magnesia required. A letter covering dies will be issued at a later date.

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FINAL DETERMINATION
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BY JP Beracain DATE 5-12-81
BY ac Barker DATE 5-13-81

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HW 21195

MAGNESIA SPECIFICATIONS

I. Source: Norton Company, Worcester, Mass.

II. Type: Electrically fused magnesia grain.

III. Chemical Specifications:

Fe_2O_3	10.25%
B	1200 ppm
Be	15 ppm
Si O_2	btw. 1% and 1.5%
$\text{Si O}_2/\text{CaO}$	btw. 2/1 and 3/1

IV. Grain Size Specifications

Two grain sizes are blended to give the desired mixture. The magnesia powder in these two grain sizes has the following sieve analysis:

1. -28 mesh + 100 mesh size.

<u>Sieve size, mesh</u>	<u>% Retained</u>
28	0
35	5 ±5
48	35 ±5
55	40 ±5
100	20 ±5

2. -200 mesh size

<u>Sieve size, mesh</u>	<u>% Retained</u>
200	1 ±1
325	39 ±10
thru 325	60 ±10

QUANTITY MAGNESIA, - BASIS

In the fabrication of magnesia crucibles for the 234-5 Building, two grain sizes are blended to give the desired mixture. The range in percent of each is:

<u>Size MgO</u>	<u>% Used</u>
-28 mesh + 100 mesh	50-65
-200 mesh	40-35

It is estimated that the proposed H-1 and H-2 Crucibles will weigh 442 and 265 respectively. In table I the estimated magnesia requirements are tabulated on the basis of 100 crucibles per month of types H-1, H-2 Y-3, Y-2A, and S-1. The S-1 is listed for comparison only since a suitable commercial source is available.

TABLE I

Type	Wgt. ea. gms.	Crucibles per month	Wgt. MgO per mo.-lbs.	plus 35% waste-lbs.	Wgt. MgO each size	
					-28 + 100M	
H-1	442	100	96	130	85	52
H-2	26	100	58	78	51	31
Y-3	503	100	109	147	96	59
Y-2A	470	100	101	136	88	54
S-1	1650	100	365	494	321	198

* Waste is estimated and includes 5% handling waste, 15% green ware breakage, and 15% fired ware breakage.

** The higher percent figures of the blend have been used.

In order to carry out the program as outlined in reference 1, it is suggested that 550 pounds of -28 mesh plus 100 mesh magnesia powder and 400 pounds of -200 mesh magnesia powder be ordered from Norton Company. This material should be packaged in lots of not more than 125 pounds in airtight metal containers.

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