

**JOHNS-MANVILLE RESEARCH
AND ENGINEERING CENTER**

MVJ R + D 1990

Memorandum NO. 431-01

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Date

December 16, 1968

TITLE: INSULATING FIREBRICK FOR CARBON BAKING FURNACES - GULF COAST ALUMINUM CORP.

Requested by: H. E. Konrad

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F. L. Schaffner, R. E. Robinson and S. E. Wooley visited the Gulf Coast Aluminum Corporation in Lake Charles, Louisiana on December 10, 1968 to discuss specifications and requirements for insulating firebrick in furnaces which will be built in 1969. Representatives of Gulf Coast Aluminum Corporation were Ernst Maeder, Carbon Plant Manager; Robert E. Bridges, Technical Assistant and Peter Sommer, Mechanical Engineer.

Mr. Robinson was asked to describe the processes which we use for making insulating firebrick. Emphasis was placed on the size and shape of the slabs, the finishing operation, dimensional tolerances and quality-control testing. The reasons for the sizes of the "Zelie Jumbo" brick were discussed and attempts were made to arouse some interest in the potential for using these larger sizes.

We were asked whether a combination of 3 in. of super duty fireclay brick, 7-1/2 in. of JM-23 and 9 in. of Moler brick could be used in the floor of a carbon baking furnace. Sand and concrete would be under the brick. Based on the use of Sil-O-Cel C-22 brick instead of Moler brick and assuming a cold face temperature of 70F, the writer estimated the interfacial temperature between the super duty brick and JM-23 to be approximately 2330F. The actual temperature of this interface would probably be higher than 2330F under steady-state conditions because of the resistance of the sand, concrete and earth. Therefore, we could not recommend JM-23 for use in this combination, at this time.

It was suggested that a combination of 2-1/2 in. of JM-26 and 4-1/2 in. of JM-23 is a possibility. It was also suggested that we could arrange to calculate the heat losses and interfacial temperatures of combinations of materials for any of the areas, and that we would appreciate suggestions concerning combinations which may be of interest to the potential customer.

The properties of Moler brick and Sil-O-Cel brick were discussed briefly and the writer pointed out that the thermal conductivity of Rototherm brick was slightly higher than that of Sil-O-Cel brick.

Quality-control procedures and dimensional tolerances for Sil-O-Cel brick were not discussed.

The use of "FIBERCHROME" or RF expansion joint board was mentioned and the customer stated that they did not plan to use any material in expansion joints.

We left with the impression that the customer was not particularly interested in improving thermal efficiency or in other properties of the refractories, and that prices would be the major factor. They appeared to be most interested in assurance that we could deliver a product.

S. E. Wooley
S. E. Wooley

Distribution on reverse side

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EXHIBIT
K-1568

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cc: M. W. Burleson, DH
A. Pocius, DH
H. E. Konrad, DH
R. E. Robinson, Zel
M. C. Parmley, Houston
F. L. Schaffner, Baton Rouge

F. L. Pundsack ✓
J. A. McKinney
S. E. Wooley
File:
L. R. Blair
Library
Chrono