Mr. R. A. Carter/13 Pittsburgh 7

FR: R. G. LaBAR
CERAMICS SECTION
ALCOA TECHNICAL CENTER - B

TO: MEMORANDUM

1978-03-06

MAR 10 1978



DATA LETTER

RE: JOHNS-MANVILLE'S IMPROVED MARINITE XL

Summary

As a result of a phone conversation with Walter Pusch in early September (1977), four sheets of an improved Marinite XL were received for evaluation. Mr. Pusch informed me at the time that J-M had just processed the material and found it to be more resistant to elevated temperature than the standard XL and that preliminary tests in molten aluminum looked very encouraging. Since receipt of the material on September 27, it has been verified that it is more refractory and is quite resistant to molten metal. However, the strength/density ratio is lower than that of Molten Metal Marinite and we have not successfully cast HDC sheet ingot with it due to cracking of the headers which is attributed to the lower ratio. Otherwise, the material has been used successfully to cast 229 mm FDC ingot.

Introduction

The improved Marinite XL was received in heat treated form and later designated as being Marinite MM. J-M reported that the material is more brittle than Molten Metal Marinite and that fabricating techniques may have to be modified to achieve satisfactory results. It was the objective of this study to quantify its thermal stability, corrosion resistance, machinability, and performance as headers.

Experiments and Results

1. Thermal and Chemical Corrosion Resistance

In addition to obtaining physical properties from the as-received board, tests were run to determine moisture content and shrinkage. The data, Table I, show that the material is stable up to 705°C (1300°F) but that when heated to 815°C (1500°F), the shrinkage is excessive. Additionally, in the modified "B-Immersion Test" (two cycles of immersion in 7075 alloy at 760°C (1400°F) for 24 h), it was noted that the portion of the specimen immersed did shrink and crack. The metal skull was easily removed after the first cycle but not so easily after the second. A layer of fines was attached to the skull each time. The result is quite similar to that observed using M.M. Marinite.

Future Programs

1. It is suggested that J-M be encouraged to rename the product and not use the word Marinite.

2. Works trials will be monitored and the results disseminated to J-M, hopefully, in support of another plant run.

R. G. LaBAR

RGL:bls

Attachment

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E. L. Rooy - Pittsburgh 23
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J. Z. Nelson/H. W. Cooley - Pittsburgh 3 WPH
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L. K. Hudson/Ceramics Section File 10.320