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TO: R. Plantz
Gibsonburg, Ohio

FROM: H. D. Stanley
Easton

DATE: May 17, 1972

SUBJECT: Improvement of Kilnoise Applied to a Solid Backing

cc: H. R. Bailey
J. K. Barr/K. R. Hancock
D. G. Brant
R. W. Linnett
B. G. Long
R. E. Norwood
H. E. Rourke
W. M. Stephenson

I would like to discuss our findings on formulation changes in Kilnoise with you in order to detail to you our recommendations and to get your comments on the subject. As was pointed out in my letter to Roger Linnett of April 21, 1972, we believe the open structure of Cafco Sound Shield is the secret of its success. Because of this our work was primarily directed to developing a similar open structure in Kilnoise. In doing so we kept in mind Mr. Linnett's three main objectives:

1. NRC rating of 50 minimum

2. Satisfactory application properties (pumpability)

3. A cost of goods comparable to Kilnoise

Our chemical sleuthing has discovered the presence of Na_2SO_3 and $Na_2SO_3 \cdot 7H_2O$ in the water soluable portion of Cafco Sound Shield. These compounds act as binding and hardening agents with $Ca(OH)_2$. This is significant since our main recommendation to lower the $Ca(OH)_2$ to fiber ratio by bringing the fiber content to somewhere between 55 to 65% by weight will have the effect of lowering the overall strength of the Kilnoise. The addition of 1 or 2% of sodium sulfite should help regain somewhat the excellent strength properties of the present product.

Our main concern at this time is the pumpability of the improved product. There is no doubt that the low fiber content material is a much more fluid system than even the 50% fiber system of OK-2. When going up to the 55 to 65% fiber that we feel is necessary for the desired improvement, we are going to have an

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even less fluid system. Since pumping equipment is not available to us at Easton, we cannot assess this parameter. We feel that the situation calls for some trade-off between these two properties, (NRC and application ease), and we have no input as to what would be acceptable from the customers point of view. One point to remember though is that the higher fiber content materials would not require hand finishing which would save labor costs.

At this time then our recommendations are as follows:

1. Rock wool, (mineral wool, etc.), can be used effectively in place of asbestos fibers and we recommend that it be used. At the present time it has both a price advantage and an environmental advantage over asbestos.

2. Based on our examination of Cafco Sound Shield and the can of OX-2 sent to Easton Research, we recommend a rock wool fiber content of about 60% by weight. The increased fiber content will open up the structure of Kilnoise and improve its NRC. The extent of this improvement will have to be determined by you. Other fiber loadings may be useful but we feel that formulations in the range of 55 to 65% will be the most effective.

3. Based on the findings of our chem lab, we also recommend incorporating 1 to 2% of either Na_2SO_3 or $Na_2SO_3 \cdot 7H_2O$ to act as a binding and hardening agent.

4. We would also like to recommend that the Kilnoise be slurried with the least amount of excess water that is possible. The more water that is added to it, the more cake-like is the final product.

At this point we have gone as far as we can at Easton and we are interested to see if you can turn our findings into anything practical. If you have any questions concerning our work, we would be pleased to discuss them with you. We would also be interested in any results you may obtain from reformulations. As you mentioned on the phone today, you felt that mixing agitation and standing time should be kept to the minimum practical and we could not agree more. Too violent a mixing will only tend to shorten the fiber length and give poor structural stability to the end product.

Please keep us informed of progress and let us know if we can be of any assistance.

Harold D. Stanley

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