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So-De-66-1274x

R & D Department
ACHESON COLLOIDS COMPANY
Port Huron, Michigan

Project CPD-A-66
MONTHLY REPORT #3
Covering Period from
December 1 to December 31, 1959

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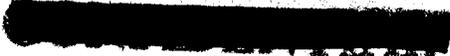
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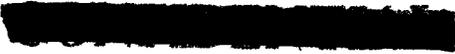
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I. SUMMARY

During December another method of incorporating lead powder into epoxy resin was tried. The use of a Baker-Perkins masticator proved to be feasible. Unfortunately the ED₂ did not arrive until December 28, 1959, so no tests on this material have yet been made.

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II INTRODUCTION

This report covers work being done at ACC in attempts to produce a superior dispersion of lead (A) and uranium dioxide (B) in epoxy resin (C). First attempts to disperse lead were made using an Eppenbach Homo-mixer. This produced a fine dispersion but was a little difficult to handle because of the viscosity of the mix.

A dry box is now available for storing and handling the UO_2 . We plan to do some initial tests on the UO_2 alone before a complete mix is attempted. The work to date has been of a limited nature due to the lack of the key raw material.

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III Procedures and Results

The first trial masticator run was made in December. 1218.9 grams of Superfine S lead powder were blended with 64.5 grams of an EPON 828 - DDSA base mixture. The latter base mix consisted of 85.5 grams EPON 828 and 106.5 grams of DDSA. The mill charge was built up gradually, stopping for each addition of lead to prevent dusting. After reaching a proper viscosity the lead ran for one hour. Then it was slowly thinned down with the remaining base mix.

The product was removed from the mill for a yield of 99.1%. The operator felt the mill load could have been larger, but the quantities used do work. Microscopically, the product was very well dispersed. Subsequent to the mixing it was noted that a slightly frothy layer appeared on the top of the product stored in a jar. This may indicate some air entrainment during mastication.

Immediately after masticating, a portion of the product was put through the Homo-mixer. After 23 minutes mix, the product was heated well above room temperature. Also it was slightly thicker. Microscopically, there was no improvement. This seems to indicate that in the future masticating is to be preferred over violent agitation. However, the relatively large experimental batch size will have to be kept in mind in planning future work.

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IV DISCUSSION

Now that the SO_2 has arrived we will begin to investigate its dispersion prospects. This will first be done in the Homo-mixer since the batch size is much smaller than that required for masticating. When we can obtain good separate dispersions of both SO_2 and lead, we will determine if there is any interaction between the two dispersions.

In January we should have our first molded product ready. This will be forwarded to Sandia for testing so we can determine its characteristics. Now that all raw materials are on hand, progress should be more rapid on this project.

7 COSTS PER MONTH

To December 31, 1959, approximately 74 staff hours have been spent on Project A-66. This is considerably under our original monthly estimates and is due to the difficulty in obtaining the needed raw material from Y-12. For November the monthly cost was \$273.28, for which we are billing.

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