Abrasive Development Laboratory

12th Period 1965

E4

PROJECT E200

Development of Diamond Products

A. Replacement of DUREZ 21131 Resin

The wet grinding tests on the D1A1 wheels have been completed. Preliminary checks on the results show that 5417 is an even better resin for wet grinding applications than 21131 which has proven quite good in this respect. Due to the fact we have a reasonable supply of Durez 21131 on hand, we can shortly select suitable users for limited field testing of the replacement resin.

B. Replacement of LS663A Aluminum Filler and BMG 5261 Molding Powder.

Bar tests dictated the selection of 40AP as the best replacement for LS663A preform filler. Dummy wheels are now being made in both dressable and non-dressable formulations to observe heat transfer qualities in the finished product. "Dressability" of both formulations will also be compared with the idea that the dressable formula may be eliminated for economy reasons.

The non-dressable formulation is revealed by the bar tests as being generally superior to dressable in every desirable physical characteristic and particularly in heat transfer.

Bars made of the BMG5261 substitute material show marked improvement over 5261 in rupture and impact tests as well as rate of heat transfer. Bars made of 5261 showed greater mold shrinkage and all were blistered to some extent. The formula containing 30% asbestos is now being molded into dummy wheels for test grinding along with the aluminum preforms. The slightly more desirable 40% asbestos formula created a filling problem with our molds and had to be abandoned.

It should be noted that cure cycle 102 produces the most desirable product in any of the formulations used in this project. This is an indication that work could be done with test diamond wheels checking out both cycles using an 8454 rim formula, thus offering the possibility of using cycle 102 throughout.

C. D11V9 Size Control

With the help of the manufacturing group, the laboratory has completed the first phase of its work to bring about finished wheel sizes that are fair to both our customers and ourselves.

Critical dimensions were recorded from the molds. Related areas of the preform were then noted in both the green and cured preform.

Calculations of shrinkage in terms of in./in. obtained from these sources have been presented to Tool Engineering for redesign of the molds in question with additional allowances to be made for larger finish sizes.

Miscellaneous

An early check on two of our 3-3/4", D11V9 wheels being tested in plant #1 shows a tentative superiority of SYN-RB-3 over RVG. This activity will be followed closely with the hope that we may be able to speed up acquisition of data for use in the field.

We are now capable of supplying all of our company's Cincinnati plant needs in diamond wheels with two exceptions. One is a 14 X 1/4 X 5 cylindrical grinding wheel ordered two or three times a year. The other is a 6 X 3/4 X 1-1/4 D6A2H in metal bond for scraper blade touch-up which is ordered once in three years.

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