

DISCUSSION

In December 1963, Mr. D. L. Fassett was assigned the project of developing a fast-curing, medium impact molding material of the Durez 1544 type which would eventually replace BMG-7500, our best counterpart to that material. The reasons for replacing the BMG-7500 were that this material: (1) had narrow molding latitude; (2) had poor flash release and (3) became gummy when preheated. Thus, the proposed material was to be designed to have all of the advantages of the Durez 1544 and at the same time to eliminate the major disadvantages of the BMG-7500 outlined above. The formulation work was begun by Mr. Fassett, but because of a military commitment he was unable to follow the development of the BMMA-5715 to its completion.

Medium impact markets represent approximately 2.5 MM pounds of business, and what makes this segment of the market especially attractive is the premium price of the impact materials. It was reported that one of the largest users of Durez 1544 and its improved version Durez 22532 was Cutler Hammer in Milwaukee, Wisconsin, and efforts were thus devoted toward tailoring a material to suit their particular requirements.

Submission of pilot plant samples to Cutler indicated that a material with a plasticity between grades 15 and 18 would be most suitable for their work, so special plasticity limits for a grade 16 were set up. The first production run on unit BA was completed on 26 May 1964, during which time 5000 pounds each of grades 9 through 18 were made along with 10,000 pounds of the special grade 16 for Cutler Hammer. This run showed that the material could be produced over the entire plasticity range with no difficulty. A 100 pound sample of the grade 16 material was shipped to Cutler, and after a thorough evaluation of it, they released the remainder of the 10,000 pound batch. However, soon after receipt of the material by Cutler Hammer, they reportedly ran into difficulties which had not been evident when running the 100 pound sample, even though all material was from the same batch. They reported (1) a narrow range of preform temperatures through which the material could be molded, (2) variation in preform temperature with no apparent change in operator technique, (3) poor flash release, and (4) excessive shrinkage of the molded parts. A trip to the customer's plant, however, failed to show up either of the first two complaints. The shrinkage and flash release problems, while not as severe as the customer had initially reported them to be, were evident and further lab work became necessary to effect the desired improvements.

A flash release test was set up, and this test showed a significant difference between a sample of the Durez 22532 and the BMMA-5715 evaluated at Cutler. When the formulation was modified