

Abstract

The reduction cost in the semi-finished plastic lens process is one of the methods that can develop and improve the production process. It is found that raw material accounts for most of the total costs. The semi-finished plastic lens are prepared in excessive amount to cover predefined magnification of finished plastic lens. The excessive material from the difference between the volumes of semi-finished plastic lens and the volumes of finished plastic lens are waste. So, the size of semi-finished plastic lens should be designed to closely fit the size of finished plastic lens. Since this size has an effect on the diopter, the objective of this research is to study the factors affecting the diopter value. These factors are the thickness at the center and at the edge of the semi-finished lens, the baking time in an oven and the speed for the size reduction. This research uses the full factorial experimental design to analyze the results, which showed that the factors from the most influential to the less influential are the center thickness of lens, the edge thickness of lens, the baking time in an oven and the speed for size reduction consequentially. It is also found that the appropriate values, that can maintain the standard diopter for each factor are 9 mm for the center thickness and 10 mm for the edge thickness of the lens. The baking time should be 24 hours and the size reduction speed should be equal to 25 rpm. Using these proposed conditions, the raw material can be reduced by 30 percent and the baking time can be reduced by 50 percent.