

Abstract

This research assessed the environmental impact of plastic eyeglass lens using Life Cycle Assessment (LCA). In this study, the scope of LCA included the lens casting process. The research began with collecting data for the input and output of resources and energy in the process. The working unit was defined as an optical plastic lens of type CR-39 with light refraction index of 1.50. In conducting life cycle assessment, this study utilized SimaPro software and Eco-indicator 99 method. The results revealed that the process with the greatest environmental impact was the cleaning of gasket due to the utilization of Hydrofluorocarbon (HF) in the cleaning process because HF is a direct contributor to several environmental problems in the world such as climate change and ozone layer depletion. To reduce the environmental impact, it was suggested that water should be used as a substitute in the process since it could effectively clean the gasket in the same manner as HF. When the new approach was implemented, it was found that the new method resulted in significant decrease in environmental impact as reflected in the LCA findings. Therefore, the use of water in the plastic ring cleaning process was proved to be more suitable and more environmentally friendly.