

Evaluating the interest of making a road safety device with recycled plastics by LCA

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“The production of waste has been increasing worldwide in quantity and diversity in the last decades as a result of changes in economic activities demography technological innovation life style and production and consumption patterns. Therefore waste management represents an environmental social and economic challenge at the global European and even national level. Incorporation of recycled plastics obtained from household plastic waste (selectively deposited in specific containers) in the manufacturing of new products can be a strategic move towards a more sustainable development.

This work assesses the potential environmental impact of using post-consumer High Density Polyethylene (HDPE) in the production of a road safety device specifically an Anti-Glare Device (AGD) traditionally manufactured from virgin polymer (not recycled). The environmental impact assessment is performed using the Life Cycle Assessment (LCA) technique which includes all stages of the product life cycle. Two road safety devices are compared: (1) current AGD manufactured from virgin HDPE and (2) optional AGD manufactured from recycled HDPE. The production of the raw material was found to be the main responsible for most of the impacts in both types of AGD. Globally the optional AGD is environmentally more advantageous than the current AGD.

A study was also performed on the influence of the definition of the Life Cycle Impact Assessment method on the results obtained. It was concluded that the selection of the methodology has a significant influence on the results and corresponding conclusions. Therefore in this type of analyses it is vital to use and compare several Life Cycle Impact Assessment methods before drawing any conclusions or taking an executive decision.”