



Recycling of Post-Consumer Goods Considering New Approaches on Polymer Identification

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ABSTRACT

Recycling of Plastics is an vital element of circular financial system due to the fact the mechanical recycled substances, acquired from postconsumer items can be converted into new merchandise frequently substituting virgin plastics, after express technological steps (like washing, grinding, keeping apart, re-granulating, drying, and compounding). Due to the fact the thermoplastic polymers are typically non-miscible, the recycled blends obtained from different post-consumer polymeric goods may have usually poor mechanical properties, is the reason for mechanical recycled materials unsuitable for many applications. Consequently without a very good separation according to polymer or as a minimum consistent with polymer companies, the mechanical recycled substances can be impossible and a long way from what it is able to be. Therefore, in view of recycling of polymer, identification of the polymer must be executed, even if the postconsumer polymeric items do not have the recycling code.

The recognized marking system for thermoplastic polymers is typically well known and applied, for the reason that 1980s and it's far represented by means of recycling codes as a triangle with internal numbers for each polymer for each type. But the plastics items molded from polymeric blends or compounds do not match into this numbering system and therefore, the identification of polymeric materials can't be

achieved. Basically thousands of resins of miscellaneous plastic or resins mixtures, being unmarked, can't be selectively accrued and consequently can't be mechanically recycled in a handy manner. That is why, this type of finding and possible concentration for each polymer from such blends or compounds could contribute to the low-cost and more efficient recycled materials from post-consumer goods. Plastic products like tarps, films, toys, computer keyboards, pipes and a multitude of other goods simply do not have the recycling code.

If the post-consumer items do not wear the recycling code, then one-of-a-kind identity techniques ought to be used to discover the polymers from every compound used to achieve such products. The following are the methods that are used to allow the exact identification of individual polymers are: Raman spectroscopy, infrared spectroscopy, mass spectroscopy, laser impulse technology, Fourier transform mid-infrared spectroscopy, short wave near infrared spectroscopy, X-ray spectroscopy. The paper exhibits that, in view of mechanical recycling, the recognition of polymer from blends melted processed as diverse items, need to taken into consideration blended strategies to determine those physical properties which highlight the principle differences among the thermoplastic polymers. The DSC and FTIR analyzes associated with melt flow index of materials, measuring the density, proved to be a good

method to detect or identify the polyolefins from blends as films for food packages which were melt processed. The DSC thermograms have to be recorded after putting off the material thermal records which adjustments the thermal behavior of each polymer.

Keywords: Melt processing, Low density polyethylene, Blends Linear low density polyethylene, Recycling code, High density polyethylenation.