

EARTH SCIENCE, RECYCLING & SPACE TECHNOLOGY

May 22-23, 2019 | Rome, Italy

Alejandra Costantino et al., J Environ Waste Management and Recycling 2019, Volume 2

INFLUENCE OF COMPATIBILIZER ON MECHANICAL PROPERTIES OF PRISTINE AND RE-CYCLED PP/PE BLENDS

Alejandra Costantino¹, Rosales C¹, Pettarin V¹, Bernal C², Palazzo G³ and Defacio Dutra R⁴

¹INTEMA, UNMDP/CONICET, Argentina

²ITPN, UBA/CONICET, Argentina

³AMPACET Latin América, Argentina

⁴AMPACET Latin América, Brazil

One of the big challenges of recycling engineering of thermoplastics is to manufacture competitive pieces or products in terms of mechanical properties such as toughness or strength. Improved mechanical performance of recycled materials would widen their application field. One of the strategies to improve PE/PP blends performance is to add special compatibilizers. The aim of the present work is to obtain recycled PE/PP blends from industrial wastes with similar properties to those of virgin PE/PP blends. Four different pristine blends were prepared: without compatibilizer and with 11wt% of three different co-polymer based compatibilizers. Also, three recycled blends were studied: without and with two different masterbatch compatibilizers. Blends were prepared in a single screw extruder simulating industrial processing conditions and then processed via compression moulding into plaques. Microstructure and morphology of blends were analyzed by DSC and SEM. Tensile and fracture tests were carried out on mode I double edge-notched tensile specimens (DENT) at quasi-static conditions (2mm/min). Fracture surfaces were studied by SEM. It was found that the addition of compatibilizing masterbatches improves the performance of both pristine and recycled PP/PE blends.

BIOGRAPHY

Alejandra Costantino was born in 1985. She was graduated in Materials Engineering in 2010 and received her PhD in Material's Science in 2016 at the University of Mar del Plata, Argentina. She is currently working as a Researcher at Institute of Materials Science and Technology in the Polymer Science and Engineering Group at University of Mar del Plata, Argentina. She made research studies at Universidade do Minho, Portugal during 2010 to 2014, and Institut National Des Sciences Appliquées, INSA, Blois, France in 2017. In the beginning of her professional career she has worked on the structural characterization of thermoplastic injected polymers with and without fillers, establishing distinctive characteristics of their mechanical behavior and processing conditions. Lately, she has extended her studies to recycled polymers. Thus, she has become an expert in injection moulding process and impact analysis, mechanical behavior and fracture of polymers and their composites (macro, micro and nano composites). Her experience focuses on correlating structural performance in service (Fracture mechanics, impact tests, conventional mechanical tests and deformation study) processing, with the microstructural characteristics of polymers and their compounds, characterizing the components globally or detecting mechanically weak areas in the final pieces.

david.j71@outlook.com