

Advanced characterization of low molecular weight components in polyolefins.

Ines Mingozi, Fabio Testoni, Isabella Camurati

Basell Poliolefine Italia S.r.l. (Italy)

Considering the increasing demand for materials with intrinsic low emission, new methods with low sensitivity levels, high resolution and improvement of capability to assess the chemical nature, were developed. These efforts were carried out to improve the knowledge of factors responsible for the low molecular weight fractions in Polyolefins samples that can be obtained with different synthesis conditions.

The analytical outputs allow us to establish correlations between emission level and polymeric structure, considering also the catalytic system and all the process conditions. The current paper describes analytical methods (extractions, GC-MS, GPC, ¹³C and ¹H NMR) and experimental results.

It will be shown that the emissions and oligomers mainly consist of hydrocarbons (polymerization oligomers). Oxygenated species, resulting from oxidations or catalyst and its by-products, are sometimes observed. However, even if they are responsible for low amount of emissions, they can cause odor issues.

References:

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2. Journal of Polymer Science: Part A: Polymer Chemistry, Vol. 48, 351-358 (2010).