

Recent Aspects of Polypropylene and Polyethylene Stabilization

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Abstract

Polypropylene (PP) and Polyethylene (PE) in general must be stabilized during compounding, processing, storage, and service life due to their inherently limited stability against auto-oxidation. The stabilization of those substrates during compounding and conversion is rather complex, as the following performance criteria need to be fulfilled:

- Good protection of molecular weight during melt conversion
- Low initial color
- Low color development during melt conversion
- Low gasfading
- Reasonable contribution to thermal stability
- Easily adjustable Long Term Thermal Stability (LTTS).

As processing stabilizer, liquid phosphites like tris-nonylphenylphosphite (TNPP) are one of successful stabilizers for polyethylene due to its excellent price/performance balance and its good compatibility in PE.

In replacing liquid phosphite (TNPP...) a fundamental decision needs to be made, whether to remain with a liquid stabilizer or to convert to a completely solid stabilization package. The advantages and disadvantages of both approaches will be highlighted in this paper.

In addition, for cases where a pronounced service life of a plastic part is needed, high end stabilization strategies (Low VOC and gasfading) for PP are discussed.