POLYPROPYLENE AND ITS PHOTO-THERMAL STABILIZATION

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Abstract: This in the article of polypropylene (PP) polymer structure, physicochemical properties, and his/her photooxidation and to thermo-degradation tendency analysis Also, polypropylene far term exploitation during stability increase for the purpose applicable photo - and thermo-stabilizers types, their impact mechanisms and efficiency discussion Article results chemistry industry, medicine, electrical engineering and ecological materials working release in the fields practical importance has.

Key words: polypropylene, photodegradation, thermoregulation, stabilizers, antioxidants, UV absorbers, HALS stabilizers.

Polypropylene is thermoplastic to class belonging the most wide widespread from polyolefins one chemical in terms of high inertia, low density, mechanical strength and cheap affordability with separated Polypropylene current on the day textile, automotive, food packaging, medical, electrical technique such as in the fields wide However, PP 's main its disadvantage is ultraviolet (UV) radiation and high temperature under the influence oxidation to the processes easy meeting, this and molecular of the chain interruption, mechanical properties to decrease and color change take This is why polypropylene based on of materials service the deadline extension for special photo - and thermo-stabilizers is used.

Polypropylene molecular chain carbon and hydrogen from atoms organization found to be, every one recurring the bond is in the form –CH_2–$CH(CH_3)$–. Methyl groups existence due to PP high crystallinity to the level yes, but the same this structure him/her oxidizing to factors relatively sensitive Degradation process mainly three in stages takes place: 1) initiation – UV radiation or heat under the influence radicals harvest 2) propagation – oxygen with to react entering hydroperoxides harvest to be; 3) termination – radicals mutual polymer chain to be interrupted take Thermo - stabilizers polymer high at temperature again work or exploitation on time face giving from oxidation protection does. Most wide widespread stabilizers the following: phenolic antioxidants (e.g., butylhydroxytoluene – BHT, Irganox) series) – free radicals holding remains; phosphates and thioesters – hydroperoxides breaks down and radical chain reactions stops; metal deactivators – such as copper and iron metal ions catalytic the impact neutralizes.

Photo stabilization ultraviolet radiation under the influence happened to be photooxidation processes attenuation for intended. The most effective stabilizers: UV absorbers (benzotriazole, benzophenone derivatives) – light swallow, heat in the form of emits; HALS (Hindered Amine Light Stabilizers) – free radicals again restorative sure stabilizers to be, to be oneself regeneration to do to

the feature HALS stabilizers polypropylene for the most effective photo protection tool is considered, because they oxygen radicals neutralizes and polymer chain interruption slows down.

In practice high efficiency for photo and thermo stabilizers together for example, phenolic antioxidant + phosphate + HALS combination synergistic impact shows. Additions amount usually in the range of 0.1–1.0% It will be too much. outside stabilizer introduction polymer optical properties to worsen possible, therefore optimal concentration for determination experience based on done is increased.

Conclusion in place to say possibly, Polypropylene high exploitative to properties has was, but photooxidation and to thermo-degradation relatively sensitive polymer is considered. Therefore his/her far term work stability provision for antioxidants, UV absorbers and HALS type stabilizers complex systems necessary. In the future nanocomposite stabilizers and ecological clean, biobased additions based on new stabilization methods working exit is promising.

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