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Synergistic Effect of Vitamin E Related Additives on Antioxidation of Polyolefin Resin

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To improve the antioxidative effect of polyolefin (PP or PE) resin, two types of antioxidants with structures similar to vitamin E (S-13 and S-19) were synthesized. The antioxidative activity of the compounds added to polypropylene as 0.005 wt% was examined by the melt-index and yellow index methods. The compounds had only antioxidative activity. The antioxidative activity significantly increased mixing with phenolic and phosphoric antioxidants. Investigation of the mechanism of the antioxidative activity revealed that hydrocarbon radicals produced by the thermal decomposition of polypropylene or polyethylene immediately reacted with the antioxidant to form stable product. The S-13 or S-19 antioxidants were regenerated by the reaction between the antioxidant radicals, and phenolic and phosphoric antioxidants.

Keywords: [Polyolefin resin](#), [Oxidative fouling](#), [Antioxidant](#), [Vitamin E related compound](#), [Radical suppression](#)



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