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PEP Report 62B

Eco-Friendly Plasticizers

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Abstract

Plasticizers are organic esters, which is compounded into polymers to facilitate processing, and to improve flexibility and toughness of the final products through internal modification of the polymer morphology. Commercially, about 90% of plasticizer consumption is accounted for by the application for flexible polyvinylchloride (PVC).

There are increasing concerns over the traditional plasticizers like dioctyl phthalate (DOP) on its potential migration out of PVC compounds and release to the environment or human body. The concerns have caused the industry to move towards more eco-friendly plasticizers. The first trend is moving towards higher molecular weight and less migratory phthalates.

PEP Report 62B reviews the technology for producing alternative plasticizers.

- Dioctyl terephthalate (DOTP) from terephthalic acid and 2-ethylhexanol[1]
- Dioctyl adipate (DOA) from 2-ethylhexanol and adipic acid
- Diisononyl phthalate (DINP) from esterification of phthalic anhydride with isononyl alcohol[2]
- 1,2-Cyclohexanedicarboxylic acid diisononyl ester (DINCH) from catalytic hydrogenation of diisononyl phthalate[3]

PEP last covered vinyl plasticizers in PEP Report 62 (1970). The same processes for the manufacture of diethylhexyl phthalate (DEHP) were updated in PEP Report 62A. PEP report 62B, will review, and analyze technologies for production of some of the abovementioned eco-friendly plasticizers in its usual format, providing information on technology aspects like R&D status, technical review, process description, process design details, economic evaluation of production processes.

This report is beneficial to plasticizer producing companies as well as consumers of plasticizers products for the production of PVC and other plastics.
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