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(54) Title: CATALYTIC EPOXIDATION AND HYDROXYLATION OF OLEFIN/DIENE COPOLYMERS

(57) Abstract: Disclosed are processes for preparing an epoxidized and/or hydroxylated α -olefine/diene copolymer materials such as ethylene/dicyclopentadiene. These processes comprise contacting in a reaction medium a) a copolymeric precursor component with b) a hydrogen peroxide oxidizing agent, in the presence of alkyl-trioxorhenium-based catalyst, under certain reaction conditions. The copolymeric precursor component comprises copolymers of α -olefins and dienes with these copolymers containing at least one double bond in each diene-derived comonomer. The reaction medium is maintained under reaction conditions which promote formation of oxirane rings at, and/or diol formation across, the sites of the diene-derived co-monomer double bonds in the copolymeric precursor material. Epoxidation and hydroxylation generally increases the glass transition temperature, T_g , of these copolymers and imbues polarity which imparts oil resistance. Functionalization in this manner thus provides a different balance between properties, cost, and processing range, and can make the resulting functionalized polyolefin materials especially useful as oil resistant, thermally stable elastomers or as structural engineering thermoplastics or precursors thereof.



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