

ABSTRACT

STABILIZED GRAFTED ETHYLENE COPOLYMER ADDITIVE USEFUL IN OIL COMPOSITIONS

Oil-soluble, derivatized ethylene copolymers derived from about 15 to 90 wt. % ethylene, and one or more C_3 to C_{28} alpha-olefins, e.g. propylene, which are grafted, preferably solution-grafted under an inert atmosphere and at elevated temperatures and in the presence of a high-temperature decomposable free-radical initiator, with an ethylenically-unsaturated dicarboxylic acid material and thereafter reacted with a polyamine having at least two primary amine groups, e.g. an alkylene polyamine such as diethylene triamine, to form carboxyl-grafted polymeric imide, usually maleimide, derivatives are subsequently reacted with a C_{12} to about C_{18} hydrocarbyl substituted dicarboxylic acid anhydride, preferably a C_{12} to about C_{18} hydrocarbyl substituted succinic anhydride, to yield an oil-soluble stable imide of said carboxyl-grafted copolymeric imide whereby oil solutions thereof are characterized by minimal viscosity change over an extended period of time. Useful number average molecular weights (M_n) of said copolymers range from about 700 to 500,000; however, if the molecular weight is from about 10,000 to 500,000 then these copolymers are also useful as multi-functional viscosity index improvers.