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ABSTRACTNOVEL RANDOM COPOLYMER, AND PROCESS FOR PRODUCTION THEREOF

A random copolymer is characterized in that (A) the copolymer comprises polymerized ethylene units and polymerized units of at least one cycloolefin, (B) the mole ratio of the polymerized cycloolefin units to the polymerized ethylene units is from 3:97 to 60:40, (C) the cycloolefin is incorporated in the polymer chain without ring opening, (D) the copolymer has an intrinsic viscosity of 0.01 to 20 dl/g, (E) the copolymer has a molecular weight distribution ($\bar{M}_w/\bar{M}_n$) of not more than 4, and (F) the copolymer has a crystallinity of 0 to 10%. A monomer selected from (a) alpha, beta-unsaturated carboxylic acids and/or their derivatives, (b) styrenes, (c) organic silicon compounds having an olefinically unsaturated bond and a hydrolyzable group, or (d) unsaturated epoxy monomers may be grafted on to the random copolymer. The random copolymer is produced by continuously copolymerizing ethylene with at least one cycloolefin in a hydrocarbon medium in the presence of a catalyst formed from a soluble vanadium compound and an organoaluminum compound while maintaining the atomic ratio of aluminum atoms to vanadium atoms in the reaction system, Al:V at 2 or more:1.