CLAIMS

1. A copolymer obtained by copolymerizing at least ethylene and a conjugated diene, wherein

(1) structural units derived from the conjugated diene represent 1 to 90 mol% of all the monomer units in the copolymer, and

(2) based on all the structural units derived from the conjugated diene in the copolymer, structural units resulting from 1,2-addition of the conjugated diene and having a side-chain double bond represent 0.5~~0~~ to 90 mol%, structural units resulting from 1,4-addition of the conjugated diene represent 0 to 3 mol%, structural units resulting from 1,3-addition of the conjugated diene represent 0 to 3 mol%, and the total of structural units resulting from 1,2-addition of the conjugated diene and having a 1,2-cyclopropane skeleton and structural units resulting from 1,2-addition of the conjugated diene and having a 1,2-cyclopentane skeleton represent 4 to 99.5~~100~~ mol%.

2. The copolymer according to claim 1, wherein the total of the structural units resulting from 1,4-addition of the conjugated diene and the structural units resulting from 1,3-addition of the conjugated diene represents 0 to 3 mol%

based on all the structural units derived from the conjugated diene in the copolymer.

3. The copolymer according to claim 1, wherein the total of the structural units resulting from 1,2-addition of the conjugated diene and having a 1,2-cyclopropane skeleton and the structural units resulting from 1,2-addition of the conjugated diene and having a 1,2-cyclopentane skeleton represents 15 to 99 mol% based on all the structural units derived from the conjugated diene in the copolymer.

4. The copolymer according to claim 1, wherein the copolymer has a weight average molecular weight of not less than 20,000 as measured by gel permeation chromatography (GPC) relative to polystyrenes.

5. The copolymer according to claim 1, wherein the copolymer has a glass transition temperature (Tg) of -60 to 30°C or does not have a glass transition temperature, and has a melting point (Tm) of not more than 130°C or does not have a melting point.

6. A process for producing the copolymer described in ~~any one of~~ claim~~s~~ 1 ~~to 5~~, comprising copolymerizing at least