

ABSTRACT

A method for producing a polymer containing silica that does not involve long kneading time, and a polymer composition having an intended low heat generation property. A polymerization catalyst composition is produced by mixing and aging a second element and a third element, and then adding a first element to the mixture to react the first element with the mixture. The first element contains a compound that contains a rare earth metal element, the second element contains a compound represented by the following formula (X), and the third element contains silica. $YR^1_aR^2_bR^3_c$ (X) (In the formula, Y is a metal; R^1 and R^2 are hydrogen atoms or hydrocarbon groups; and R^3 is a hydrocarbon group, and R^1 , R^2 , and R^3 are the same as or different from each other, a, b, and c are 0 or 1.)