CLAIMS

1. A process for producing a propylene impact copolymer (ICOP), the process comprising the steps of:

feeding propylene monomer and optionally one or more first comonomers into a first reactor;

feeding into the first reactor a catalyst mixture comprising (1) a Ziegler-Natta catalyst composition comprising (a) a transition metal compound, and (b) an internal electron donor, (2) a cocatalyst, and (3) an external donor comprising (a) an activity limiting agent and (b) a selectivity control agent;

contacting the propylene with the catalyst mixture under first polymerization conditions to polymerize propylene and the optionally one or more first comonomers to form an active propylene-based polymer;

transferring at least a portion of the first reactor contents to a second reactor, the first reactor contents comprising the active propylene-based polymer, the unreacted propylene, and the catalyst mixture;

feeding additional activity limiting agent, additional selectivity control agent and, optionally additional cocatalyst and one or more second comonomers into the second reactor; and

maintaining the second reactor at a second reactor temperature in a range that is sufficient to allow copolymerization of the active propylene-based polymer, the unreacted propylene and the optionally one or more second comonomers to form the propylene impact copolymer (ICOP), wherein the second reactor temperature is lower than the first reactor temperature and is below 70°C.

2. The process of Claim 1 in which the optionally one or more first comonomers are not fed into the first reactor.

3. The process of Claim 1 in which the optionally one or more first comonomers are fed into the first reactor.

4. The process of Claim 1 in which the cocatalyst is triethylaluminum.