We Claim:

1. A polymer comprising ~~units derived from ethylene and~~a polyalkylene backbone with greater than 100 units and one or more highly branched ethylene based polymeric branches, the polymer having at least 0.15 units of C_5 (amyl) ~~groups~~branches per 1000 carbon atoms ~~as determined by ^{13}C Nuclear Magnetic Resonance (NMR)~~ based on the carbon atoms in the ethylene based polymeric branches, and

wherein the polyalkylene has a weight average molecular weight from 30,000 to 4.1 million g/mole, and

wherein the polymer comprises a majority weight percent of polymerized ethylene based on the weight of the polymer.

2. The polymer of Claim 1 comprising a portion of the highly branched ethylene based polymeric branches bonded to one or more carbon atoms of the polyalkylene.

3. The polymer of Claim 1 wherein the polymer comprises at least one ethylene-based polymeric branch bonded to a carbon atom of the polyalkylene.

4. The polymer of any of the preceding claims wherein the C_5 (amyl) branches are determined by ^{13}C Nuclear Magnetic Resonance (NMR).

~~4~~5. The polymer of any of the preceding claims in which the polymer comprises no appreciable methyl branches as determined by ^{13}C NMR.

~~5~~6. The polymer of any of the preceding claims in which the polymer comprises no appreciable propyl branches as determined by ^{13}C NMR.

~~6~~7. The polymer of any of the preceding claims having a density of at least 0.91 g/cm^3.

~~7~~8. The polymer of any of ~~Claims 1-5~~the preceding claims having a density of from 0.89 to 0.90 g/ cm^3.

~~8~~9. The polymer of any of the preceding claims in which less than 70 weight percent of the polyalkylene is extractable by solvent extraction.

~~9~~10. The polymer of any of the preceding claims having a melt index (I_2) of less than 10.

~~10~~11. The polymer of any of the preceding claims having a viscosity ratio V 0.1/V 100 of at least 15.

~~11~~12. The polymer of ~~Claim 1~~any of the preceding claims wherein the polyalkylene comprises polyisobutylene.

~~12~~13. A composition comprising the polymer of any of Claims 1-12~~0~~.

~~13~~14. An article comprising at least one component formed from the composition of Claim ~~10~~13.

~~14~~15. The article of Claim ~~13~~ 14 in the form of a film.

~~15. A process to form a polymer comprising units derived from ethylene and polyalkylene, the process comprising:~~

~~A. Contacting at least one polyalkylene with ethylene in the presence of a free-radical initiator in a first reactor or a first part of a multi-part reactor; wherein the polyalkylene has a weight average molecular weight from 30,000 to 4.1 million g/mole; and~~

~~B. Reacting the polyalkylene with additional ethylene in the presence of the free-radical initiator to form an ethylene-based polymeric branch bonded to the polyalkylene in at least one other reactor or a later part of the multi-part reactor.~~

~~16. The process of Claim 15 in which the ethylene-based polymeric branch in step A is formed by bonding an ethylene monomer with the polyalkylene to form an ethylene-polyalkylene moiety, and further polymerizing the resulting ethylene- polyalkylene moiety polymerizing with at least additional ethylene monomer to form the ethylene-based polymeric branch.~~

~~17. The process of Claim 15 comprising reacting the at least one polyalkylene with an ethylene-based polymeric branch formed independently of the polyalkylene in a reactor separate from the first reactor or a multi-part reactor, wherein the ethylene-based polymeric branch is grafted to the polyalkylene.~~

~~18. The process of Claim 17 wherein in Step A, the ethylene is a highly branched ethylene-based polymer, and the polyalkylene is reacted with the highly branched ethylene polymer.~~