Commercially Available Resins	Density (g/cm^3)	Melt Index (I_2) (g/10 min)	Heat of Fusion (J/g)	Peak T_m (°C)	gpcBR Whole	LCBf
CAR15	0.922	33	153.5	111.8	0.46	1.95
CAR16	0.922	4.1	151.0	109.3	1.89	2.61
CAR17	0.918	0.46	141.2	107.4	3.09	3.33
CAR18	0.921	2.1	145.9	110.2	0.85	2.11
CAR19	0.918	8.2	143.2	106.4	2.27	3.20
CAR20	0.922	0.67	148.7	110.4	0.68	1.59
CAR21	0.924	0.79	154.2	111.8	0.74	1.96
CAR22	0.922	0.25	150.0	110.5	0.92	1.92
CAR23	0.924	3.4	153.6	111.3	0.65	1.94
CAR24	0.921	4.6	148.2	106.9	1.49	2.54
CAR25	0.923	20	150.9	108.9	NM	2.21
CAR26	0.925	1.8	157.5	112.4	0.82	1.86
CAR27	0.923	0.81	153.7	111.5	0.87	1.94
CAR28	0.919	6.8	145.1	105.7	1.72	2.75
CAR29	0.931	3.6	167.3	115.6	NM	NM
CAR30	0.931	2.3	169.3	115.8	NM	NM

"NM" means not measured.

Test Methods

Density

Samples that are measured for density are prepared according to ASTM D 1928. Samples are pressed at 374°F (190°C) and 206,843 kPa (30,000 psi) for 3 minutes, and then at 70°F (21°C) and 206,843 kPa (30,000 psi) for 1 minute. Density measurements are made within one hour of sample pressing using ASTM D792, Method B.

Melt Index

Melt index, or I_2, is measured in accordance by ASTM D 1238, Condition 190°C/2.16 kg, and is reported in grams eluted per 10 minutes. I_{10} is measured in accordance with ASTM D 1238, Condition 190°C/10 kg, and is reported in grams eluted per 10 minutes.

Viscosity Determination for Polyalkylene

Melt viscosity is determined using a Brookfield Laboratories (Middleboro, MA) DVII+ Viscometer and disposable aluminum sample chambers. The spindle used is a SC4-25 hot-melt spindle suitable for measuring viscosities from about 480,000 to about 950,000 mPa•s (about 480,000 to about 950,000 centipoises). Other spindles may be used to obtain viscosities if the viscosity of the polymer is out of this range or in order to obtain the recommended torque ranges as

We Claim:

1. A polymer comprising units derived from ethylene and polyalkylene the polymer having at least 0.15 units of amyl groups per 1000 carbon atoms as determined by ^{13}C Nuclear Magnetic Resonance (NMR), 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 ethylene 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 in which the polymer comprises no appreciable methyl branches as determined by ^{13}C NMR.

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

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

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

~~7~~8. The polymer of any of the preceding claims in which less than 70 weight percent of the polyalkylene is extractable by solvent extraction.

~~8~~9. The polymer of any of the preceding claims having ~~an~~ a melt index (I_2) of less than 10.

~~9~~10. The polymer of any of the preceding claims having a viscosity ratio V 0.1/V 100 of at least 15.

11. The polymer of Claim 1 wherein the polyalkylene comprises polyisobutylene.

~~10~~12. A composition comprising the polymer of any of Claims ~~1-9~~ 1-10.

~~11~~13. An article comprising at least one component formed from the composition of Claim 10.

~~12~~14. The article of Claim ~~11~~ 13 in the form of a film.

~~13~~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.

~~14~~16. The process of Claim ~~13~~ 15 in which the ethylene-based polymeric branch in step A is formed by bonding an ethylene monomer ~~bonding~~ 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.

~~15~~17. The process of Claim ~~13~~ 15 ~~in which the~~ comprising reacting the at least one polyalkylene with an ethylene-based polymeric branch ~~is~~ 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 ~~and is then~~ 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.