B) a peak area from 21.3 ppm to 21.8 ppm that is greater than, or equal to, 3.0 percent of the total integral area from 19.5 ppm to 22.0 ppm, as determined by 13C NMR; and

wherein the first composition has a tan delta (190°C at 0.1 rad/sec) less than, or equal to, 1.0.

In one aspect of the present disclosure, there is provided a composition comprising a first composition that comprises an ethylene/alpha-olefin/nonconjugated polyene interpolymer that has the following properties:

A) a Mw greater than, or equal to, 150,000 g/mole; and

B) a peak area from 21.3 ppm to 21.8 ppm that is greater than, or equal to, 10 percent of the total integral area from 19.5 ppm to 22.0 ppm, as determined by 13C NMR;

wherein the first composition has a tan delta (190°C at 0.1 rad/sec) less than, or equal to, 1.0;

wherein the nonconjugated polyene is a nonconjugated diene selected from the group consisting of ENB, dicyclopentadiene and 1,4-hexadiene; and

wherein the first composition further comprises an oil.

In another aspect of the present disclosure, there is provided an article comprising at least one component formed from a composition disclosed herein.

In a further aspect of the present disclosure, there is provided a process for preparing a composition disclosed herein, said process comprising the steps of:

(i) supplying a purified alkanes solvent having ethylene, propylene, 5-ethylidene-2-norbornene (ENB), and hydrogen dissolved in said solvent into a continuous reactor;

(ii) introducing a catalyst component solution into said continuous reactor to form the interpolymer as defined herein;

(iii) adding water to said continuous reactor to stop the process in step (ii);

(iv) adding an extender oil to said interpolymer to form the composition as defined herein; and

(v) recovering said composition by extrusion.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 depicts the Tan Delta 0.1 rad/sec, measured at 190°C) versus the Weight Average Molecular Weight (Mw) for inventive and comparative polymers.

Figure 2 depicts the Tan Delta versus Frequency (rad/s) profiles at 190°C for inventive and comparative polymers.

Figure 3 depicts "Water Absorption (wt%) versus Foam Density" for Foamed Rods at 230°C.

Figure 4 depicts "Water Absorption (wt%) versus Foam Density" for Foamed Tapes at 230°C.

DETAILED DESCRIPTION OF THE INVENTION

As discussed above, the invention provides a composition comprising a first composition that comprises an ethylene/alpha-olefin/nonconjugated polyene interpolymer that has the following properties:

A) a Mw greater than, or equal to, 150,000 g/mole; and

B) a peak area from 21.3 ppm to 21.8 ppm that is greater than, or equal to, 3.0 percent of the total integral area from 19.5 ppm to 22.0 ppm, as determined by 13C NMR; and wherein the first composition has a tan delta (190°C at 0.1 rad/sec) less than, or equal to, 1.0.

The composition may comprise a combination of two or more embodiments described herein.

The first composition may comprise a combination of two or more embodiments described herein.

The ethylene/alpha-olefin/nonconjugated polyene interpolymer may comprise a combination of two or more embodiments described herein.

In one embodiment, the ethylene/α-olefin/nonconjugated polyene interpolymer is an ethylene/α-olefin/diene interpolymer (EAODM). In a further embodiment, the interpolymer

CLAIMS:

1. A composition comprising a first composition that comprises an ethylene/alpha-olefin/nonconjugated polyene interpolymer that has the following properties:

A) a Mw greater than, or equal to, 150,000 g/mole; and

B) a peak area from 21.3 ppm to 21.8 ppm that is greater than, or equal to, 10 percent of the total integral area from 19.5 ppm to 22.0 ppm, as determined by 13C NMR; wherein the first composition has a tan delta (190°C at 0.1 rad/sec) less than, or equal to, 1.0; wherein the nonconjugated polyene is a nonconjugated diene selected from the group consisting of ENB, dicyclopentadiene and 1,4-hexadiene,
wherein the first composition further comprises an oil.

2. The composition of claim 1, wherein the ethylene/alpha-olefin/nonconjugated polyene interpolymer has a Mw greater than, or equal to, 180,000 g/mole.

3. The composition of claim 1 or claim 2, wherein the ethylene/alpha-olefin/-nonconjugated polyene interpolymer has a Mw greater than, or equal to, 200,000 g/mole.

4. The composition of any of the previous claims, wherein the interpolymer has a rheology ratio (V0.1/V100 at 190°C) greater than, or equal to, 40.

5. The composition of any of the previous claims, wherein the interpolymer has a rheology ratio from 80 to 130.

6. The composition of any of the previous claims, wherein the first composition has a viscosity at 0.1 rad/sec, 190°C, from 150,000 to 250,000 Pa•s.

7. The composition of any of the previous claims, wherein the interpolymer has a polyene content from 6 to 15 weight percent, based on the weight of the interpolymer.

8. The composition of any of the previous claims, wherein the interpolymer has a Mooney Viscosity greater than, or equal to, 60 (ML 1+4, 125°C).

9. The composition of any of the previous claims, wherein the interpolymer has a MWD less than, or equal to, 4.0.

10. The composition of any of the previous claims, wherein the interpolymer comprises from 40 to 65 weight percent ethylene, based on the weight of the interpolymer.

11. An article comprising at least one component formed from the composition of any of the previous claims.

12. The article of claim 11, wherein the article is a foam.

13. The article of claim 11, wherein the article is selected from the group consisting of profiles, injection molded parts, gaskets, automotive parts, building and construction materials, shoe components and tubes.

14. A process for preparing the composition of any of claims 1-10, said process comprising the steps of:

(i) supplying a purified alkanes solvent having ethylene, propylene, 5-ethylidene-2-norbornene (ENB), and hydrogen dissolved in said solvent into a continuous reactor;

(ii) introducing a catalyst component solution into said continuous reactor to form the interpolymer as defined in any of claims 1-10;

(iii) adding water to said continuous reactor to stop the process in step (ii);

(iv) adding an extender oil to said interpolymer to form the composition of any of claims 1-10; and

(v) recovering said composition by extrusion.