Claims:

1. A high energy return foam derived from a composition comprising from about 30 wt% to about 100 wt% of a polyolefin elastomer having a density of between about 0.857 g/cc and about 0.884 g/cc and a MI of not greater than about 5 g/10 min and from about 0 wt% to about 70 wt% of a polyolefin derivative having a density less than about 0.857 g/cc or greater than about 0.884 g/cc or having a MI of greater than about 5 g/10 min, based on the weight of the composition.

2. The high energy return foam of claim 1, wherein the polyolefin elastomer is selected from ethylene/α-olefin random copolymer, ethylene/α-olefin multi-block interpolymer, ethylene/α-olefin/nonconjugated polyene interpolymer or a mixture of any two or more of them.

3. The high energy return foam of claim 1, wherein the foam has a rebound of not less than 70%.

4. The high energy return foam of claim 1, wherein the polymer in the composition is crosslinked by peroxide or by irradiation and the crosslinked polymer has a gel% of from about 50% to about 100% by weight by a hot xylene extraction method.

5. The high energy return foam of claim 4, wherein the crosslinked polymer is foamed at temperature of not less than about 90 ^{o}C and at a pressure from about 10 to about 80 MPa.

6. The high energy return foam of claim 4 or 5, wherein the foam has a rebound of not less than 72%.

7. The high energy return foam of claim 1, wherein the composition comprises from about 35 wt% to about 100 wt% of a polyolefin elastomer having a density of between about 0.857 g/cc and about 0.884 g/cc and a MI of not greater than about 5 g/10 min and from about 0 wt% to about 65 wt% of a polyolefin derivative having a

density less than about 0.857 g/cc or greater than about 0.884 g/cc or having a MI of greater than about 5 g/10 min, based on the weight of the composition.

8. A method for preparing the high energy return foam of any one of the preceding claims, comprising:

a) providing a composition comprising from about 30 wt% to about 100 wt% of a polyolefin elastomer having a density of between about 0.857 g/cc and about 0.884 g/cc and a MI of not greater than about 5 g/10 min and from about 0 wt% to about 70 wt% of a polyolefin derivative having a density less than about 0.857 g/cc or greater than about 0.884 g/cc or having a MI of greater than about 5 g/10 min, based on the weight of the composition;

b) crosslinking by peroxide or irradiation_the polymers in the composition obtained in step a);

c) foaming the resulting crosslinked polymers obtained in step b).

9. The method of claim 8, wherein the crosslinked polymer is foamed at temperature of not less than about 90 ^{o}C and at a pressure from about 10 to about 80 MPa.

10. The method of claim 8, wherein the foam has a rebound of not less than 70%.