CLAIMS:

1. A polymer resin produced from a mixture comprising ethylene monomers and propylene monomers, wherein a melt temperature of the polymeric resin is less than approximately 140ºC, and wherein the polymer resin comprises a flexural modulus between approximately 500 MPa and approximately 1100 MPa.

2. The polymer resin of claim 1, wherein the mixture comprises less than or equal to 7% by weight of ethylene monomers.

3. The polymer resin of claim 1, wherein the polymer resin further comprises a PDI of 1.8 to 5 and Mz/Mw of 1.5 to 4.0, and wherein the comonomer of the polymer resin is distributed uniformly, orthogonally, or conventionally generated by single or multiple reactors connected in series or parallel configuration.

4. The polymer resin of claim 1, wherein the flexural modulus is between approximately 600 MPa to approximately 1100 MPa.

5. The polymer resin of claim 1, wherein the polymer resin comprises a strain at break between approximately 600% to approximately 900%.

6. The polymer resin of claim 1, wherein the polymer resin comprises a crystallization temperature, T_c, that is less than 100ºC.

7. The polymer resin of claim 1, wherein the polymer resin has a melt temperature between approximately 115ºC to approximately 135ºC.

8. The polymer resin of claim 1, wherein the polymer resin comprises a 2,1-EE-defect mole % between 0.15 and 0.30.

9. The polymer resin of claim 1, wherein the polymer resin comprises a 2,1-E-defect mole % between 0.30 and 0.45.

10. The polymer resin of claim 1, wherein the polymer resin comprises a total regioisomer defect mole % between 0.45 and 0.65.

11. The polymer resin of claim 1, wherein the mixture comprises approximately 3% to approximately 7% by weight of ethylene monomers.

12. The polymer resin of claim 1, wherein the polymer resin comprises a melt flow rate between approximately 3 g/10 min to 55 g/10 min.

13. The polymer resin of claim 1, wherein the polymer resin comprises a melt flow rate between approximately 3 g/10 min to 12 g/10 min.

14. A polymeric foam formed from a random copolymer comprising blocks including ethylene and propylene monomer units, wherein the random copolymer comprises less than or equal to 20% by weight of ethylene monomer units, and wherein the random copolymer foams in an operational window at approximately 100 ℃ or less.

15. The polymeric foam of claim 14, wherein the polymeric foam comprises at least one of:

a peak expansion ratio at approximately 100℃ or less, wherein the operational window comprises an expansion ratio between approximately 1 and 10;

the random copolymer comprises a flexural modulus between approximately 500 MPa to approximately 1100 MPa;

the random copolymer comprises a crystallization temperature, T_c, that is less than 90^{o}C;

the random copolymer comprises a melt temperature between approximately 110^{o}C to approximately 130^{o}C;

a strain at break of between approximately 600% to approximately 900%; or

a PDI of 1.8 to 5 and Mz/Mw of 1.5 to 4.0, and wherein the comonomer of the polymer foam is distributed uniformly, orthogonally or conventionally generated by single or multiple reactors connected in series or parallel configuration.