Amended claims

What is claimed is:

1. A foaming composition comprising:
(a) a plurality of chains of a copolymer of one or more vinylidene aromatic monomers and one or more unsaturated acids, the copolymer having about 0.01 to about 15.0 percent by weight of the one or more unsaturated acids wherein the acid groups are pendant from the copolymer;
(b) a metal salt, metal oxide or combination thereof, the metal having a valence of at least 2; and,
(c) one or more blowing agents.

2. The foaming composition of Claim 1 wherein the foaming composition is an admixture of each of (a), (b) and (c).

3. The foaming composition of Claim 1, wherein the foaming composition are separate parts that are brought into contact when forming a foam.

4. The foaming composition according to any one of the preceding claims wherein the metal is one or more of transition metals, post transition metals, metalloids or an alkaline earth metals.

5. The foaming composition according to any one of the preceding claims wherein the metal is one or more of zinc, zirconium, aluminum, magnesium and calcium.

6. The foaming composition according to any one of the preceding claims wherein the metal salt is a salt that decomposes into one or more gases at a temperature used to form a foam.

7. A method of forming a foam comprising:
a) heating the foaming composition of claim 1 and
b) extruding the foaming composition from a higher pressure to a lower pressure to form an extruded foam comprised of the reversibly cross-linkable copolymer that is crosslinked.

8. The method of Claim 7, wherein the reversibly crosslinkable copolymer that is crosslinked is comprised of copolymer of one or more vinylidene aromatic monomers and one or more unsaturated acids, the copolymer having about 0.01 to about 15.0 percent by weight of the one or more unsaturated acids wherein the acid groups are pendant from the copolymer and a metal salt, metal oxide or combination thereof, the metal having a valence of at least 2, wherein the copolymer is crosslinked through ionic bonds between the unsaturated acids and the metal of the metal salt or metal oxide.

9. The method of either Claim 7 or 8, wherein the solution viscosity, measured at 23 °C at 10 weight percent in toluene, of the reversibly cross-linkable copolymer that is crosslinked is at least 100 percent greater than the solution viscosity of the uncrosslinked copolymer.

10. The method of either Claim 8 or 9, wherein the metal salt decomposes to form a gas during the method.

11. The method of any one of Claims 8 to 10, wherein the metal salt is a metal carbonate, metal carboxylate, metal acetylacetonate or combination thereof.

12. The method of any one of Claims 8 to 11, wherein the metal salt or metal oxide has a metal that is one or more of zinc, zirconium, aluminum, magnesium and calcium.

13. A foam comprised of a copolymer comprising one or more vinylidene aromatic monomers and one or more unsaturated acids, the copolymer having about 0.01 to about 15.0 percent by weight of the one or more unsaturated acids wherein the acid groups are pendant from the copolymer and a metal salt, metal oxide or combination thereof, the metal having a valence of at least 2, wherein the copolymer is crosslinked through ionic bonds between the unsaturated acids and the metal of the metal salt or metal oxide and the foam contains decomposition residue of the metal salt.

14. The foam of Claim 13, wherein the metal of the metal salt or metal oxide is zinc, zirconium, aluminum, magnesium, calcium or combination thereof.

15. The foam of either Claim 13 or 14, wherein the solution viscosity, measured at 23 °C at 10 weight percent in toluene, of the crosslinked copolymer is at least 100 percent greater than the solution viscosity of the uncrosslinked copolymer.