WHAT IS CLAIMED IS:

Claim 1. A preformed stabilizer formed by free-radical polymerization of a mixture comprising:

(a) at least one ethylenically unsaturated macromolecule or macromer,

with

(b) at least three different radically polymerizable ethylenically unsaturated monomers,

in the presence of

(c) at least one free-radical polymerization initiator,

and, optionally,

(d) a liquid diluent,

and, optionally,

(e) a chain transfer agent

Claim 2. The preformed stabilizer of Claim 1 in which (b) includes acrylonitrile and/or styrene.

Claim 3. The preformed stabilizer of Claim 1 in which (b) includes a mixture of styrene and acrylonitrile in a weight ratio of 80:20 to 20:80.

Claim 4. The preformed stabilizer of Claim 3 in which the styrene and acrylonitrile constitute at least 20% by weight of the total weight of (b).

Claim 5. The preformed stabilizer of Claim 1 in which (b) includes an ethylenically unsaturated monomer containing a hydroxyl group.

Claim 6. The preformed stabilizer of Claim 1 in which (b) includes at least one ethylenically unsaturated monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, and hydroxypropyl methacrylate.

Claim 7. The preformed stabilizer of Claim 4 in which (b) further includes at least one ethylenically unsaturated monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, and hydroxypropyl methacrylate.

Claim 8. The preformed stabilizer of Claim 1 in which (c) is selected from the group consisting of one or more peroxide initiators, one or more azo initiators and mixtures thereof.

Claim 9. The preformed stabilizer of Claim 7 in which (c) is selected from the group consisting of one or more peroxide initiators, one or more azo initiators and mixtures thereof.

Claim 10. The preformed stabilizer of Claim 1 in which (d) is selected from the group consisting of a mono-ol, a polyol, a hydrocarbon, an ether and mixtures thereof.

Claim 11. The preformed stabilizer of Claim 9 in which (d) is selected from the group consisting of a mono-ol, a polyol, a hydrocarbon, an ether and mixtures thereof.

Claim 12. The preformed stabilizer of Claim 1 in which (e) is selected from the group consisting of methanol, isopropanol, ethanol, tert-butanol, toluene, ethylbenzene, triethylamine, dodecylmercaptan,

octadecylmercaptan, carbon tetrachloride, carbon tetrabromide, chloroform, and methylene chloride.

Claim 13. A continuous process for preparing a polymer polyol comprising:

free-radically polymerizing:

(1) a base polyol,

(2) the preformed stabilizer of Claim 1,

and

(3) at least one ethylenically unsaturated monomer,

in the presence of

(4) at least one free-radical polymerization initiator comprising an azo compound that is free of nitrile groups,

and, optionally,

(5) a polymer control agent, and optionally

(6) a chain transfer agent

Claim 14. A polymer polyol produced by the process of Claim 13.

CLAIMS

1. A preformed stabilizer formed by free-radical polymerization of a mixture comprising:

(a) at least one ethylenically unsaturated macromolecule or macromer,

with

(b) at least three different radically polymerizable ethylenically unsaturated monomers,

in the presence of

(c) at least one free-radical polymerization initiator,

and, optionally,

(d) a liquid diluent,

and, optionally,

(e) a chain transfer agent.

2. The preformed stabilizer of claim 1 in which (b) includes acrylonitrile and/or styrene.

3. The preformed stabilizer of claim 1 in which (b) includes a mixture of styrene and acrylonitrile in a weight ratio of 80:20 to 20:80.

4. The preformed stabilizer of claim 3 in which the styrene and acrylonitrile constitute at least 20% by weight of the total weight of (b).

5. The preformed stabilizer of claim 1 in which (b) includes an ethylenically unsaturated monomer containing a hydroxyl group.

6. The preformed stabilizer of claim 1 in which (b) includes at least one ethylenically unsaturated monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, and hydroxypropyl methacrylate.

7. The preformed stabilizer of claim 4 in which (b) further includes at least one ethylenically unsaturated monomer selected from the group consisting of 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, hydroxypropyl acrylate, and hydroxypropyl methacrylate.

8. The preformed stabilizer of claim 1 in which (c) is selected from the group consisting of one or more peroxide initiators, one or more azo initiators and mixtures thereof.

9. The preformed stabilizer of claim 7 in which (c) is selected from the group consisting of one or more peroxide initiators, one or more azo initiators and mixtures thereof.

10. The preformed stabilizer of claim 1 in which (d) is selected from the group consisting of a mono-ol, a polyol, a hydrocarbon, an ether and mixtures thereof.

11. The preformed stabilizer of claim 9 in which (d) is selected from the group consisting of a mono-ol, a polyol, a hydrocarbon, an ether and mixtures thereof.

12. The preformed stabilizer of claim 1 in which (e) is selected from the group consisting of methanol, isopropanol, ethanol, tert-butanol, toluene, ethylbenzene, triethylamine, dodecylmercaptan, octadecylmercaptan, carbon tetrachloride, carbon tetrabromide, chloroform, and methylene chloride.

13. A continuous process for preparing a polymer polyol comprising: free-radically polymerizing:

(1) a base polyol,

(2) the preformed stabilizer of claims 1,

and

(3) at least one ethylenically unsaturated monomer,

in the presence of

(4) at least one free-radical polymerization initiator comprising an azo compound that is free of nitrile groups,

and, optionally,

(5) a polymer control agent,

and optionally

(6) a chain transfer agent.

14. A polymer polyol produced by the process of claim 13.