

WHAT IS CLAIMED IS:

1. Use of a dibenzoate plasticizer in a reactive polyurethane composition prepared from the reaction of an isocyanate and a polyol,
wherein the dibenzoate plasticizer consists of a low hydroxyl 1,2-propylene glycol dibenzoate having a hydroxyl number of less than 2 mg KOH/g when measured by the ASTM E222 method and less than 4 mg KOH/g when measured by the ASTM E1899 method,
wherein the dibenzoate plasticizer is added to the polyurethane composition at the same time or close to the time that the isocyanate and polyol are mixed together to form a polyurethane polymer, and
wherein the dibenzoate plasticizer achieves comparable or improved properties of compatibility, color, exudation, optical properties, MVTR, hardness, tensile strength, tear strength, rebound, compression set, and solvent swell, as compared to that achieved with traditional plasticizers known for use in polyurethanes.
2. Use of a dibenzoate plasticizer as set forth in claim 1, wherein the 1,2-propylene glycol dibenzoate has low acidity of less than 0.1%, water content levels of less than 0.1% and a half-ester content of less than 1%.
3. Use of a dibenzoate plasticizer as set forth in claim 1, wherein the 1,2-propylene glycol dibenzoate has a hydroxyl value of less than 1 mg/KOH/g when measured by the ASTM E222 method.
4. Use of a dibenzoate plasticizer as set forth in claim 1, wherein the 1,2-propylene glycol dibenzoate has a hydroxyl value of 3 or less mg/KOH/g when measured by the ASTM E1899 method.
5. A reactive thermoplastic polyurethane composition, comprising:
 - a. a thermoplastic polyurethane, and
 - b. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 and 4.

6. The reactive thermoplastic polyurethane composition of claim 5, wherein the dibenzoate plasticizer is present in an amount ranging from about 5 wt.% to about 50 wt.%, based upon the weight of the thermoplastic polyurethane composition.
7. A reactive polyurethane adhesive comprising the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
8. A reactive polyurethane sealant comprising the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
9. A thermoset polyurethane article comprising the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
10. A method of preventing yellowing of a polyurethane composition comprising the step of adding the dibenzoate plasticizer of any of claims 1, 2, 3 or 4 to a reactive polyurethane formulation during manufacture.
11. A thermoplastic polyurethane composition comprising:
 - a. an isocyanate;
 - b. a polyol;
 - c. a diol;
 - d. the low hydroxyl dibenzoate plasticizer of claims 1, 2, 3 or 4; and
 - e. a stabilizer.
12. The thermoplastic polyurethane composition of claim 11, wherein the low hydroxyl dibenzoate plasticizer is present in an amount ranging from about 5 wt.% to about 80 wt.%, based upon the total weight of the thermoplastic polyurethane composition.
13. The thermoplastic polyurethane composition of claim 11,

- wherein the isocyanate is a diisocyanate that is methylene diphenyl diisocyanate;
and
wherein the diol is butanediol; and
wherein the polyol is a polyester or polyether.
14. An adhesive comprising:
a. a polyurethane polymer; and
b. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
15. A sealant comprising:
a. a polyurethane polymer; and
b. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3, or 4.
16. A reactive thermoset polyurethane comprising:
a. a polyurethane polymer; and
b. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
17. An article of manufacture comprising the thermoplastic polyurethane composition of any of claims 5, 6, 11, 12, and 13, wherein the article of manufacture is footwear, handbags, or luggage.
18. A 1K polyurethane adhesive or sealant comprising the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3, or 4.
19. A 2K polyurethane adhesive or sealant comprising the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4.
20. A method for reducing or eliminating yellowing associated with the use of traditional plasticizers in polyurethane compositions, comprising the steps of:
a. substituting the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3, or 4 for the traditional plasticizer in the polyurethane composition, and

- b. incorporating the low hydroxyl dibenzoate plasticizer at the same time or close to the time that the isocyanate and polyol are mixed together to form a polyurethane polymer.
21. A method for improving the properties of articles made from a polyurethane composition, comprising the steps of:
- a. substituting the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3, or 4 for the traditional plasticizer in the polyurethane composition, and
 - b. incorporating the low hydroxyl dibenzoate plasticizers at the same time or close to the time that the isocyanate and polyol are mixed together to form a polyurethane polymer.
22. A reactive polyurethane composition, comprising:
- a. an isocyanate;
 - b. a diol;
 - c. a polyol;
 - d. a stabilizer; and
 - e. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4, present in an amount ranging from 20 phr to 60 phr, based on 100 parts of polyurethane polymer formed by the reaction of the isocyanate and the polyol, wherein components are blended in the polymer formation steps at the same time or very close to the point where the isocyanate and polyol components react to form the polyurethane polymer and not when the polyurethane polymer is fully formed.
23. A reactive polyurethane system, comprising:
- a. an isocyanate;
 - b. a diol;
 - c. a polyol;
 - d. a stabilizer; and
 - e. the low hydroxyl dibenzoate plasticizer of any of claims 1, 2, 3 or 4,

wherein components are blended in the polymer formation steps at the same time or very close to the point where the isocyanate and polyol components react to form the polyurethane polymer and not when the polyurethane polymer is fully formed.