CLAIMS

1. A curable film-forming composition comprising:

(1) a resinous component comprising:

(a) an acrylic polyol;

(b) an aliphatic ketimine that contains 3% or less silane functional groups, based upon the total number of silane functional groups relative to the total number of functional groups in the aliphatic ketimine; and optionally

(c) a polyaspartic ester; and

(2) a curing agent comprising at least two different aliphatic polyisocyanates, wherein the curable film-forming composition comprises less than 10 percent by weight, or less than 5 percent by weight, or less than 2 percent by weight, or 0 percent by weight of a polyisocyanate polymer or prepolymer, based on the total weight of the curable film-forming composition.

2. The curable film-forming composition of claim 1, wherein the curing agent (2) does not comprise a polyisocyanate polymer or prepolymer.

3. The curable film-forming composition of claim 1 or 2, wherein the polyaspartic ester (c) is present and has an amino equivalent weight of 270 to 300 g/equivalent.

4. The curable film-forming composition of any of the preceding claims, wherein the aliphatic ketimine (b) is prepared from a reaction mixture comprising:

(1) a diamine comprising isophorone diamine, ethylene diamine, 1,2-diaminopropane, 1,4-diaminobutane, 1,5-diaminopentane, 1,6-diaminohexane, 1,8-diaminooctane, 2-methyl-1,5-pentane diamine, 2,5-diamino-2,5-dimethylhexane, 2,2,4- trimethyl-1,6-diamino-hexane, 2,4,4-trimethyl-1,6-diamino-hexane, 1,11-diaminoundecane, 1,12-diaminododecane, 1,3-cyclohexane diamine, 1,4-cyclohexane diamine, 1-amino-3,3,5-trimethyl-5-

aminomethyl-cyclohexane, 2,4'- diamino-dicyclohexyl methane, 4,4'-diamino-dicyclohexyl methane, 3,3'-dimethyl-4,4'-diamino-dicyclohexyl methane and/or 3,3'-diethyl-4,4'-diamino-dicyclohexyl methane; and

(2) a ketone comprising acetone, methyl ethyl ketone, methyl isobutyl ketone, and/or methyl amyl ketone.

5. The curable film-forming composition of claim 4, wherein the aliphatic ketimine (b) is prepared from a reaction mixture comprising isophorone diamine and methyl isobutyl ketone.

6. The curable film-forming composition of any of the preceding claims, wherein the acrylic polyol (a) has a hydroxyl equivalent weight of at least 650, or at least 670, or at least 690, and at most 750, or at most 720, or at most 700 g/equivalent, and wherein the acrylic polyol is prepared from a monomer mixture comprising butyl acrylate and 2-hydroxyethyl acrylate.

7. The curable film-forming composition of any of the preceding claims, wherein the weight ratio of the acrylic polyol (a) to the polyaspartic ester (c) is 1:4 to 1:2.5 (0.25 to 0.4), or 1:4 to 1:2.7 (0.25 to 0.37), or 1:4 to 1:3 (0.25 to 0.33), or 1:4 to 1:3.45 (0.25 to 0.29).

8. The curable film-forming composition of any of the preceding claims, wherein the equivalent ratio of isocyanate functional groups in the curing agent (2) to total active hydrogen functional groups in the resinous component (1) is 1:1 to 1.2:1.

9. The curable film-forming composition of any of the preceding claims, wherein the aliphatic polyisocyanates comprise at least two of 4,4'-methylene-bis(cyclohexyl isocyanate), isophorone diisocyanate, 2,2,4-trimethyl hexamethylene diisocyanate, 2,4,4-trimethyl hexamethylene diisocyanate, 1,6-hexamethylene diisocyanate, a biuret of one or more of the

preceding aliphatic polyisocyanates, and an isocyanurate of one or more of the preceding aliphatic polyisocyanates.

10. The curable film-forming composition of any of the preceding claims, wherein after application of the curable film-forming composition to a substrate and after curing to form a cured coating, the cured coating demonstrates a 20° surface gloss greater than 70, or greater than 75, or greater than 85, and less than 95 or less than 90, and a 60° surface gloss of greater than 85, or greater than 90, and less than 98 or less than 96, as measured according to ASTM D-523-14.

11. The curable film-forming composition of any of the preceding claims, further comprising (3) a matting agent present in the curable film-forming composition in an amount of 3 to 5 percent by weight, based on the total weight of the curable film-forming composition, wherein the matting agent comprises (a) precipitated silica that is surface treated with wax and that demonstrates a number average d50 particle size of 5 to 7 microns, or 6 to 7 microns, such as 6.3 microns, as measured by Test Method ISO 13320-2009 using laser diffraction; and (b) organic polymeric particles that demonstrate a density of 1.4 to 2.0 g/cm^3, as measured by Test Method ISO 787-10, and a volume average d50 particle size of 4 to 6 microns, or 4.5 to 5.5 microns, such as 5 microns, as measured by Test Method ISO 13320-2009 using laser diffraction.

12. The curable film-forming composition of claim 11, wherein after application of the curable film-forming composition to a substrate and after curing to form a cured coating, the cured coating demonstrates a 20° surface gloss greater than 5, or greater than 8, and less than 15 or less than 10, and a 60° surface gloss of greater than 40, or greater than 43, and less than 50 or less than 47, as measured according to ASTM D-523-14.

13. The curable film-forming composition of any of the preceding claims, wherein the curable film-forming composition has a solids content of at least 60, or at least 65, or at least 68, and at most 80, or at most 77, or at most 75 percent by weight, based on the total weight of the curable film-forming composition.

14. The curable film-forming composition of any of the preceding claims, wherein the curable film-forming composition has a volatile organic compound (VOC) content less than 2.7, or less than 2.6, or less than 2.5 lb/gallon.

15. The curable film-forming composition of any of the preceding claims, wherein the curable film-forming composition comprises separate packages, wherein a first package comprises the resinous component (1) and the matting agent (3) if present; and wherein a second package comprises the curing agent (2); and wherein the packages are separate from one another until immediately prior to application of the curable film-forming composition to a substrate.

16. The curable film-forming composition of any of the preceding claims, wherein the resinous component (1) further comprises (d) a polyester polyol.

17. A coated structure comprising:

(a) a component of a vehicle, building, bridge, industrial protective structure, construction equipment structure, ship, railcar, railcar container, water tower, power line tower, tunnel, oil or gas industry structure, marine structure, aerospace structure, bridge support structure, pipeline, oil rig, storage tank, or wind turbine, wherein said component comprises a metal substrate; and

(b) a cured coating, wherein the cured coating is formed from the curable film-forming composition of any of claims 1 to 16 applied to at least one surface of the substrate.

18. The coated structure of claim 17, wherein the polyaspartic ester is present in the curable film-forming composition, and the curable film-forming composition is applied directly to at least one surface of the substrate.

19. The coated structure of claim 17, further comprising at least one additional film-forming composition applied on top of the curable film-forming composition and/or between the curable film-forming composition and the substrate.

20. The coated structure of any of claims 17 to 19, wherein the substrate comprises one or more of a ferrous metal, aluminum, an aluminum alloy, copper, and brass.

21. The coated structure of claim 20, wherein the substrate comprises profiled steel.

22. A coating kit comprising:

(1) a resinous component comprising:

(a) an acrylic polyol; and

(b) an aliphatic ketimine that contains 3% or less silane functional groups, based upon the total number of silane functional groups relative to the total number of functional groups in the aliphatic ketimine; and optionally

(c) a polyaspartic ester; and

(2) a curing agent comprising at least two different aliphatic polyisocyanates, wherein the coating kit comprises less than 10 percent by weight, or less than 5 percent by weight, or less than 2 percent by weight, or 0 percent by weight of a polyisocyanate polymer or prepolymer, based on the total weight of the coating kit.

23. The coating kit of claim 22 comprising multiple, separate packages, wherein a first package comprises the resinous component (1), and a second package comprises the curing agent (2).

24. The coating kit of any of claims 22 to 23, wherein the resinous component (1) further comprises (d) a polyester polyol.

25. The coating kit of any of claims 22 to 24, wherein the coating kit comprises the curable film-forming composition of any of claims 1 to 16.