What is claimed is:

1. A double-sided multi-layer adhesive comprising:

at least two layers of pressure sensitive adhesive,

the first layer comprising a first pressure sensitive adhesive composition; and

the second layer comprising a second pressure sensitive adhesive composition

comprising a cured mixture comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, or a non-siloxane containing segmented urethane-based unit.

2. The double-sided multi-layer adhesive of claim 1, wherein B comprises a non-siloxane containing segmented urea-based unit that comprises at least one urea group and at least one oxyalkylene group.

3. The double-sided multi-layer adhesive of claim 2, wherein the X-B-X reactive oligomer is the reaction product of a non-siloxane segmented urea-based diamine and a Z-X material, wherein X comprises an ethylenically unsaturated group, and Z comprises an amine-reactive group.

4. The double-sided multi-layer adhesive of claim 3, wherein the non-siloxane segmented urea-based diamine is the reaction product of a polyoxyalkylene diamine with a diaryl carbonate.

5. The double-sided multi-layer adhesive of claim 3, wherein Z comprises an isocyanate, an azlactone, an anhydride or a combination thereof.

6. The double-sided multi-layer adhesive of claim 1, wherein the X-B-X reactive oligomer is the reaction product of a non-siloxane segmented urea-based diamine and a Z-W-Z material, wherein Z comprises an amine-reactive group and W comprises a linking

group, followed by the reaction with a Y-X material wherein X comprises an ethylenically unsaturated group, and Y comprises an Z-reactive group.

7. The double-sided multi-layer adhesive of claim 6, wherein Z-W-Z comprises a diisocyanate and Y-X comprises a hydroxyl-functional (meth)acrylate.

8. The double-sided multi-layer adhesive of claim 1, wherein the adhesive is an optically clear adhesive.

9. The double-sided multi-layer adhesive of claim 1, wherein the first layer is a self-wetting and removable adhesive.

10. The double-sided multi-layer adhesive of claim 1, wherein at least one layer is a microstructured adhesive.

11. The double-sided multi-layer adhesive of claim 1, wherein the cured mixture further comprises an ethylenically unsaturated material.

12. The double-sided adhesive tape of claim 1, wherein at least one of the first layer or the second layer further comprises an additive, wherein the additive comprises a pressure sensitive adhesive, a plasticizing agent, a tackifying agent, a UV stabilizer, an environmental stabilizer, or mixture thereof.

13. The double-sided adhesive tape of claim 2, wherein the first layer pressure sensitive adhesive composition comprises 5-60 weight % of cured reaction mixture and 5-55 weight % plasticizer.

14. The double sided adhesive tape of claim 1, wherein B comprises a non-siloxane segmented urethane-based unit that comprises at least one urethane group and at least one oxyalkylene group.

15. The double sided adhesive tape of claim 1, wherein X-B-X comprises a siloxane diacrylate.

16. The double sided adhesive tape of claim 1, wherein the second layer comprises poly(meth)acrylate, a siloxane, or a siloxane (meth)acrylate.

17. The double-sided adhesive tape of claim 1, wherein the second layer has a 180° Peel Strength which is less than the 180° Peel Strength of the first layer as measured by ASTM test method D 3330-90.

18. A method of preparing an double-sided multi-layer adhesive comprising:

providing a first fluid comprising a polymeric adhesive composition solution or dispersion;

providing a second fluid comprising a curable composition comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, a non-siloxane containing segmented urethane-based unit, or a siloxane-based unit, and an initiator;

coating the first fluid and the second fluid onto a substrate; and

curing the curable composition.

19. The method of claim 18, wherein coating the first fluid and the second fluid onto a substrate comprises simultaneous slot die coating of the two fluids.

20. The method of claim 19, wherein the second fluid is coated over a coating of the first fluid.

21. The method of claim 18, wherein the polymeric adhesive composition comprises a pressure sensitive adhesive.

22. The method of claim 18, wherein the substrate comprises a release liner.

23. The method of claim 18, wherein the curable composition further comprises a pressure sensitive adhesive, a plasticizing agent, a tackifying agent or mixture thereof.

24. An adhesive article comprising:

a double-sided multi-layer adhesive comprising at least two layers of pressure sensitive adhesive,

the first layer comprising a first pressure sensitive adhesive; and

the second layer comprising:

a pressure sensitive adhesive comprising a cured mixture comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, or a non-siloxane containing urethane-based unit; and

a substrate.

25. The adhesive article of claim 24, wherein the substrate comprises an optically active film comprising a visible mirror film, a color mirror film, a solar reflective film, a diffusive film, an infrared reflective film, an ultraviolet reflective film, a reflective polarizer film such as a brightness enhancement film or a dual brightness enhancement film, an absorptive polarizer film, an optically clear film, a tinted film, or an antireflective film.

CLAIMS

1. A double-sided multi-layer adhesive comprising:

at least two layers of pressure sensitive adhesive with no intervening layers between the pressure sensitive adhesive layers,

the first layer comprising a first pressure sensitive adhesive composition; and

the second layer comprising a second pressure sensitive adhesive composition comprising a cured mixture formed from a reactive mixture comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, or a non-siloxane containing segmented urethane-based unit, wherein the reactive mixture is coated to form a layer prior to curing.

2. The double-sided multi-layer adhesive of claim 1, wherein B comprises a non-siloxane containing segmented urea-based unit that comprises at least one urea group and at least one oxyalkylene group.

3. The double-sided multi-layer adhesive of claim 2, wherein the X-B-X reactive oligomer is the reaction product of a non-siloxane segmented urea-based diamine and a Z-X material, wherein X comprises an ethylenically unsaturated group, and Z comprises an amine-reactive group.

4. The double-sided multi-layer adhesive of claim 3, wherein the non-siloxane segmented urea-based diamine is the reaction product of a polyoxyalkylene diamine with a diaryl carbonate.

5. The double-sided multi-layer adhesive of claim 3, wherein Z comprises an isocyanate, an azlactone, an anhydride or a combination thereof.

6. The double-sided multi-layer adhesive of claim 1, wherein the X-B-X reactive oligomer is the reaction product of a non-siloxane segmented urea-based diamine and a Z-W-Z material,

wherein Z comprises an amine-reactive group and W comprises a linking group, followed by the reaction with a Y-X material wherein X comprises an ethylenically unsaturated group, and Y comprises an Z-reactive group.

7. The double-sided multi-layer adhesive of claim 6, wherein Z-W-Z comprises a diisocyanate and Y-X comprises a hydroxyl-functional (meth)acrylate.

8. The double-sided multi-layer adhesive of claim 1, wherein the adhesive is an optically clear adhesive.

9. The double-sided multi-layer adhesive of claim 1, wherein the first layer is a self-wetting and removable adhesive.

10. The double-sided multi-layer adhesive of claim 1, wherein at least one layer is a microstructured adhesive.

11. The double-sided multi-layer adhesive of claim 1, wherein the cured mixture further comprises an ethylenically unsaturated material.

12. The double-sided multi-layer adhesive of claim 1, wherein at least one of the first layer or the second layer further comprises an additive, wherein the additive comprises a pressure sensitive adhesive, a plasticizing agent, a tackifying agent, a UV stabilizer, an environmental stabilizer, or mixture thereof.

13. The double-sided multi-layer adhesive of claim 2, wherein the first layer pressure sensitive adhesive composition comprises 5-60 weight % of cured reaction mixture and 5-55 weight % plasticizer.

14. The double-sided multi-layer adhesive of claim 1, wherein B comprises a non-siloxane segmented urethane-based unit that comprises at least one urethane group and at least one oxyalkylene group.

15. The double-sided multi-layer adhesive of claim 1, wherein X-B-X comprises a siloxane diacrylate.

16. The double-sided multi-layer adhesive of claim 1, wherein the second layer comprises poly(meth)acrylate, a siloxane, or a siloxane (meth)acrylate.

17. The double-sided multi-layer adhesive of claim 1, wherein the second layer has a 180° Peel Strength which is less than the 180° Peel Strength of the first layer as measured by ASTM test method D 3330-90.

18. A method of preparing an double-sided multi-layer adhesive comprising:

providing a first fluid comprising a polymeric adhesive composition solution or dispersion;

providing a second fluid comprising a curable composition comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, a non-siloxane containing segmented urethane-based unit, or a siloxane-based unit, and an initiator;

coating the first fluid and the second fluid onto a substrate; and

curing the curable composition.

19. The method of claim 18, wherein coating the first fluid and the second fluid onto a substrate comprises simultaneous slot die coating of the two fluids.

20. The method of claim 19, wherein the second fluid is coated over a coating of the first fluid.

21. The method of claim 18, wherein the polymeric adhesive composition comprises a pressure sensitive adhesive.

22. The method of claim 18, wherein the substrate comprises a release liner.

23. The method of claim 18, wherein the curable composition further comprises a pressure sensitive adhesive, a plasticizing agent, a tackifying agent or mixture thereof.

24. An adhesive article comprising:

a double-sided multi-layer adhesive comprising at least two layers of pressure sensitive adhesive,

the first layer comprising a first pressure sensitive adhesive; and

the second layer comprising:

a pressure sensitive adhesive comprising a cured mixture comprising:

at least one X-B-X reactive oligomer, wherein X comprises an ethylenically unsaturated group, and B comprises a non-siloxane containing segmented urea-based unit, or a non-siloxane containing urethane-based unit; and

a substrate.

25. The adhesive article of claim 24, wherein the substrate comprises an optically active film comprising a visible mirror film, a color mirror film, a solar reflective film, a diffusive film, an infrared reflective film, an ultraviolet reflective film, a reflective polarizer film such as a brightness enhancement film or a dual brightness enhancement film, an absorptive polarizer film, an optically clear film, a tinted film, or an antireflective film.