

CLAIMS

What is claimed is:

1. A polishing pad stack for polishing a substrate, the polishing pad stack comprising:
a polishing pad having a polishing surface and a back surface; and
a compressive subpad with a first surface having a first pressure sensitive adhesive layer coated thereon, the first surface of the compressive subpad coupled directly to the back surface of the polishing pad by the first pressure sensitive adhesive layer, and wherein the first surface of the compressive subpad has a surface energy approximately in the range of 30-40 dyne/cm².
2. The polishing pad stack of claim 1, further comprising:
a second pressure sensitive adhesive layer coated on a second surface of the compressive subpad, the second surface of the compressive subpad opposite the first surface.
3. The polishing pad stack of claim 2, wherein the first pressure sensitive adhesive layer is a permanent pressure sensitive adhesive layer, and wherein the second pressure sensitive adhesive layer is a removable pressure sensitive adhesive layer.
4. The polishing pad stack of claim 3, wherein the removable pressure sensitive adhesive layer is for coupling the polishing pad stack to a platen of a chemical mechanical polishing apparatus.
5. The polishing pad stack of claim 4, further comprising:
a release liner disposed on the removable pressure sensitive adhesive layer.
6. The polishing pad stack of claim 3, wherein the first pressure sensitive adhesive layer has a peel strength of greater than approximately 4.5 pounds per inch at 25 degrees Celsius, and wherein the second pressure sensitive adhesive layer has a peel strength of less than approximately 4 pounds per inch at 25 degrees Celsius.
7. The polishing pad stack of claim 6, wherein the second pressure sensitive adhesive layer has a peel strength of less than approximately 2.5 pounds per inch at 25 degrees Celsius.

8. The polishing pad stack of claim 1, wherein the compressive subpad is a compressive foam subpad.
9. The polishing pad stack of claim 8, wherein the compressive foam subpad comprises a material selected from the group consisting of an ethylene vinyl acetate closed cell foam material, a polyethylene closed cell foam material, and a polyurethane mostly closed cell foam material.
10. The polishing pad stack of claim 1, wherein the compressive subpad has a thickness approximately in the range of 10 mils to 40 mils.
11. The polishing pad stack of claim 1, wherein the first surface of the compressive subpad has a surface roughness of at least 3 microns and has a total surface area, and the first pressure sensitive adhesive layer is in direct contact with at least 90% of the total surface area of the first surface of the compressive subpad.
12. The polishing pad stack of claim 1, wherein the first pressure sensitive adhesive layer comprises a material selected from the group consisting of an acrylic material, a rubber, ethylene vinyl acetate, a silicone material, and a block co-polymer.
13. The polishing pad stack of claim 1, wherein the polishing pad comprises a thermoset polyurethane material.
14. The polishing pad stack of claim 2, wherein the polishing pad comprises a polishing layer coupled to a foundation layer, and wherein the back surface of the polishing pad is a surface of the foundation layer.
15. A subpad for a polishing pad stack, the subpad comprising:
 - a compressive subpad material having a first surface and a second, opposite, surface;
 - a first pressure sensitive adhesive layer coated on the first surface of the compressive subpad material, and a first release liner disposed on the first pressure sensitive adhesive layer;
 - and
 - a second pressure sensitive adhesive layer coated on the second surface of the compressive subpad material, wherein the compressive subpad material is a compressive foam

subpad material, and wherein the first and second surfaces of the compressive foam subpad material each have a surface energy approximately in the range of 30-40 dyne/cm².

16. The subpad of claim 15, further comprising:
a second release liner disposed on the second pressure sensitive adhesive layer.
17. The subpad of claim 15, wherein the first pressure sensitive adhesive layer is a removable pressure sensitive adhesive layer, and wherein the second pressure sensitive adhesive layer is a permanent pressure sensitive adhesive layer.
18. The subpad of claim 17, wherein the permanent pressure sensitive adhesive layer is for coupling to a back surface of a polishing pad, and wherein the removable pressure sensitive adhesive layer is for coupling the subpad to a platen of a chemical mechanical polishing apparatus.
19. The subpad of claim 15, wherein the second pressure sensitive adhesive layer has a peel strength of greater than approximately 4.5 pounds per inch at 25 degrees Celsius, and wherein the first pressure sensitive adhesive layer has a peel strength of less than approximately 4 pounds per inch at 25 degrees Celsius.
20. The subpad of claim 15, wherein the compressive subpad material is a compressive foam subpad material comprising a material selected from the group consisting of an ethylene vinyl acetate closed cell foam material, a polyethylene closed cell foam material, and a polyurethane mostly closed cell foam material.
21. The subpad of claim 15, wherein the compressive subpad material has a thickness approximately in the range of 10 mils to 40 mils.
22. The subpad of claim 15, wherein the second pressure sensitive adhesive layer comprises a first material selected from the group consisting of an acrylic material, a rubber, ethylene vinyl acetate, a silicone material, and a block co-polymer, and wherein the first pressure sensitive adhesive layer comprises a second material selected from the group consisting of an acrylic material, a rubber, ethylene vinyl acetate, a silicone material, and a block co-polymer.

23. The subpad of claim 15, wherein the first surface of the compressive subpad material has a surface roughness of at least 3 microns and has a total surface area, and the first pressure sensitive adhesive layer is in direct contact with at least 90% of the total surface area of the first surface of the compressive subpad material.

24. The subpad of claim 23, wherein the second surface of the compressive subpad material has a surface roughness of at least 3 microns and has a total surface area, and the second pressure sensitive adhesive layer is in direct contact with at least 90% of the total surface area of the second surface of the compressive subpad material.