What is claimed is:

1. A structured abrasive article comprising:

a backing having first and second opposed major surfaces;

a structured abrasive layer disposed on and secured to the first major surface wherein the structured abrasive layer comprises:

a polymeric binder;

abrasive particles dispersed in the binder; and

a nonionic polyether surfactant dispersed in the binder,

wherein the abrasive particles have a mean particle size of less than about 200 nm, wherein the nonionic polyether surfactant is not covalently bound to the crosslinked polymeric binder, and

wherein the nonionic polyether surfactant is present in an amount of from 0.75 to 2.2 percent by weight based on a total weight of the structured adhesive layer.

2. A structured abrasive article according to claim 1, wherein the nonionic polyether surfactant is present in an amount of from 1.0 to 2.2 percent by weight based on a total weight of the structured adhesive layer.

3. A structured abrasive article according to claim 1, wherein the shaped abrasive composites are precisely-shaped.

4. A structured abrasive article according to claim 1, wherein the crosslinked polymeric binder comprises an acrylic polymer.

5. A structured abrasive article according to claim 1, wherein the surfactant comprises a polyethylene oxide segment.

6. A structured abrasive article according to claim 1, wherein the surfactant comprises a polypropylene oxide segment.

7. A structured abrasive article according to claim 1, wherein the shaped abrasive composites further comprise an anionic phosphate polyether ester, and wherein the anionic phosphate polyether ester is present in an amount by weight that is less than that of the nonionic polyether surfactant.

8. A structured abrasive article according to claim 1, wherein the backing comprises a polymer film.

9. A structured abrasive article according to claim 8, wherein the polymer film comprises an elastomeric polyurethane.

10. A structured abrasive article according to claim 1, wherein the backing comprises a polymer foam.

11. A structured abrasive article according to claim 1, further comprising an attachment interface layer directly bonded to the second major surface.

12. A structured abrasive article according to claim 11, wherein the attachment interface layer comprises a pressure-sensitive adhesive disposed on the second major surface.

13. A structured abrasive article according to claim 11, wherein the attachment interface layer comprises a looped fabric.

14. A method of abrading a workpiece comprising:

frictionally contacting at least a portion of a structured abrasive article with a surface of a workpiece while in the presence of an aqueous fluid; and

moving at least one of the workpiece or the structured abrasive layer relative to the other to abrade at least a portion of the surface of the workpiece,

wherein the structured abrasive article comprises:

a backing having first and second opposed major surfaces; and

a structured abrasive layer disposed on and secured to the first major surface wherein the structured abrasive layer comprises:

a polymeric binder;

abrasive particles dispersed in the binder; and

a nonionic polyether surfactant dispersed in the binder,

wherein the abrasive particles have a mean particle size of less than about 200 nm, wherein the nonionic polyether surfactant is not covalently bound to the crosslinked polymeric binder, and

wherein the nonionic polyether surfactant is present in an amount of from 0.75 to 2.2 percent by weight based on a total weight of the structured adhesive layer.

15. A method of abrading a workpiece according to claim 14, wherein the workpiece is an oxide wafer.

16. A method of abrading a workpiece according to claim 14, wherein the workpiece comprises silicon.

17. A method of abrading a workpiece according to claim 14, wherein the aqueous fluid comprises tap water.

CLAIMS

1. A structured abrasive article comprising:

a backing having first and second opposed major surfaces;

a structured abrasive layer disposed on and secured to the first major surface wherein the structured abrasive layer comprises:

a polymeric binder;

abrasive particles dispersed in the binder; and

a nonionic polyether surfactant dispersed in the binder,

wherein the abrasive particles are ceria particles and have an average particle size, on a volume basis, ranging from 1 to 95 nm,

wherein the nonionic polyether surfactant is not covalently bound to the crosslinked polymeric binder, and

wherein the nonionic polyether surfactant is present in an amount of from 0.75 to 2.2 percent by weight based on a total weight of the structured abrasive layer.

2. A structured abrasive article according to claim 1, wherein the nonionic polyether surfactant is present in an amount of from 1.0 to 2.2 percent by weight based on a total weight of the structured abrasive layer.

3. A structured abrasive article according to claim 1, wherein the shaped abrasive composites are precisely-shaped.

4. A structured abrasive article according to claim 1, wherein the crosslinked polymeric binder comprises an acrylic polymer.

5. A structured abrasive article according to claim 1, wherein the surfactant comprises a polyethylene oxide segment.

6. A structured abrasive article according to claim 1, wherein the surfactant comprises a polypropylene oxide segment.

7. A structured abrasive article according to claim 1, wherein the shaped abrasive composites further comprise an anionic phosphate polyether ester, and
wherein the anionic phosphate polyether ester is present in an amount by weight that is less than that of the nonionic polyether surfactant.

8. A structured abrasive article according to claim 1, wherein the backing comprises a polymer film.

9. A structured abrasive article according to claim 8, wherein the polymer film comprises an elastomeric polyurethane.

10. A structured abrasive article according to claim 1, wherein the backing comprises a polymer foam.

11. A structured abrasive article according to claim 1, further comprising an attachment interface layer directly bonded to the second major surface.

12. A structured abrasive article according to claim 11, wherein the attachment interface layer comprises a pressure-sensitive adhesive disposed on the second major surface.

13. A structured abrasive article according to claim 11, wherein the attachment interface layer comprises a looped fabric.

14. A method of abrading a workpiece comprising:

frictionally contacting at least a portion of a structured abrasive article (100) with a surface of a workpiece while in the presence of an aqueous fluid; and

moving at least one of the workpiece or the structured abrasive layer (120) relative to the other to abrade at least a portion of the surface of the workpiece, wherein the structured abrasive article comprises:

a backing having first and second opposed major surfaces; and

a structured abrasive layer disposed on and secured to the first major surface wherein the structured abrasive layer comprises:

a polymeric binder;

abrasive particles dispersed in the binder; and

a nonionic polyether surfactant dispersed in the binder,

wherein the abrasive particles are ceria particles and have an average particle size, on a volume basis, ranging from 1 to 95 nm

wherein the nonionic polyether surfactant is not covalently bound to the crosslinked polymeric binder, and

wherein the nonionic polyether surfactant is present in an amount of from 0.75 to 2.2 percent by weight based on a total weight of the structured abrasive layer.

15. A method of abrading a workpiece according to claim 14, wherein the workpiece is an oxide wafer.

16. A method of abrading a workpiece according to claim 14, wherein the workpiece comprises silicon.

17. A method of abrading a workpiece according to claim 14, wherein the aqueous fluid comprises tap water.

18. The structured abrasive article according to claim 1, wherein the ceria particles have associated carboxylic meth(acrylate) molecules.

19. The method of abrading a workpiece according to claim 14, wherein the ceria particles have associated carboxylic meth(acrylate) molecules.