What is claimed is:

1. An abrasive article comprising:

a bonded abrasive body including:

a bond material comprising an inorganic material;

abrasive agglomerates contained in the bond material;

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body; and

the bonded abrasive body having a wear rate of not greater than about 90% during an ultra-high material removal rate (UHMRR) grinding operation.

2. The abrasive article of claim 1, wherein the wear rate is not greater than about 85%, and at least about 5% during an ultra-high material removal rate (UHMRR) grinding operation.

3. An abrasive article comprising:

a bonded abrasive body including:

a bond material comprising an inorganic material;

abrasive particulate material contained in the bond material, the abrasive particulate material including abrasive agglomerates and unagglomerated abrasive particles;

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body; and

the bonded abrasive body having a maximum material removal rate of at least about 1.6 $in.^3/min./in.$ [17.3 $mm^3/s/mm$] during an ultra-high material removal rate (UHMRR) grinding operation.

4. The abrasive article of claim 3, wherein the maximum material removal rate is at least about 1.7 $in.^3/min./in.$ [18.4 $mm^3/s/mm$], at least about 1.8 $in.^3/min./in.$ [19.4 $mm^3/s/mm$], at least about 1.9 $in.^3/min./in.$ [20.5 $mm^3/s/mm$], at least 2.0 $in.^3/min./in.$

[21.6 mm^3/s/mm], not greater about 5.0 $in.^3$/min./in. [54 mm^3/s/mm], not greater than about 4.5 $in.^3$/min./in. [48.6 mm^3/s/mm] during an ultra-high material removal rate (UHMRR) grinding operation.

5. The abrasive article of claim 1 or 4, wherein the body is formed from a pore forming agent selected from the group of materials consisting of bubble alumina, bubble mullite, hollow glass spheres, hollow ceramic spheres, hollow polymer spheres, polymers, organic compounds, fibrous materials naphthalene, PDB, shells, wood, and a combination thereof, wherein the body is formed from a combination of at least about 2 different pore forming agents, wherein the body is formed from a combination of bubble material and an organic-based pore forming agent, wherein the body is formed from a combination of bubble alumina and walnut shells, wherein the content of bubble alumina is greater than a content of walnut shells.

6. An abrasive article comprising:

a bonded abrasive body including:

a bond material in an amount of not greater than about 15 vol% for the total volume of the body;

abrasive particulate material contained in the bond material, the abrasive particulate material including abrasive agglomerates and unagglomerated abrasive particles, wherein the body comprises an abrasive particulate ratio (AP_p:AP_{agg}) within a range between 3:1 and about 1:3, wherein AP_p represents the amount (vol%) of unagglomerated abrasive particles present in the body and AP_{agg} represents the amount (vol%) of abrasive agglomerates present in the body; and

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body.

7. The abrasive article of claim 1, 4 or 6, wherein the agglomerates comprise abrasive particles contained in a binder, wherein the abrasive particles comprise an oxide,

wherein the abrasive particles comprise alumina, wherein the abrasive particles consist essentially of alumina, wherein the abrasive particles of the abrasive agglomerates consist essentially of microcrystalline alumina.

8. The abrasive article of claim 7, wherein the abrasive agglomerates comprise an amount of abrasive particles of not greater than about 80 vol% for the total volume of the abrasive agglomerate, not greater than about 70 vol%, not greater than about 65 vol%, not greater than about 60 vol%, not greater than about 55 vol%, not greater than about 50 vol%, and at least about 10 vol%, at least about 20 vol%, at least about 25 vol%, at least about 30 vol%.

9. The abrasive article of claim 8, wherein the abrasive particles of the abrasive agglomerates have an average particle size of at least about 10 microns, at least about 20 microns, at least about 50 microns, and not greater than about 250 microns, not greater than about 200 microns, not greater than about 180 microns.

10. The abrasive article of claim 9, wherein the abrasive particles of the abrasive agglomerate comprise microcrystalline alumina having an average grain size of not greater than about 1 micron, not greater than about 0.5 microns, and an average grain size of at least about 0.01 microns.

11. The abrasive article of claim 1 or 6, wherein the abrasive agglomerates have an average agglomerate size of at least about 50 microns, at least about 80 microns, at least about 100 microns, at least about 150 microns, at least about 200 microns, at least about 250 microns, at least about 500 microns, at least about 600 microns, and not greater than about 2 mm, not greater than about 1 mm, not greater than about 0.8 mm.

12. The abrasive article of claim 1, 4 or 6, wherein the agglomerates comprise abrasive particles contained in a binder, wherein the binder comprises a material selected from the group consisting of vitrified material, organic material, crystalline material, and a combination thereof, wherein the binder comprises an oxide-based vitrified material.

13. The abrasive article of claim 12, wherein the abrasive agglomerates comprise an amount of binder of not greater than about 20 vol% for the total volume of the abrasive agglomerate, not greater than about 18 vol%, not greater than about 15 vol%, not greater than about 12 vol%, not greater than about 10 vol%, not greater than about 8 vol%, not greater than about 5 vol%, not greater than about 4 vol%, not greater than about 3 vol%, and at least about 0.5 vol%, at least about 0.8 vol%, at least about 1 vol%, at least about 1.3 vol%.

14. The abrasive article of claim 1 or 6, wherein the abrasive agglomerates comprise an amount of porosity within a volume of a body of the agglomerates of at least about 15 vol% for the total volume of the abrasive agglomerate, at least about 18 vol%, at least about 20 vol%, at least about 25 vol%, at least about 30 vol%, at least about 40 vol%, at least about 45 vol%, at least about 50 vol%, at least about 55 vol%, and at least about 57 vol%, and not greater than about 85 vol%, not greater than about 80 vol%, not greater than about 75 vol%, not greater than about 70 vol%.

15. The abrasive article of claim 1 or 6, wherein the body comprises a content of abrasive agglomerates of at least about 10 vol% for the total volume of the body, at least about 15 vol%, at least about 20 vol%, at least about 25 vol%, at least about 30 vol%, at least about 32 vol%, and not greater than about 80 vol%, not greater than about 70 vol%, not greater than about 65 vol%, not greater than about 60 vol%, not greater than about 55 vol%, not greater than about 50 vol%, not greater than about 45 vol%, not greater than about 42 vol%.

16. The abrasive article of claim 1 or 6, wherein the abrasive agglomerates comprise an aspect ratio as a measure of the length to the width of not greater than about 3:1, not greater than about 2:1, not greater than about 1.7:1, not greater than about 1.5:1, not greater than about 1.3:1, wherein the abrasive agglomerates are substantially equiaxed particles.

17. The abrasive article of claim 1 or 6, wherein the body further comprises unagglomerated abrasive particles separate from the abrasive agglomerates contained within the bond, wherein the unagglomerated abrasive particles comprise an oxide, wherein the unagglomerated abrasive particles comprise alumina, wherein the unagglomerated abrasive particles consist essentially of alumina, wherein the unagglomerated abrasive particles of the abrasive agglomerates consist essentially of microcrystalline alumina, wherein the unagglomerated abrasive particles contain a same material as the abrasive particles within the abrasive agglomerates.

18. The abrasive article of claim 1 or 6, wherein the body comprises a content of unagglomerated abrasive particles of at least about 10 vol% for the total volume of the body, at least about 15 vol%, at least about 20 vol%, at least about 25 vol%, at least about 30 vol%, at least about 32 vol%, and not greater than about 80 vol%, not greater than about 70 vol%, not greater than about 65 vol%, not greater than about 60 vol%, not greater than about 55 vol%, not greater than about 50 vol%, not greater than about 45 vol%, not greater than about 42 vol%.

19. The abrasive article of claim 1, 4 or 6, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 2.8:1 and about 1:2.8, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 2.6:1 and about 1:2.6, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 2.4:1 and about 1:2.4, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 2.2:1 and about 1:2.2, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 2:1 and about 1:2, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 1.8:1 and about 1:1.8, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 1.6:1 and about 1:1.6, wherein the abrasive particulate ratio (AP_p:AP_{agg}) is within a range between about 1.4:1 and about 1:1.4.

20. The abrasive article of claim 1 or 6, wherein the bonded abrasive body comprises a porosity of at least about 43 vol% of the total volume of the bonded abrasive

body, at least about 45 vol%, at least about 48 vol%, at least about 50 vol%, at least about 52 vol%, and not greater than about 70 vol%, not greater than about 65 vol%, not greater than about 63 vol%, not greater than about 60 vol%, not greater than about 58 vol%.

21. The abrasive article of claim 1 or 6, wherein the bond material comprises a single phase vitreous material, wherein the bond material is essentially free of crystalline material.

22. The abrasive article of claim 1, 4, or 6, wherein the body comprises not greater than about 12 vol%, not greater than about 10 vol%, not greater than about 9 vol%, not greater than about 8 vol%, not greater than about 7 vol%, not greater than about 6.5 vol%, at least about 1 vol%, at least about 2 vol%, at least about 3 vol%, at least about 4 vol%.

23. The abrasive article of claim 1 or 6, wherein the bond material is formed from not greater than about 20 wt% boron oxide (B_2O_3) for the total weight of the bond material, not greater than about 18 wt%, at least about 10 wt%, at least about 12 wt%, at least about 14 wt%.

24. The abrasive article of claim1 or 6, wherein the bond material is formed from a ratio of weight percent silicon oxide (SiO_2): weight percent aluminum oxide (Al_2O_3) of not greater than about 5, not greater than about 4.8, not greater than about 4.6, not greater than about 4.5, at least about 1.8, at least about 2, at least about 2.2, at least about 2.5.

25. The abrasive article of claim 1 or 6, wherein the bond material is formed from not greater than about 3 wt% phosphorous oxide (P_2O_5), not greater than about 2 wt%, not greater than about 1 wt%, wherein the bond material is essentially free of phosphorus oxide (P_2O_5).

26. The abrasive article of claim 1 or 6, wherein the bond material is formed from an alkaline earth oxide compound (RO), wherein a total amount of alkaline earth oxide

compound (RO) present in the bond material is not greater than about 3 wt%, not greater than about 2 wt%, not greater than about 1 wt%.

27. The abrasive article of claim 1 or 6, wherein the bond material is formed from not greater than 3 different alkaline earth oxide compounds (RO) selected from the group of calcium oxide (CaO), magnesium oxide (MgO), barium oxide (BaO), strontium oxide (SrO), not greater than 2 different alkaline earth oxide compounds (RO), not greater than 1 alkaline earth oxide compound (RO).

28. The abrasive article of claim 1 or 6, wherein the bond material comprises an alkali oxide compound (R_2O) selected from the group of compounds consisting of lithium oxide (Li_2O), sodium oxide (Na_2O), potassium oxide (K_2O), and cesium oxide (Cs_2O) and a combination thereof, wherein the bond material comprises not greater than 4 alkali oxide compounds (R_2O), not greater than 3 alkali oxide compounds (R_2O), at least 2 alkali oxide compounds (R_2O).

29. The abrasive article of claim 1 or 6, wherein the bond material is formed from a total amount of alkali oxide compound (R_2O) not greater than about 20 wt%, not greater than about 18 wt%, not greater than about 17 wt%, not greater than about 16 wt%, and at least about 5 wt%, at least about 7 wt%, at least about 9 wt%, at least about 11 wt%, at least about 12 wt%.

30. The abrasive article of claim 1 or 6, wherein the bond material is formed from not greater than about 62 wt% silicon oxide (SiO_2), not greater than about 60 wt%, not greater than about 59 wt%, not greater than about 58 wt%, and at least about 45 wt%, at least about 47 wt%, at least about 48 wt%, at least about 50 wt%, at least about 52 wt%.

31. The abrasive article of claim 1 or 6, wherein the bond material is formed from at least about 9 wt% aluminum oxide (Al_2O_3), at least about 10 wt%, at least about 11 wt%, at least about 12 wt%, not greater than about 20 wt%, not greater than about 18 wt%, not greater than about 16 wt%, not greater than about 15 wt%.

32. The abrasive article of claim 1 or 6, wherein the bond material is formed from at least one alkali oxide compound (R_2O) and at least one alkaline earth oxide compound (RO), wherein the total content of the alkali oxide compound and the alkaline earth oxide compound is not greater than about 20 wt%.

33. The abrasive article of claim 1 or 6, wherein the bond material is formed from boron oxide (B_2O_3) and silicon oxide (SiO_2), and wherein the total content of boron oxide and silicon oxide is not greater than about 80 wt%, not greater than about 78 wt%, not greater than about 76 wt%, not greater than about 74 wt%, and at least about 60 wt%, at least about 66 wt%, at least about 70 wt%.

34. The abrasive article of claim 33, wherein the content of silicon oxide (SiO_2) is greater than the content of boron oxide.

35. The abrasive article of claim 1 or 6, wherein the bond material is formed from a composition comprising not greater than about 1 wt% of an oxide compound selected from the group consisting of MnO_2, $ZrSiO_2$, $CoAl_2O_4$, and MgO, wherein the bond material is formed from a composition comprising not greater than about 1 wt% of any oxide compound selected from the group consisting of MnO_2, $ZrSiO_2$, $CoAl_2O_4$, and MgO, wherein the bond material is formed from a composition essentially free of oxide compounds selected from the group consisting of MnO_2, $ZrSiO_2$, $CoAl_2O_4$, and MgO.

36. The abrasive article of claim 1 or 6, wherein the body is formed from a pore forming agent selected from the group of materials consisting of bubble alumina, bubble mullite, hollow glass spheres, hollow ceramic spheres, hollow polymer spheres, polymers, organic compounds, fibrous materials naphthalene, PDB, shells, wood, and a combination thereof, wherein the body is formed from a combination of at least about 2 different pore forming agents, wherein the body is formed from a combination of bubble material and an organic-based pore forming agent, wherein the body is formed from a combination of bubble alumina and walnut shells, wherein the content of bubble alumina is greater than a content of walnut shells.

37. The abrasive article of claim 1 or 6, wherein the body is formed from a pore forming agent in an amount of at least about 1 wt%, at least about 2 wt%, at least about 3 wt%, at least about 4 wt%, at least about 5 wt%, and not greater than about 15 wt%, not greater than about 12 wt%, not greater than about 10 wt%, not greater than about 9 wt%.

38. The abrasive article of claim 6, wherein the bonded abrasive body has a maximum material removal rate of at least about 1.60 $in.^3/min./in.$ [17.3 $mm^3/s/mm$], at least about 1.7 $in.^3/min./in.$ [18.4 $mm^3/s/mm$], at least about 1.8 $in.^3/min./in.$ [19.4 $mm^3/s/mm$], at least about 1.9 $in.^3/min./in.$ [20.5 $mm^3/s/mm$], at least 2.0 $in.^3/min./in.$ [21.6 $mm^3/s/mm$], not greater about 5.0 $in.^3/min./in.$ [54 $mm^3/s/mm$], not greater than about 4.5 $in.^3/min./in.$ [48.6 $mm^3/s/mm$] during an ultra-high material removal rate (UHMRR) grinding operation during an ultra-high material removal rate (UHMRR) grinding operation.

39. The abrasive article of claim 1 or 6, wherein the bonded abrasive body has a wear rate of not greater than about 90% and at least about 5% during an ultra-high material removal rate (UHMRR) grinding operation.

40. The abrasive article of claim 6, wherein a portion of the porosity is interconnected porosity, wherein at least about 5% of the total volume of porosity is interconnected porosity, at least about 10%, at least about 20%, and not greater than about 95% of the total volume of porosity is interconnected porosity.

AMENDED CLAIMS
Received by the International Bureau on 22.April.2013 (22.04.2013)

What is claimed is:

1. An abrasive article comprising:

a bonded abrasive body including:

a bond material comprising an inorganic material;

abrasive agglomerates contained in the bond material;

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body; and

the bonded abrasive body having a wear rate of not greater than about 90% during an ultra-high material removal rate (UHMRR) grinding operation.

2. An abrasive article comprising:

a bonded abrasive body including:

a bond material comprising an inorganic material;

abrasive particulate material contained in the bond material, the abrasive particulate material including abrasive agglomerates and unagglomerated abrasive particles;

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body; and

the bonded abrasive body having a maximum material removal rate of at least about 1.6 $in.^3/min./in.$ [17.3 $mm^3/s/mm$] during an ultra-high material removal rate (UHMRR) grinding operation.

3. An abrasive article comprising:

a bonded abrasive body including:

a bond material in an amount of not greater than about 15 vol% for the total volume of the body;

abrasive particulate material contained in the bond material, the abrasive particulate material including abrasive agglomerates and

unagglomerated abrasive particles, wherein the body comprises an abrasive particulate ratio (AP_p:AP_{agg}) within a range between 3:1 and about 1:3, wherein AP_p represents the amount (vol%) of unagglomerated abrasive particles present in the body and AP_{agg} represents the amount (vol%) of abrasive agglomerates present in the body; and

a porosity of at least about 42 vol% of the total volume of the bonded abrasive body.

4. The abrasive article of any one of the claims 1-3, wherein the abrasive agglomerates comprise an amount of abrasive particles of not greater than about 80 vol% for the total volume of the abrasive agglomerate.

5. The abrasive article claim 4, wherein the abrasive particles of the abrasive agglomerate comprise microcrystalline alumina having an average grain size of not greater than about 1 micron.

6. The abrasive article of any one of the claims 1-3, wherein the abrasive agglomerates comprise an amount of binder of not greater than about 20 vol% for the total volume of the abrasive agglomerate.

7. The abrasive article of any one of the claims 1 and 2, wherein the body further comprises unagglomerated abrasive particles separate from the abrasive agglomerates contained within the bond and wherein the unagglomerated abrasive particles of the abrasive agglomerates comprise microcrystalline alumina.

8. The abrasive article of claim 7, wherein the body comprises an abrasive particulate ratio (AP_p:AP_{agg}) within a range between 3:1 and about 1:3, wherein AP_p represents the amount (vol%) of unagglomerated abrasive particles present in the body and AP_{agg} represents the amount (vol%) of abrasive agglomerates present in the body.

9. The abrasive article of any one of the claims 1-3, wherein the bonded abrasive body comprises a porosity of at least about 43 vol% and not greater than about 70 vol% of the total volume of the bonded abrasive body.

10. The abrasive article of any one of the claims 1-3, wherein the bond material is formed from not greater than about 20 wt% boron oxide (B_2O_3) for the total weight of the bond material.

11. The abrasive article of any one of the claims 1-3, wherein the bond material is formed from a ratio of weight percent silicon oxide (SiO_2): weight percent aluminum oxide (Al_2O_3) of not greater than about 5.

12. The abrasive article of any one of the claims 1 and 3, wherein the bonded abrasive body has a maximum material removal rate of at least about 1.60 $in.^3/min./in.$ [17.3 $mm^3/s/mm$] during an ultra-high material removal rate (UHMRR) grinding operation.

13. The abrasive article of any one of the claims 2 and 3, wherein the bonded abrasive body has a wear rate of not greater than about 90% during an ultra-high material removal rate (UHMRR) grinding operation.

14. The abrasive article of any one of the claims 1 and 13, wherein the bonded abrasive body has a wear rate of at least about 5% during an ultra-high material removal rate (UHMRR) grinding operation.

15. The abrasive article of any one of the claims 1-3, wherein at least about 5% of the total volume of porosity is interconnected porosity.

What is claimed is:

1. An abrasive article comprising:

a bonded abrasive body including:

a bond material comprising an inorganic material;

abrasive agglomerates contained in the bond material, wherein the abrasive agglomerates comprise at least about 70 vol% and not greater than about 90 vol% abrasive particles for a total volume of the abrasive agglomerates;

a porosity of at least about 52 vol% and not greater than about 58 vol% of a total volume of the bonded abrasive body; and

the bonded abrasive body having a wear rate of not greater than about 90% during an ultra-high material removal rate (UHMRR) grinding operation.

2. The abrasive article of claim 1, wherein the abrasive agglomerates comprise an amount of abrasive particles of at least about 70 vol% and not greater than about 80 vol% for the total volume of the abrasive agglomerate.

3. The abrasive article of claim 1, wherein the abrasive particles of the abrasive agglomerates comprise microcrystalline alumina having an average grain size of not greater than about 1 micron.

4. The abrasive article of claim 1, wherein the abrasive agglomerates comprise abrasive particles contained in a binder, and wherein the binder comprises an oxide-based vitrified material.

5. The abrasive article of claim 4, wherein the abrasive agglomerates comprise an amount of binder of at least about 1 vol% and not greater than about 4 vol% for a total volume of the abrasive agglomerate.

6. The abrasive article of claim 1, wherein the body further comprises unagglomerated abrasive particles separate from the abrasive agglomerates contained within the bond material, and wherein the unagglomerated abrasive particles comprise microcrystalline alumina.

7. The abrasive article of claim 1, wherein the body comprises an abrasive particulate ratio (AP_p:AP_{agg}) within a range between 0.85 and about 1.18, wherein AP_p represents an amount (vol%) of abrasive particles present in the body and AP_{agg} represents an amount (vol%) of abrasive agglomerates present in the body.

8. The abrasive article of claim 1, wherein the abrasive agglomerates comprise an amount of binder of at least about 1 vol% and not greater than about 4 vol% for the total volume of the abrasive agglomerates.

9. The abrasive article of claim 1, wherein the abrasive agglomerates comprise an amount of porosity of at least about 6 vol% and not greater than 29 vol% for the total volume of the abrasive agglomerates.

10. The abrasive article of claim 1, wherein the bond material includes silica (SiO_2) in an amount of at least about 48 wt% and not greater than about 52 wt%, alumina (Al_2O_3) in an amount of at least 15 wt% and not greater than about 20 wt%, alkali oxide compounds (R_2O) in an amount of at least about 9 wt% and not greater than about 20 wt%, and boron oxide (B_2O_3) in an amount of at least about 10 wt% and not greater than about 17 wt%.

11. An abrasive article comprising:

a bonded abrasive body including:

a vitreous bond material comprising an inorganic material;

abrasive particulate material contained in the vitreous bond material, the abrasive particulate material including abrasive agglomerates and unagglomerated abrasive particles, wherein the abrasive agglomerates include at least about 70 vol% and not greater than about 90 vol% abrasive particles of alumina for a total volume of the abrasive agglomerates;

a porosity of at least about 52 vol% and not greater than about 58 vol% of a total volume of the bonded abrasive body; and

the bonded abrasive body having a maximum material removal rate of at least about 1.6 in.3/min./in. [17.3 mm^3/s/mm] during an ultra-high material removal rate (UHMRR) grinding operation.

12. The abrasive article of claim 11, wherein the abrasive agglomerates comprise abrasive particles contained in a binder, and wherein the abrasive particles of the abrasive agglomerates consist essentially of microcrystalline alumina.

13. The abrasive article of claim 12, wherein the abrasive agglomerates comprise an amount of binder of at least about 1 vol%, and not greater than about 4 vol% for the total volume of the abrasive agglomerate.

14. The abrasive article of claim 11, wherein the body comprises an abrasive particulate ratio (AP_p:AP_{agg}) within a range between 0.85 and about 1.18, wherein AP_p represents an amount (vol%) of unagglomerated abrasive particles present in the body and AP_{agg} represents an amount (vol%) of abrasive agglomerates present in the body.

15. An abrasive article comprising:

a bonded abrasive body including:

a vitreous bond material in an amount of at least 3 vol% and not greater than 8 vol% for a total volume of the body;

abrasive particulate material contained in the vitreous bond material, the abrasive particulate material including abrasive agglomerates and unagglomerated abrasive particles, wherein the abrasive agglomerates include at least about 70 vol% and not greater than about 90 vol% of abrasive particles of alumina for the total volume of the abrasive agglomerates, wherein the body comprises a content of abrasive particulate material of at least 34 vol% and not greater than 40 vol%; and

a porosity of at least about 52 vol% and not greater than about 58 vol% of the total volume of the bonded abrasive body.

16. The abrasive article of claim 15, wherein the abrasive agglomerates comprise abrasive particles contained in a binder, wherein the abrasive particles of the abrasive agglomerates consist essentially of microcrystalline alumina.

17. The abrasive article of claim 16, wherein the abrasive agglomerates comprise an amount of abrasive particles of at least about 70 vol% and not greater than about 80 vol% for the total volume of the abrasive agglomerate.

18. The abrasive article of claim 15, wherein the abrasive agglomerates comprise abrasive particles contained in a binder and wherein the binder comprises an oxide-based vitrified material.

19. The abrasive article of claim 18, wherein the abrasive agglomerates comprise an amount of binder of at least about 1 vol%, and not greater than about 4 vol% for the total volume of the abrasive agglomerate.

20. The abrasive article of claim 15, wherein the body comprises not greater than about 5 vol% of unagglomerated abrasive particles and at least 34 vol% and not greater than 40 vol% of agglomerated abrasive particles.

21. The abrasive article of claim 15, wherein a portion of the porosity is interconnected porosity, and wherein at least about 5% of the total volume of porosity is interconnected porosity.

22. The abrasive article of claim 15, wherein the bond material includes silica (SiO_2) in an amount of at least about 48 wt% and not greater than about 52 wt%, alumina (Al_2O_3) in an amount of at least 15 wt% and not greater than about 20 wt%, alkali oxide compounds (R_2O) in

an amount of at least about 9 wt% and not greater than about 20 wt%, and boron oxide (B_2O_3) in an amount of at least about 10 wt% and not greater than about 17 wt%.