CLAIMS

1. An abrasive article comprising:

a body including:

a bond material comprising an inorganic material comprising a ceramic, wherein the bond material comprises at least 15 wt% and not greater than 44 wt% zircon ($ZrSiO_4$) for a total weight of the bond material;

abrasive agglomerates comprising silicon carbide contained within the bond material; and

a permeability of at least 60.

2. The abrasive article of claim 1, wherein the body comprises a permeability of at least 65 to not greater than 300.

3. The abrasive article of claim 1, wherein the body comprises at least 25 vol% to not greater than 55 vol% abrasive agglomerates for a total volume of the body.

4. The abrasive article of claim 1, wherein the abrasive agglomerates comprise abrasive particles and wherein the abrasive particles comprise carbide-based materials.

5. The abrasive article of claim 1, wherein the abrasive agglomerates comprises at least 91% silicon carbide for a total content of abrasive particles in the agglomerates.

6. The abrasive article of claim 1, wherein the abrasive agglomerates comprise abrasive particles and essentially all of the abrasive particles are silicon carbide.

7. The abrasive article of claim 1, wherein the abrasive agglomerates comprise abrasive particles and the abrasive particles comprise not greater than 9% alumina for a total percentage of abrasive particles.

8. The abrasive article of claim 1,

wherein the body includes:

the bond material of at least 3 vol% and not greater than 20 vol% for a total volume of the body;

the abrasive agglomerates of at least 25 vol% and not greater than 55 vol% for the total volume of the body;

unagglomerated abrasive particles of at least 1 vol% and not greater than 30 vol% for the total volume of the body; and

a porosity of at least 40 vol% and not greater than 64 vol% for the total volume of the body; and

wherein the bond material further comprises:

SiO_2 of at least 30 wt% and not greater than 60 wt% for the total weight of the bond material;

B_2O of at least 5 wt% and not greater than 54 wt% for the total weight of the bond material; and

Al_2O_3 of at least 4 wt% and not greater than 18 wt% for the total weight of the bond material.

9. The abrasive article of claim 1, wherein the body includes an average pore size of at least 70 microns and a pore size standard deviation of at least 77 microns.

10. An abrasive article comprising:

a body including:

a bond material comprising an inorganic material comprising a ceramic, wherein the bond material comprises zircon ($ZrSiO_4$) of at least 15 wt% and not greater than 44 wt% for a total weight of the bond material;

abrasive agglomerates comprising silicon carbide contained within the bond material;

a ceramic pore former contained within the bond material, the ceramic pore former present in an amount of not greater than 5 vol% for a total volume of the body; and

a porosity of at least 40 vol% for the total volume of the body.

11. The abrasive article of claim 10, wherein the bond material comprises:

zircon ($ZrSiO_4$) of at least 24 wt% and not greater than 32 wt% for the total weight of the bond material;

SiO_2 of at least 30 wt% and not greater than 60 wt% for a total weight of the bond material;

B_2O of at least 5 wt% and not greater than 54 wt% for the total weight of the bond material; and

Al_2O_3 of at least 4 wt% and not greater than 18 wt% for the total weight of the bond material.

12. The abrasive article of claim 10, wherein the body comprises a median pore size of at least 45 microns.

13. The abrasive article of claim 10, wherein the abrasive agglomerates comprises at least 91% silicon carbide for the total content of abrasive particles in the agglomerates.

14. The abrasive article of claim 10, wherein the body comprises a permeability of at least 60.

15. The abrasive article of claim 10, wherein the body comprises an abrasive agglomerates content (Caa) and a bond material content (Cbm) as measured in vol% for a total volume of the body, and wherein the body comprises an agglomerates/bond ratio (Caa/Cbm) of at least 2.

16. An abrasive article comprising:

a body including:

a bond material of at least 4 vol% and not greater than 15 vol% for a total volume of the body, wherein the bond material comprises an inorganic material comprising a ceramic;

abrasive agglomerates contained within the bond material comprising silicon carbide particles, wherein the body comprises the abrasive agglomerates of at least 25 vol% and not greater than 55 vol% for the total volume of the body;

a porosity of at least 40 vol% and not greater than 58 vol% for a total volume of the body; and

a permeability of at least 60,

wherein the bond material comprises:

zircon ($ZrSiO_4$) of at least 24 wt% and not greater than 32 wt% for a total weight of the bond material;

SiO_2 of at least 37 wt% and not greater than 55 wt% for a total weight of the bond material;

B_2O of at least 9 wt% and not greater than 16 wt% for the total weight of the bond material; and

Al_2O_3 of at least 6 wt% and not greater than 18 wt% for the total weight of the bond material.

17. The abrasive article of claim 16, wherein the abrasive agglomerates comprise abrasive particles and the abrasive particles consist essentially of silicon carbide.

18. The abrasive article of claim 16, wherein the body further comprises unagglomerated abrasive particles and a total content of the abrasive agglomerates and the unagglomerated abrasive particles is at least 36 vol% and not greater than 46 vol% for the total volume of the body.
19. The abrasive article of claim 18, wherein the unagglomerated abrasive particles consist essentially of silicon carbide.
20. The abrasive article of claim 16, wherein the bond material comprises a forming temperature of not greater than about 950°C.