WHAT IS CLAIMED IS:

1. An abrasive article comprising:

a bonded abrasive body having abrasive particles comprising microcrystalline alumina (MCA) contained within a bond material, wherein the bonded abrasive body comprises a strength ratio (MOR/MOE) of at least about 0.80.

2. An abrasive article comprising:

a bonded abrasive body having abrasive particles comprising microcrystalline alumina (MCA) contained within a bond material, wherein the bonded abrasive body comprises a MOR of at least 40 MPa for a MOE of at least about 40 GPa.

3. The abrasive article as recited in claim 2, wherein the abrasive body comprises a strength ratio (MOR/MOE) of at least about 0.80.

4. An abrasive article comprising:

a bonded abrasive body having abrasive particles comprising microcrystalline alumina (MCA) contained within a bond material, wherein the bonded abrasive body has a strength ratio (MOR/MOE) of at least about 0.80, the bonded abrasive body capable of grinding a workpiece comprising metal at a speed of at least about 60 m/s at a material removal rate of at least about 0.4 in^3/min/in (258 mm^3/min/mm).

5. The abrasive article as recited in any one of claims 1 to4, wherein the bonded abrasive body is sintered at a temperature of not greater than about 1000°C.

6. The abrasive article as recited in any one of claims 1 to 4, wherein the bonded abrasive body comprises not greater than about 15 vol% bond material of the total volume of the bonded abrasive body.

7. The abrasive article as recited in any one of claims 1 and 4, wherein the bonded abrasive body comprises a MOR of at least about 40 MPa for a MOE of at least about 40 GPa.

8. The abrasive article as recited in any one of claims 1 to 3, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a speed of at least about 60 m/s.

9. The abrasive article as recited in any one of claims 1 to 3, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a material removal rate of at least about 0.4 in^3/min/in (258 mm^3/min/mm).

10. The abrasive article as recited in any one of claims 1 to 4, wherein the bond material is formed from not greater than about 3.0 wt% phosphorous oxide (P_2O_5).

11. The abrasive article as recited in any one of claims 1 to 4, 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.

12. The abrasive article as recited in any one of claims 1 to 4, wherein the bond material is formed from not greater than about 18 wt% boron oxide (B_2O_3) for the total weight of the bond material.

13. The abrasive article as recited in any one of claims 1 to 4, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a depth of cut of at least about 0.003 inches (0.076 mm).

14. The abrasive article as recited in any one of claims 1 to 4, wherein the bond material comprises a ratio of weight percent silicon oxide (SiO_2) to weight percent aluminum oxide (Al_2O_3) (SiO_2:Al_2O_3) of not greater than about 3.2.

15. The abrasive article as recited in any one of claims 1 to 4, wherein the bond material is formed from not greater than about 3 different alkaline earth oxide compounds (RO) selected from the group of calcium oxide (CaO), magnesium oxide (MgO), barium oxide (BaO), strontium oxide (SrO).

WHAT IS CLAIMED IS:

1. An abrasive article comprising:

a bonded abrasive body having abrasive particles comprising microcrystalline alumina (MCA) contained within a single phase vitreous bond material, wherein the bonded abrasive body comprises a strength ratio (MOR/MOE) of at least about 0.80, and wherein the single phase vitreous bond material comprises:

a content of boron oxide (B_2O_3) in an amount of at least about 13 wt% and not greater than about 17 wt% for a total weight of the bond material; and

a content of silicon oxide (SiO_2) in a wt% amount of at least about 1.5 times greater than the amount of boron oxide (B_2O_3) and not greater than about 5 times greater than the amount of boron oxide (B_2O_3).

2. The abrasive article as recited in claim 1, wherein the bonded abrasive body is sintered at a temperature of not greater than about 1000°C.

3. The abrasive article as recited in claim 1, wherein the bonded abrasive body comprises not greater than about 15 vol% bond material of the total volume of the bonded abrasive body.

4. The abrasive article as recited in claim 1, wherein the bonded abrasive body comprises a MOR of at least about 40 MPa for a MOE of at least about 40 GPa.

5. The abrasive article as recited in claim 1, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a speed of at least about 60 m/s.

6. The abrasive article as recited in claim 1, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a material removal rate of at least about 0.4 in^3/min/in (258 mm^3/min/mm).

7. The abrasive article as recited in claim 1, wherein the bond material is formed from not greater than about 3.0 wt% phosphorous oxide (P_2O_5).

8. The abrasive article as recited in claim 1, wherein the bonded abrasive body is capable of grinding a workpiece comprising metal at a depth of cut of at least about 0.003 inches (0.076 mm).

9. The abrasive article as recited in claim 1, wherein the bond material comprises a ratio of weight percent silicon oxide (SiO_2) to weight percent aluminum oxide (Al_2O_3) (SiO_2:Al_2O_3) of not greater than about 3.2.

10. The abrasive article as recited in claim 1, wherein the bond material is formed from not greater than about 3 different alkaline earth oxide compounds (RO) selected from the group of calcium oxide (CaO), magnesium oxide (MgO), barium oxide (BaO), strontium oxide (SrO).

11. The abrasive article of claim 1, wherein the bonded abrasive body comprises not greater than about 15 vol% bond material for the total volume of the bonded abrasive body.

12. The abrasive article of claim 1, wherein the bond material comprises a content of silicon oxide (SiO_2) in an amount of not greater than about 52 wt% for a total weight of the bond material .

13. The abrasive article as recited in claim 1, wherein the bond material comprises a content of lithium oxide (Li_2O) in an amount of at least about 2 wt% and not greater than about 5 wt% for a total weight of the bond material.

14. The abrasive article as recited in claim 1, wherein the bond material comprises not greater than about 1.0 wt% phosphorous oxide (P_2O_5).

15. The abrasive article as recited in claim 1, wherein the bond material comprises a content of sodium oxide (Na_2O) of at least about 5 wt% and not greater than about 10 wt% for a total weight of the bond material.

16. The abrasive article as recited in claim 1, wherein the bond material comprises a content of potassium oxide (K_2O) of at least about 2 wt% and not greater than about 5 wt% for a total weight of the bond material.

17. The abrasive article as recited in claim 1, wherein the bond material comprises a total content of alkali oxide compound (R_2O) of at least about 10 wt% and not greater than about 20 wt% for a total weight of the bond material.

18. The abrasive article of claim 1, wherein the bond material comprises not greater than 3 different alkaline earth oxide compounds (RO) selected from the group consisting of calcium oxide (CaO), magnesium oxide (MgO), barium oxide (BaO), and strontium oxide (SrO).

19. The abrasive article of claim 1, wherein the bond material comprises an alkaline earth oxide compound (RO) and wherein a total amount of alkaline earth oxide compound (RO) present in the bond material is not greater than about 3.0 wt%.

20. The abrasive article of claim 1, wherein the bond material comprises a content of aluminum oxide (Al_2O_3) of at least about 15 wt% and not greater than about 20 wt% for a total weight of the bond material.

21. The abrasive article of claim 1, wherein the bond material comprises at least one alkali oxide compound (R_2O) and at least one alkaline earth compound (RO), and wherein a total content of a combination of alkali oxide compounds (R_2O) and a total content of alkaline earth compounds (RO) is at least 14 wt% of a total weight of the bond material.