CLAIMS

1. A bonded abrasive article comprising:

a body including:

a bond material;

abrasive particles contained within the bond material; and

pores contained within the body, wherein at least a portion of the pores have a coating comprising a polymer, wherein the polymer comprises a poly(p-xylylene) polymer including fluorine; and

wherein the body comprises a permeability of at least 100 mD.

2. The bonded abrasive article of claim 1, wherein the coating comprises parylene HT.

3. The bonded abrasive article of claims 1 or 2, wherein the body comprises a permeability of at least 800 mD and not greater than 15,000 mD.

4. The bonded abrasive articles of claims 1 or 2, wherein the body comprises an average pore size (D50) of at least 5 microns and not greater than 300 microns.

5. The bonded abrasive article of claims 1 or 2, wherein the pores comprise an open porosity defining an interconnected network of voids extending through the body, and wherein the open porosity is at least 5 vol% and not greater than 85 vol% based on a total volume of the body.

6. The bonded abrasive article of claim 5, wherein a ratio of the total porosity to the open porosity of the body is not greater than 1:0.5.

7. The bonded abrasive article of claims 1 or 2, wherein the coating comprises an average thickness of at least 0.5 microns and not greater than 10 microns.

8. The bonded abrasive article of claims 1 or 2, wherein the coating has a melting point of at least 350°C and not greater than 600°C.

9. The bonded abrasive article of claims 1 or 2, wherein the abrasive particles comprises a material selected from oxides, carbides, nitrides, borides, oxynitrides, oxyborides, diamond, or any combination thereof.

10. The bonded abrasive article of claims 1 or 2, wherein the body comprises a flexural strength of at least 35 MPa.

11. The bonded abrasive article of claims 1 or 2, wherein a loss of flexural strength of the body after a corrosion treatment is not greater than 10%, the corrosion treatment being an exposure of the body for 24 hours in a water bath having a temperature of 99°C.

12. A method of forming a bonded abrasive body comprising:

providing a bonded abrasive having a body, the body comprising:

a bond material;

abrasive particles contained within the bond material;

pores contained within the body; and

coating at least a portion of the body with a coating comprising a poly(p-xylylene) polymer including fluorine by conducting a vapor deposition process,

wherein the permeability of the bonded abrasive body obtained after coating is at least 100 mD, and at least a portion of the pores of the bonded abrasive body have the coating comprising poly(p-xylylene) polymer including fluorine.

13. The method of claim 12, wherein the coating comprises parylene HT.

14. The method of claim 12, wherein an increase of a flexural strength of the body after coating is at least 5% in comparison to a flexural strength of the body before coating.