CLAIMS

1. A bottoms cracking catalyst composition, comprising:

about 30 to about 60 wt% alumina;

greater than 0 to about 10 wt% of a dopant comprising ytterbium, gadolinium, cerium, lanthanum, yttrium, barium, magnesium, or a mixture of any two or more thereof, measured as the oxide;

about 2 to about 20 wt% reactive silica;

about 3 to about 20 wt% of a component comprising peptizable boehmite, colloidal silica, aluminum chlorohydrol, or a combination of any two or more thereof; and

about 10 to about 50 wt% of kaolin.

2. The catalyst of claim 1, wherein the dopant is present in an amount of about 0.1 to about 5 wt% of the composition, measured as the oxide.

3. The catalyst of claim 1, wherein the dopant is present in an amount of about 4 wt%.

4. The catalyst of claim 1, wherein the dopant comprises lanthanum.

5. The catalyst of claim 1, wherein the dopant is impregnated into the alumina, or coated onto the alumina, or the dopant is co-precipitated with the alumina.

6. The catalyst of claim 1, having an average particle size of about 70-95 microns.

7. The catalyst of claim 1, having a mercury pore volume of 0.3 - 0.56 cc/g in a diameter range from 4 to 2,000 nm.

8. The catalyst of claim 1 further comprising a zeolite in the composition.

9. The catalyst of claim 8, wherein the zeolite is Y zeolite.

10. The catalyst of claim 1 which is zeolite-free.

11. The catalyst of claim 1, wherein the alumina is calcined alumina.

12. A method of making bottoms cracking catalyst, comprising

forming an aqueous slurry containing on a dry weight basis,

about 30 to about 60 wt% alumina;

greater than 0 to about 10 wt% of a dopant comprising ytterbium, gadolinium, cerium, lanthanum, yttrium, barium, magnesium, or a mixture of any two or more thereof, measured as the oxide with respect to the alumina;

about 2 to about 20 wt% reactive silica;

about 3 to about 20 wt% of a component comprising peptizable boehmite, colloidal silica, aluminum chlorohydrol, or a combination of any two or more thereof; and

about 10 to about 50 wt% of kaolin, and

spray drying the aqueous slurry to obtain microspheres.

13. The method of claim 12, further comprising calcining the microspheres.

14. A method of cracking a hydrocarbon feed comprising contacting said feed with a fluid catalytic cracking (FCC) catalyst comprising a zeolitic component and a bottoms cracking catalyst, the bottoms cracking catalyst comprising:

about 30 to about 60 wt% alumina;

greater than 0 to about 10 wt% of a rare earth element that is ytterbium, gadolinium, cerium, lanthanum, yttrium, barium, magnesium, or a mixture of any two or more thereof, measured as the oxide;

about 2 to about 20 wt% reactive silica;

about 3 to about 20 wt% of a component comprising peptizable boehmite, colloidal silica, aluminum chlorohydrol, or a combination of any two or more thereof; and

about 10 to about 50 wt% of kaolin.

15. The method of claim 14, wherein the catalyst comprises the dopant in an amount of about 0.1 to about 5 wt%, measured as the oxide.

16. The method of claim 15, wherein the rare earth element includes lanthanum.

17. The method of claim 14, wherein the method results in greater than 10% lower coke yield measured at 13 wt% bottoms, when compared to contacting the feed with a catalyst having the same physical properties which does not include the bottoms cracking catalyst.

18. The method of claim 14, wherein the zeolite comprises a Y zeolite.

19. The method of claim 14, wherein the FCC catalyst comprises 15 wt% to 50 wt% of the bottoms cracking catalyst and 85 wt% to 50 wt% of the zeolitic component and optionally other clay-based components.

20. The method of claim 14 wherein the FCC catalyst further comprises a vanadium trap, or a crystalline boehmite nickel trap.

21. The method of claim 14, wherein the rare earth element is present in a slurry as ytterbium carbonate, gadolinium carbonate, cerium carbonate, lanthanum carbonate, yttrium carbonate, or a mixture of any two or more thereof.