CLAIMS

What is claimed is:

1. A method of treating a catalyst which comprises a molecular sieve and greater than 0 wt.% and up to 99 wt.% of a binder, based on the weight of said catalyst, the method comprises the step of heating said catalyst in the presence of a gaseous stream having a dew point temperature of less than or equal to 5°C to form a treated catalyst having a ratio of the external amount of Bronsted acid sites (BExt) to the total amount of Bronstead acid sites (BTot) of below 0.19, wherein said molecular sieve is any one of a MCM-22 family molecular sieve, faujasite, mordenite, zeolite-beta, or combinations of two or more thereof, wherein said gaseous stream comprises air and has an oxygen concentration in a range from 1 vol./vol.% to 21 vol./vol.%.

2. The method of claim 1, wherein said catalyst is heated to a temperature of greater than 300°C up to about 600°C for a time of at least 1 hour up to about 48 hours.

3. The method of claim 1, wherein said binder is any one of alumina, silica, titania, zirconia, tungsten oxide, ceria, niobia, or mixtures of two or more thereof.

4. The method of claim 1, wherein the MCM-22 family molecular sieve is any one of MCM-22, PSH-3, SSZ-25, MCM-36, MCM-49, MCM-56, ERB-1, EMM-10, EMM-10-P, EMM-12, EMM-13, UZM-8, UZM-8HS, ITQ-1, ITQ-2, ITQ-30, or combinations of two or more thereof.

5. A catalyst treated by the method of claim 1 and having a ratio of the external amount of Bronsted acid sites (BExt) to the total amount of Bronstead acid sites (BTot) of below 0.19.

6. A process for producing a mono-alkylated aromatic compound comprising the step of contacting an alkylatable aromatic compound which comprises benzene and an alkylating agent with a treated catalyst having a ratio of the external amount of Bronsted acid sites (B_{Ext}) to the total amount of Bronstead acid sites (B_{Tot}) of below 0.19 under at least partial liquid phase conditions for alkylation or transalkylation to produce an

effluent comprising said mono-alkylated aromatic compound, wherein said treated catalyst comprises a molecular sieve and greater than 0 wt.% and up to 99 wt.% of a binder, based on the weight of said catalyst, and is made by the method comprising the step of heating an untreated catalyst in the presence of a gaseous stream having a dew point temperature of less than or equal to 5°C to form said treated catalyst, wherein said molecular sieve is any one of a MCM-22 family molecular sieve, faujasite, mordenite, zeolite-beta, or combinations of two or more thereof, wherein said gaseous stream comprises air and has an oxygen concentration in a range from 1 vol./vol.% to 21 vol./vol.%.

7. The process of claim 6, wherein said gaseous stream further comprises at least one diluent, said diluent is any one of nitrogen, helium, or mixtures thereof.

8. The process of claim 6, wherein said alkylatable aromatic compound or said alkylating agent supplied to said process comprises impurities, the process further comprising the step of contacting said alkylatable aromatic compound or said alkylating agent with a treatment material to remove at least a portion of said impurities, said treatment material is any one of clay, resin, activated alumina, a molecular sieve, and combinations of two or more thereof.

9. The process of claim 6, wherein said alkylatable aromatic compound is benzene and said alkylating agent is ethylene and said mono-alklylated aromatic compound is ethylbenzene.

10. The process of claim 6, wherein said alkylatable aromatic compound is benzene and said alkylating agent is propylene and said mono-alkylated aromatic compound is cumene.

11. The process of claim 6, wherein said effluent further comprises poly-alkylated aromatic compounds, and said process further comprises the step of separating said poly-alkylated aromatic compounds from said effluent.

12. The process of claim 11, further comprising the step of contacting said poly-

alkylated aromatic compounds and additional alkylatable aromatic compound which comprises benzene with a transalkylation catalyst under at least partial liquid phase conditions to produce said effluent comprising additional said mono-alkylated aromatic compound.

13. The process of claim 12, wherein said transalkylation catalyst comprises an aluminosilicate, wherein said aluminosilicate is any one of a MCM-22 family molecular sieve, faujasite, mordenite, zeolite-beta, or combinations of two or more thereof.

14. The process of claim 6, wherein said at least partial liquid phase conditions for alkylation include a temperature of from 10°C to 400°C and a pressure up to 25000 kPa, or said at least partial liquid phase conditions for transalkylation include a temperature of 100°C to 300°C and a pressure of from 200 kPa to 600 kPa.