WHAT IS CLAIMED IS:

1. A process for isomerizing a feed stream comprising xylenes and ethylbenzene, the process comprising:

contacting the feed stream with a first catalyst in a dual-bed catalyst system to produce a first effluent stream; and

contacting the first effluent stream with a second catalyst in the dual-bed catalyst system to produce a second effluent stream,

wherein the first catalyst comprises an aluminosilicate molecular sieve with up to 0.8 weight percent aluminum,

wherein the first catalyst has activity for the conversion of ethylbenzene,

wherein 20 percent or more of the ethylbenzene in the feed stream is converted to hydrocarbons other than ethylbenzene, and

wherein EBC/Xylene Loss is at least 45 when about 30 percent of the ethylbenzene is converted.

2. The process of claim 1, wherein the aluminosilicate molecular sieve comprises 0.7 +/- 0.05 weight percent aluminum.

3. The process of claim 1 or claim 2, wherein about 33 percent of the ethylbenzene in the feed stream is converted to hydrocarbons other than ethylbenzene.

4. The process of any one of claims 1-3, wherein the aluminosilicate molecular sieve is on a support.

5. The process of claim 4, wherein the support comprises silica.

6. The process of claim 4, wherein the support comprises at least 50% silica.

7. The process of any one of claims 1-6, wherein the aluminosilicate molecular sieve is ZSM-5 aluminosilicate zeolite.

8. The process of any one of claims 1-7, wherein the second catalyst has activity for isomerization of xylenes.

9. A catalyst composition comprising an aluminosilicate molecular sieve with MFI framework with up to 0.8 weight percent aluminum,

wherein the catalyst composition has activity for the conversion of ethylbenzene, and

wherein crystals of the catalyst composition have average lengths in the range of 5 to 25 microns and average widths in the range of 1 to 10 microns and average thickness in the range of 1 to 10 microns.

10. The catalyst composition of claim 9, wherein the aluminiosilicate molecular sieve comprises 0.7 +/- 0.05 weight percent aluminum.

11. The catalyst composition of claim 9 or claim 10, wherein the aluminosilicate molecular sieve is on a support.

12. The catalyst composition of claim 11, wherein the support comprises silica.

13. The catalyst composition of any one of claims 9-12, wherein the aluminosilicate molecular sieve is ZSM-5 aluminosilicate zeolite.