C L A I M S

1. A process for the conversion of mixed lower alkanes into aromatics which comprises first reacting a mixed lower alkane feed comprising at least propane and ethane in the presence of an aromatization catalyst under first stage reaction conditions which maximize the conversion of propane into first stage aromatic reaction products, separating ethane from the first aromatic reaction products, reacting ethane in the presence of an aromatization catalyst under second stage reaction conditions which maximize the conversion of ethane into second stage aromatic reaction products, and optionally separating ethane from the second stage aromatic reaction products.

2. The process of claim 1 wherein the aromatization reaction is carried out at a temperature of from 400 to 700°C.

3. The process of claims 1 and 2 wherein the first stage reaction conditions comprise a temperature of from 400 to 650°C, preferably from 420 to 650°C.

4. The process of claims 1 to 3 wherein the second stage reaction conditions comprise a temperature of from 450 to 680°C, preferably from 450 to 660°C.

5. The process of claims 1 to 4 wherein the first stage reaction products are produced in at least two reactors aligned in parallel.

6. The process of claims 1 to 5 wherein the second stage reaction products are produced in at least two reactors aligned in parallel.

7. The process of claims 1 to 6 wherein other non-aromatic hydrocarbons are produced in the first stage and are reacted in the second stage along with the ethane to produce additional second stage aromatic reaction products.

8. The process of claims 1 to 7 wherein fuel gas is also produced in either or both of the first and second stages and is separated from the aromatic reaction products and ethane.

9. A process for the conversion of mixed lower alkanes into aromatics which comprises first reacting a mixed lower alkane feed comprising at least propane and ethane in the presence of an aromatization catalyst under first stage reaction conditions which maximize the conversion of propane and any other higher hydrocarbons present in the feed into first stage aromatic reaction products, separating the first aromatic reaction products from ethane and any other non-aromatic hydrocarbons produced in the first stage, reacting ethane and at least a portion of the any other non-aromatic hydrocarbons produced in the first stage in the presence of an aromatization catalyst under second stage reaction conditions which maximize the conversion of ethane and the any other non-aromatic hydrocarbons into second stage aromatic reaction products, and optionally separating the second stage aromatic reaction products from ethane and other non-aromatic hydrocarbons.

10. The process of claim 9 wherein the aromatization reaction is carried out at a temperature of from 400 to 700°C.

11. The process of claims 9 and 10 wherein the first stage reaction conditions comprise a temperature of from 400 to 650°C, preferably from 420 to 650°C.

12. The process of claims 9 to 11 wherein the second stage reaction conditions comprise a temperature of from 450 to 680°C, preferably from 450 to 660°C.

13. The process of claims 9 to 12 wherein the first stage reaction products are produced in at least two reactors aligned in parallel.

14. The process of claims 9 to 13 wherein the second stage reaction products are produced in at least two reactors aligned in parallel.

15. The process of claims 9 to 15 wherein fuel gas is also produced in either or both of the first and second stages and is separated from the aromatic reaction products and ethane.

The claims defining the invention are as follows:

1. A process for the conversion of mixed lower alkanes into aromatics which comprises first reacting a mixed lower alkane feed comprising at least propane and ethane in the presence of an aromatization catalyst under first stage reaction conditions which maximize the conversion of propane into first stage aromatic reaction products, separating ethane from the first aromatic reaction products, reacting ethane in the presence of an aromatization catalyst under second stage reaction conditions which maximize the conversion of ethane into second stage aromatic reaction products, and optionally separating ethane from the second stage aromatic reaction products .

2. The process of claim 1 wherein the aromatization reaction is carried out at a temperature of from 400 to 700°C.

3. The process of claim 1 or 2 wherein the first stage reaction conditions comprise a temperature of from 400 to 650°C, preferably from 420 to 650°C.

4. The process of any one of claims 1 to 3 wherein the second stage reaction conditions comprise a temperature of from 450 to 680°C, preferably from 450 to 660°C.

5. The process of any one of claims 1 to 4 wherein the first stage reaction products are produced in at least two reactors aligned in parallel.

6. The process of any one of claims 1 to 5 wherein the second stage reaction products are produced in at least two reactors aligned in parallel.

7. The process of any one of claims 1 to 6 wherein other non-aromatic hydrocarbons are produced in the first stage and are reacted in the second stage along with the ethane to produce

additional second stage aromatic reaction products.

8. The process of any one of claims 1 to 7 wherein fuel gas is also produced in either or both of the first and second stages and is separated from the aromatic reaction products and ethane.

9. A process for the conversion of mixed lower alkanes into aromatics which comprises first reacting a mixed lower alkane feed comprising at least propane and ethane in the presence of an aromatization catalyst under first stage reaction conditions which maximize the conversion of propane and any other higher hydrocarbons present in the feed into first stage aromatic reaction products, separating the first aromatic reaction products from ethane and any other non-aromatic hydrocarbons produced in the first stage, reacting ethane and at least a portion of the any other non-aromatic hydrocarbons produced in the first stage in the presence of an aromatization catalyst under second stage reaction conditions which maximize the conversion of ethane and the any other non-aromatic hydrocarbons into second stage

aromatic reaction products, and optionally separating the second stage aromatic reaction products from ethane and other non-aromatic hydrocarbons.

10. The process of claim 9 wherein the aromatization reaction is carried out at a temperature of from 400 to 700°C.

11. The process of claim 9 or 10 wherein the first stage reaction conditions comprise a temperature of from 400 to 650°C, preferably from 420 to 650°C.

12. The process of any one of claims 9 to 11 wherein the second stage reaction conditions comprise a temperature of from 450 to 680°C, preferably from 450 to 660°C.

13. The process of any one of claims 9 to 12 wherein the first stage reaction products are produced in at least two reactors aligned in parallel.

14. The process of any one of claims 9 to 13 wherein the second stage reaction products are produced in at least two reactors aligned in parallel.

15. The process of any one of claims 9 to 14 wherein fuel gas is also produced in either or both of the first and second stages and is separated from the aromatic reaction products and ethane.

16. Aromatic products produced by the process of any one of claims 1 to 15.