

CLAIMS

1. A process for cracking a hydrocarbon feedstock in a steam cracker unit, comprising the following steps of:
 - 5 feeding a liquid hydrocarbon feedstock to a hydrocracking unit,
 - separating the stream thus hydrocracked in said hydrocracking unit into a high content aromatics stream and a gaseous stream comprising C2-C4 paraffins, hydrogen and methane,
 - separating C2-C4 paraffins from said gaseous stream, further separating
 - 10 C2-C4 paraffins into individual streams, each stream predominantly comprising C2 paraffins, C3 paraffins and C4 paraffins, respectively,
 - feeding each individual stream to a specific furnace section of said steam cracker unit,
 - wherein the process conditions in said hydrocracking unit are a
 - 15 temperature of 300-450 °C , a pressure of 300-5000 kPa gauge and a Weight Hourly Space Velocity of 0.1-10 h⁻¹.
2. The process according to claim 1, further comprising separating said high content aromatics stream into a stream of heavy aromatics and a stream high in mono-aromatics, especially using a distillation unit.
- 20 3. The process according to any one or more claims 1-2, wherein separating said C2-C4 paraffins from said gaseous stream is carried out by cryogenic distillation or solvent extraction.
4. The process according to any one or more of claims 1-3, further comprising recovering from said gaseous stream a stream predominantly comprising hydrogen and
- 25 methane and recycling said stream to the hydrocracking unit.
5. The process according to any one or more of the claims 1-4, wherein the process conditions in said hydrocracking unit are a temperature of 350-450 °C, preferably 375-450 °C, a pressure of 600-3000 kPa gauge and a Weight Hourly Space Velocity of 0.2-2 h⁻¹.
- 30 6. The process according to any one or more of the preceding claims, wherein the reactor type design of the said hydrocracking unit is chosen from the group of the fixed bed type, ebulating bed reactor type and the slurry type, wherein the reactor type design of the said hydrocracking unit is preferably of the fixed bed type.

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7. The process according to any one or more of the preceding claims, wherein the hydrocarbon feedstock to said hydrocracking unit is of the type naphtha, kerosene, diesel, atmospheric gas oil (AGO), waxes and gas condensates, or combinations thereof.

8. The process according to any one or more of the preceding claims, wherein
5 the separation of the high content aromatics stream is of the distillation type.

9. The process according to any one or more of the claims 2-8 further comprising separating a C7 to C9 aromatics rich fraction from the stream high in mono-aromatics, and converting said C7 to C9 aromatics rich fraction into a benzene rich fraction.

10 10. The process according to any one or more of the claims 1-9, further comprising recovering hydrogen from the product stream of said steam cracker unit and feeding said hydrogen to said hydrocracking unit.

11. The process according to any one or more of the claims 1-10 further comprising recovering C5+ hydrocarbons from the product stream of said steam cracker
15 unit and feeding said C5+ hydrocarbons to said hydrocracking unit.