C L A I M S

1. Process for steam cracking a hydrocarbon feed, comprising the steps of:

recovering aliphatic hydrocarbons from a liquid hydrocarbon feedstock stream (1) in a process for the recovery of aliphatic hydrocarbons from a liquid hydrocarbon feedstock stream (1), which comprises a liquid product produced by the pyrolysis of plastic waste and which comprises aliphatic hydrocarbons, polar components and optionally aromatic hydrocarbons, wherein the aliphatic hydrocarbons comprise paraffinic and olefinic aliphatic hydrocarbons, wherein the polar components comprise heteroatom containing organic compounds and optionally salts, wherein the heteroatom containing organic compounds contain one or more heteroatoms which are oxygen, nitrogen and/or a halogen and the heteroatom containing organic compounds comprise oxygen containing organic compounds, nitrogen containing organic compounds and halogen containing organic compounds, wherein the liquid hydrocarbon feedstock stream (1) comprises both aliphatic hydrocarbons having a boiling point of from 30 to 300 °C and aliphatic hydrocarbons having a boiling point of from greater than 300 to 600 °C in a weight ratio of from 99:1 to 1:99, and wherein the amount of the polar components is at least 0.5 wt.% based on the total weight of the liquid hydrocarbon feedstock stream and the amount of the optional aromatic hydrocarbons is at most 20 wt.% based on the total weight of the liquid hydrocarbon feedstock stream, said process for the recovery of aliphatic hydrocarbons comprising the steps of:

feeding the liquid hydrocarbon feedstock stream (1) to a first column (4a);

feeding a first solvent stream (2) which comprises an organic solvent to the first column (4a) at a position which is higher than the position at which the liquid hydrocarbon feedstock stream (1) is fed, wherein the organic solvent in the first solvent stream (2) contains one or more heteroatoms;

contacting at least a portion of the liquid hydrocarbon feedstock stream (1) with at least a portion of the first solvent stream (2); and

recovering at least a portion of the aliphatic hydrocarbons by liquid-liquid extraction of polar components and optionally aromatic hydrocarbons with organic solvent, resulting in a top stream (5a) from the first column (4a) comprising recovered aliphatic hydrocarbons and organic solvent and a bottom stream (6) from the first column (4a) comprising organic solvent, polar components and optionally aromatic hydrocarbons; and

feeding the top stream (5a) from the first column (4a) to a second column (4b);

feeding a second solvent stream (3) which comprises water to the second column (4b) at a position which is higher than the position at which the top stream (5a) from the first column (4a) is fed;

contacting at least a portion of the top stream (5a) from the first column (4a) with at least a portion of the second solvent stream (3); and

removing at least a portion of the organic solvent from the top stream (5a) from the first column (4a) by liquid-liquid extraction of organic solvent with water, resulting in a top stream (5b) from the second column (4b) comprising recovered aliphatic hydrocarbons and a bottom stream (14) from the second column (4b) comprising water and organic solvent; and

steam cracking a hydrocarbon feed, wherein the hydrocarbon feed comprises aliphatic hydrocarbons recovered in the preceding step of recovering aliphatic hydrocarbons.

2. Process according to claim 1, wherein the liquid hydrocarbon feedstock stream (1) comprises aliphatic hydrocarbons having a boiling point of from 30 to 300 °C in an amount of at most 80 wt.% and aliphatic hydrocarbons having a boiling point of from greater than 300 to 600 °C in an amount of at least 20 wt.%, wherein both amounts are based on the total amount of aliphatic hydrocarbons having a boiling point of from 30 to 600 °C.

3. Process according to any one of claim 1 or 2, wherein the organic solvent in the first solvent stream (2) is selected from the group consisting of diols and triols, including monoethylene glycol, monopropylene glycol and any isomer of butanediol; glycol ethers, including oligoethylene glycols, including diethylene glycol and tetraethylene glycol, and ethers thereof, including diethylene glycol dimethylether; amides, including N-alkylpyrrolidone, including N-methylpyrrolidone, and dialkyl formamide, including dimethyl formamide; dialkylsulfoxide, including dimethylsulfoxide; sulfolane; N-formyl morpholine; and furan ring containing components, including furfural, 2-methyl-furan and furfuryl alcohol.

4. Process according to any one of claims 1-3, wherein the organic solvent in the first solvent stream (2) has an $R_{a,heptane}$ of at least 10 $MPa^{1/2}$ or at least 15 $MPa^{1/2}$ and a difference in $R_{a,heptane}$ compared to $R_{a,toluene,}$ namely $R_{a,heptane}$ - $R_{a,toluene}$, of at most 4.5 $MPa^{1/2}$ or at most 4 $MPa^{1/2}$, wherein $R_{a,heptane}$ and $R_{a,toluene}$ refer to the Hansen solubility parameter

distance with respect to heptane and toluene, respectively, determined at 25 °C.