Claims

1. A process for removing hydrocarbons comprising the steps of:
   (A) passing a stream of a solution into a separator wherein a liquid phase comprising polymer and a vapour phase coexist;
   (B) withdrawing a vapour stream and a concentrated solution stream from the separator;
   (C) passing at least a part of the vapour stream into a first fractionator;
   (D) withdrawing a first overhead stream and a first bottom stream from the first fractionator;
   (E) passing the first overhead stream to a second fractionator;
   (F) withdrawing a second overhead stream and a second bottom stream from the second fractionator;
   (G) passing the second overhead stream to a third fractionator;
   (H) withdrawing a third overhead stream and a third bottom stream from the third fractionator;
   characterised in that at least a part of the third bottom stream is withdrawn as a purge stream.
2. The process according to claim 1 wherein the stream of the solution comprises 1-hexene and n-octane and a mixture of isomers of 1-hexene and n-hexane.
3. The process according to claim 2 comprising the step of purging isomers of 1-hexene and n-hexane with the purge stream.
4. The process according to any of claims 1-3 comprising the additional step of:
   (I) passing the first bottom stream to a fourth fractionator;
   (J) withdrawing a fourth overhead stream and a fourth bottom stream from the fourth fractionator;
   (K) passing optionally at least a part of the fourth overhead stream to a polymerisation reactor.
5. The process according to any of claims 1-3 comprising the additional step of:
   (L) passing optionally at least a part of the third overhead stream to the polymerisation reactor.
6. The process according to any of claims 1-3 comprising the additional step of:
   (M) passing optionally at least a part of the third bottom stream to the polymerisation reactor.

7. The process according to claim 4 comprising the additional steps of:

(N) passing optionally at least a part of any of the third bottom stream, third overhead stream or fourth overhead stream to a feed vessel

(O) withdrawing a feed stream from the feed vessel;

(P) passing the feed stream via a cooling step to the polymerisation reactor.

8. The process according to any of claims 1-3 wherein the stream of the solution comprises ethylene.

9. The process according to claim 4 wherein any of the first, second, third or fourth fractionators are distillation columns, stripping columns, multi-phase separators, extractors or liquid-liquid separators.

10. The process according to any of claims 1-3 wherein at least a part of the purge stream is used as a gasoline additive or as a fuel additive.

11. The process according to any of claims 1-3 wherein at least a part of the purge stream sent to a hydrogenation step.

12. The process according to any of claims 1-3 wherein at least a part of the purge stream is sent to an isomerisation step.