C L A I M S

1. Process for the preparation of an alkanediol and a dialkyl carbonate comprising:

(a) reacting an alkylene carbonate and an alkanol in the presence of a transesterification catalyst to obtain a reaction mixture comprising dialkyl carbonate, unconverted alkanol, alkanediol, unconverted alkylene carbonate and an alkoxy alkanol impurity;

(b) subjecting the reaction mixture to distillation in a first distillation column to obtain a top stream comprising dialkyl carbonate, alkanol and alkoxy alkanol impurity and a bottom stream comprising alkanediol and alkylene carbonate;

(c) subjecting the bottom stream from the first distillation column to distillation in a second distillation column to obtain a top stream comprising alkanediol and a bottom stream comprising alkylene carbonate;

(d) subjecting the top stream from the first distillation column to distillation in a third distillation column in the presence of a catalyst to effect reaction of the alkoxy alkanol impurity with the dialkyl carbonate into a carbonate ether impurity, to obtain a top stream comprising alkanol and a bottom stream comprising dialkyl carbonate and carbonate ether impurity; and

(e) subjecting the bottom stream from the third distillation column to distillation in a fourth distillation column to obtain a top stream comprising dialkyl carbonate and a bottom stream comprising dialkyl carbonate and carbonate ether impurity; and

(f) recycling the bottom stream from the fourth distillation column to the first distillation column.

2. Process according to claim 1, wherein the dialkyl carbonate is a di(C_1-C_5)alkyl carbonate, preferably diethyl carbonate.

3. Process according to any one of the preceding claims, wherein the catalyst in step (d) is a heterogeneous catalyst, preferably a heterogeneous catalyst comprising zinc.

4. Process according to any one of the preceding claims, wherein the alkylene carbonate is ethylene carbonate, the unconverted alkanol is ethanol, the dialkyl carbonate is diethyl carbonate, the alkanediol is monoethylene glycol and the alkoxy alkanol impurity is 2-ethoxyethanol.

5. Process for making a diaryl carbonate, comprising contacting, in the presence of a transesterification catalyst, an aryl alcohol with a stream containing a dialkyl carbonate from which stream an alkoxy alkanol impurity has been removed in accordance with the process of any one of claims 1-4.

6. Process for making a diaryl carbonate, comprising steps (a) to (f) in accordance with the process of any one of claims 1-4, and additionally comprising:
(h) contacting, in the presence of a transesterification catalyst, an aryl alcohol with the top stream comprising dialkyl carbonate from the fourth distillation column.

7. Process according to claim 5 or 6, wherein the diaryl carbonate is diphenyl carbonate and the aryl alcohol is phenol.

Claims:

1. Process for the preparation of an alkanediol and a dialkyl carbonate comprising: (a) reacting an alkylene carbonate and an alkanol in the presence of a transesterification catalyst to obtain a reaction mixture comprising dialkyl carbonate, unconverted alkanol, alkanediol, unconverted alkylene carbonate and an alkoxy alkanol impurity; (b) subjecting the reaction mixture to distillation in a first distillation column to obtain a top stream comprising dialkyl carbonate, alkanol and alkoxy alkanol impurity and a bottom stream comprising alkanediol and alkylene carbonate; (c) subjecting the bottom stream from the first distillation column to distillation in a second distillation column to obtain a top stream comprising alkanediol and a bottom stream comprising alkylene carbonate; (d) subjecting the top stream from the first distillation column to distillation in a third distillation column in the presence of a catalyst to effect reaction of the alkoxy alkanol impurity with the dialkyl carbonate into a carbonate ether impurity, to obtain a top stream comprising alkanol and a bottom stream comprising dialkyl carbonate and carbonate ether impurity; and (e) subjecting the bottom stream from the third distillation column to distillation in a fourth distillation column to obtain a top stream comprising dialkyl carbonate and a bottom stream comprising dialkyl carbonate and carbonate ether impurity; and (f) recycling the bottom stream from the fourth distillation column to the first distillation column.

2. Process according to claim 1, wherein the dialkyl carbonate is a di(C_1-C_5)alkyl carbonate, preferably diethyl carbonate.

3. Process according to any one of the preceding claims, wherein the catalyst in step (d) is a heterogeneous catalyst, preferably a heterogeneous catalyst comprising zinc.

4. Process according to any one of the preceding claims, wherein the alkylene carbonate is ethylene carbonate, the unconverted alkanol is ethanol, the dialkyl carbonate is diethyl carbonate, the alkanediol is monoethylene glycol and the alkoxy alkanol impurity is 2-ethoxyethanol.

5. Process for making a diaryl carbonate, comprising steps (a) to (f) in accordance with the process of any one of claims 1-4, and additionally comprising: (h) contacting, in the presence of a transesterification catalyst, an aryl alcohol with the top stream comprising dialkyl carbonate from the fourth distillation column.

6. Process according to claim 5, wherein the diaryl carbonate is diphenyl carbonate and the aryl alcohol is phenol.