CLAIMS

1. A process for preparing diaryl carbonate comprising:

a) preparing phosgene by reacting chlorine with carbon monoxide;

b) reacting the phosgene formed in step a) with at least one monophenol in the presence of an aqueous alkali metal-containing base and, optionally, a nitrogen catalyst, to form a diaryl carbonate and a reaction wastewater solution comprising alkali metal chloride;

c) separating and working-up the diaryl carbonate formed in step b);

e) increasing concentration of at least part of said reaction wastewater solution comprising alkali metal chloride remaining after step c) by osmotic membrane distillation;

f) electrochemically oxidizing at least part of said reaction wastewater solution comprising alkali metal chloride from e) to form chlorine, alkali metal hydroxide, and, optionally, hydrogen.

2. The process of claim 1, wherein said aqueous alkali metal-containing base is a sodium-containing base and said alkali metal chloride is sodium chloride.

3. The process of claim 1, wherein, in a step d), separating solvent residues and, optionally, catalyst residues from said reaction wastewater solution comprising alkali metal chloride remaining after step c) and subsequently feeding the solution to the osmotic membrane distillation in step e).

4. The process of claim 3, wherein said separating is performed by extraction or stripping of the solution by means of steam and/or treatment with an adsorbent.

5. The process of claim 4, wherein said adsorbent is activated carbon.

6. The process of claim 3, wherein concentration of said reaction wastewater solution comprising alkali metal chloride from d) is increased by means of osmotic distillation in step e) using sodium hydroxide solution as water acceptor.

7. The process of claim 1, wherein the osmotic membrane distillation in step e) is

carried out at a temperature in the range of from 20 to 50 °C.

8. The process of claim 1, wherein the osmotic membrane distillation in step e) is carried out at an absolute pressure in the range of from 1.1 to 1.2 bar.

9. The process of claim 1, wherein the osmotic membrane distillation in step e) is carried out at a differential pressure in the range of from 30 to 100 bar.

10. The process of claim 1, wherein the osmotic membrane distillation of at least part of said reaction wastewater solution comprising alkali metal chloride from d) is carried out using an Accurel PP membrane.

11. The process of claim 1, wherein the electrochemical oxidation of at least part of said reaction wastewater solution comprising alkali metal chloride from e) to chlorine and sodium hydroxide is carried out using gas diffusion electrodes as cathode.

12. The process of claim 1, wherein at least part of the purified reaction wastewater solution comprising alkali metal chloride from e) is introduced into the brine circuit of a membrane electrolysis for the preparation of chlorine and sodium hydroxide.

13. The process of claim 1, wherein additional alkali metal chloride is added to said reaction wastewater solution comprising alkali metal chloride to increase the alkali metal chloride concentration in the electrolysis f).

14. The process of claim 1, wherein said reaction wastewater solution comprising alkali metal chloride is brought to a pH of less than 8 in the isolation in step c) or the purification in step d).

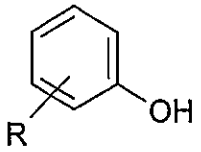
15. The process of claim 14, wherein the pH of said reaction wastewater solution comprising alkali metal chloride is adjusted by use of hydrochloric acid or gaseous hydrogen chloride in the isolation in step c) or the purification in step d).

16. The process of claim 1, wherein the alkali metal chloride concentration of said reaction wastewater solution comprising alkali metal chloride fed to the electrolysis in step f) is in the range of from 100 to 280 g/l and/or the concentration of the alkali hydroxide solution obtained from the electrolysis in step f) is in the range of from

13 to 50 % by weight.

17. The process of claim 16, wherein the alkali metal chloride concentration of said reaction wastewater solution comprising alkali metal chloride fed to the electrolysis in step f) is in the range of from 110 to 220 g/l and/or the concentration of the alkali hydroxide solution obtained from the electrolysis in step f) is in the range of from 14 to 32 % by weight

18. The process of claim 1, wherein said at least one monophenol in step b) is of formula (I)



(I)

wherein R is hydrogen, halogen, or a branched or unbranched C_1-C_9-alkyl radical or alkoxycarbonyl radical.

19. The process of claim 1, wherein said at least one monophenol in step b) is selected from the group consisting of phenol, alkylphenols, and halophenols.

20. The process of claim 19, wherein said alkylphenols are selected from the group consisting of cresols, p-tert-butylphenol, p-cumylphenol, p-n-octylphenol, p-isooctylphenol, p-n-nonylphenol, and p-isononylphenol, and said halophenols are selected from the group consisting of p-chlorophenol, 2,4-dichlorophenol, p-bromophenol, and 2,4,6-tribromophenol.

21. The process of claim 19, wherein said at least one monophenol in step b) is phenol.

CLAIMS

1. An invention not claimed in any divisional application.