Claims:

1. A method for the preparation of 1,2-propanediol and dipropylene glycol comprising:
   a) continuously reacting propene with hydrogen peroxide in the presence of a catalyst mixture comprising a phase transfer catalyst and a heteropolytungstate in a liquid reaction mixture comprising an aqueous phase with a maximum apparent pH of 6 and an organic phase to obtain 1,2-propanediol and dipropylene glycol;
   b) separating the reaction mixture into an aqueous phase ($P_a$) comprising 1,2-propanediol and dipropylene glycol and an organic phase ($P_o$);
   c) recycling at least a part of the separated organic phase ($P_o$) to the reaction step a); and
   d) recovering 1,2-propanediol and dipropylene glycol from the separated aqueous phase ($P_a$);

   wherein the reaction heat generated in step a) is at least partially removed and the ratio of 1,2-propanediol to dipropylene glycol is controlled by adjusting the weight ratio of hydrogen peroxide to water fed to step a), wherein the weight ratio of hydrogen peroxide to water is varied within the range of from 0.05 to 1.5,

   wherein the ratio of 1,2-propanediol to dipropylene glycol is reduced by increasing the weight ratio of hydrogen peroxide to water fed to step a) or the ratio of 1,2-propanediol to dipropylene glycol is increased by reducing the weight ratio of hydrogen peroxide to water fed to step a).

2. The method of claim 1, wherein the weight ratio of hydrogen peroxide to water fed to step a) is adjusted while maintaining a molar excess of propene to hydrogen peroxide fed to step a).

3. The method of claim 2, wherein the molar ratio of propene to hydrogen peroxide fed to step a) is from 1.1:1 to 10:1, preferably from 1.2:1 to 4:1.

4. The method of any one of claims 1 to 3, wherein the weight ratio of hydrogen peroxide to water is varied within the range from 0.10 to 0.7 and preferably from 0.15 to 0.45.

5. The method of any one of claims 1 to 4, wherein the concentration of hydrogen peroxide in the aqueous phase of step a) is from 0.1 to 5 % by weight, preferably from 0.12 to 1.0 % by weight.

6. The method of any one of claims 1 to 5, wherein the residence time of the reaction mixture in step a) is adjusted to maintain a hydrogen peroxide conversion in the range of from 80 to 99 %.

7. The method of any one of claims 1 to 6, wherein step a) is conducted in a loop reactor and the reaction heat generated in step a) is at least partially removed by circulating the reaction mixture through a heat exchanger.

8. The method of any one of claims 1 to 7, wherein the aqueous phase ($P_a$) obtained in step b) is further processed without recycling any part of it directly or indirectly to step a).

9. The method of any one of claims 1 to 8, wherein in step d) the aqueous phase ($P_a$) is subjected to catalytic hydrogenation.

10. The method of any one of claims 1 to 9, wherein step a) is conducted in the presence of phosphoric acid and the heteropolytungstate is a polytungstophosphate.

11. The method of any one of claims 1 to 10, wherein the organic phase in step a) comprises an organic solvent having a boiling point of more than 100 °C at atmospheric pressure and a solubility in water at 20 °C of less than 250 mg/kg, the organic solvent being preferably selected from alkylated aromatic hydrocarbons having 8 to 12 carbon atoms.

12. The method of any one of claims 1 to 11, wherein the phase transfer catalyst is selected from tertiary amines and tertiary or quaternary ammonium salts and comprises in total at least 12 carbon atoms.

13. The method of claim 12, wherein the phase transfer catalyst comprises a tertiary or quaternary ammonium ion having the structure $R^1R^2R^3NR^{4+}$, wherein $R^1$, $R^2$ and $R^3$ are the same or different and are each selected from alkyl groups having from 8 to 10 carbon atoms and $R^4$ is hydrogen or methyl.

14. The method of any one of claims 1 to 13, wherein steps b), c) and d) are carried out continuously.