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Abstract

A process for preparing propylene oxide comprises at least the following steps:

(a) propene is reacted with a hydroperoxide in a solvent in the presence of a zeolite catalyst to give a mixture (M0), where the mixture (M0) comprises propylene oxide, solvent, unreacted propene, unreacted hydroperoxide and oxygen,

(b) the propylene oxide is separated from the mixture (M0) so as to give a mixture (M1) which comprises unreacted propene and oxygen,

(c) the mixture (M1) is brought into contact with a liquid medium comprising at least a solvent to give the mixtures (M2) and (M3),
where the mixture (M3) comprises part of the unreacted propene and oxygen and the mixture (M2) comprises solvent and residual propene, and
the mixture (M3) which has been separated off and comprises unreacted propene and oxygen has a ratio of oxygen to propene such that the mixture (M3) is not ignitable, and
the mixture (M2) is fed to at least one reaction of propene with hydroperoxide.