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(54) **Title:** A PROCESS FOR THE EPOXIDATION OF AN OLEFIN WITH IMPROVED ENERGY BALANCE

(57) **Abstract:** The invention relates to a process for the epoxidation of an olefin comprising (a) reacting the olefin with hydrogen peroxide in the presence of methanol as solvent in at least two reaction stages to obtain a mixture (M-a) comprising olefin oxide, unreacted olefin, methanol and water, wherein between at least two reaction stages, olefin oxide is separated by distillation; (b) separating unreacted olefin from the mixture (M-a) by distillation to obtain a mixture (M-bi) comprising at least 80 wt.-% of olefin and a mixture (M-bii) comprising methanol, water and at least 7 wt.-% of olefin oxide; (c) separating olefin oxide from the mixture (M-bii) in at least one distillation stage to obtain a mixture (M-ci) comprising at least 99 wt.-% of olefin oxide and a mixture (M-cii) comprising water and at least 55 wt.-% of methanol; (d) separating methanol from the mixture (M-cii) in at least one distillation stage to obtain a mixture (M-di) comprising at least 85 wt.-% of methanol and up to 10 wt.-% of water, and a mixture (M-dii) comprising at least 90 wt.-% of water; wherein a vapor top stream (Td) obtained from at least one distillation column used in (d), said vapor top stream (Td) comprising at least 85 wt.-% methanol, is used to operate at least partially at least one vaporizer used in at least one distillation column used in at least one of stages (a), (b) and (c).

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