This object is achieved by effecting the hydrogenation in two stages, namely in a first stage in a manner known per se over a catalyst comprising copper, nickel and optionally chromium and/or barium oxide, and subsequently in a second stage with another catalyst which must be free of copper, chromium and nickel.

In a first aspect, there is provided a process for preparing at least one decanol by hydrogenation of at least one decenal, in which a first hydrogenation is effected in the liquid phase over a solid first catalyst, said first catalyst comprising copper and nickel, characterized by a second hydrogenation, following the first hydrogenation, in the liquid phase over a solid second catalyst, said second catalyst comprising ruthenium.

The disclosure~~invention~~ therefore provides a process for preparing at least one decanol by hydrogenation of at least one decenal, in which a first hydrogenation is effected in the liquid phase over a solid first catalyst, said first catalyst comprising copper and nickel, comprising a second hydrogenation, following the first hydrogenation, in the liquid phase over a solid second catalyst, said second catalyst being free of copper, chromium and nickel.

The process according to the disclosure~~invention~~, compared to a process which uses only one catalyst, has the following advantages: for the same overall catalyst volume, with comparable yields, a product with a lower content of olefinic compounds is obtained. The consequence of this is that, while complying with a limit of olefinic compounds in the hydrogenation output, a lower specific catalyst volume is needed. Due to the lower catalyst costs and lower frequency of catalyst exchange and associated cost and inconvenience, lower specific hydrogenation costs arise. In addition, shutdown times in production resulting from catalyst exchange are reduced.

Feedstocks for the process according to the invention are decenals (α,β-unsaturated C_{10}-aldehydes). More particularly, α,β-unsaturated C_{10}-aldehydes which have been obtained by aldol condensation of C_5-aldehydes are used, for example 2-propylhept-2-enal from n-pentanal and 2-methyl-2-isopropylhex-2-enal from 3-methylbutanal, or a mixture of isomeric decenals which are obtained by condensation of at least two different C_5-aldehydes, for example 4-methyl-2-propylhexanal from cross-aldolization of n-pentanal with 2-methylbutanal. Particular preference is given to hydrogenating decenal mixtures having a content of 2-propylhept-2-enal of more than 85% by mass by the process according to the invention.