

ABSTRACT
PRODUCTION PROCESS FOR UNSATURATED ALDEHYDE

The present invention provides a process in which, when an unsaturated aldehyde and/or an unsaturated carboxylic acid are produced by carrying out a catalytic gas phase oxidation reaction by using a fixed-bed multitubular reactor which is packed with a molybdenum-containing catalyst, the deterioration of the catalyst as located at a hot spot portion can be suppressed; so that the reaction can be continued for a long time while a high yield is maintained, regardless of where the hot spot portion occurs and also even if the concentration of a raw gas is high. An oxide and/or a complex oxide including molybdenum, bismuth, and iron as essential components are used as the catalysts, and the inside of each reaction tube of the fixed-bed multitubular reactor is divided in a tubular axial direction to thus arrange at least two reaction zones, and then these reaction zones are packed with the catalysts in such a manner that the ratio R of the apparent density of the catalyst to the true density of the catalyst ($\text{apparent density of catalyst} / \text{true density of catalyst}$) in each reaction zone differs from that in another reaction zone.

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