

Preparation of n-butyraldehyde and/or n-butanol

Abstract

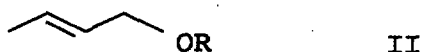
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Process for the preparation of n-butyraldehyde and/or n-butanol, wherein

- 10 a) 1,3-Butadiene or a butadiene-containing hydrocarbon mixture is reacted with an alcohol of the formula I

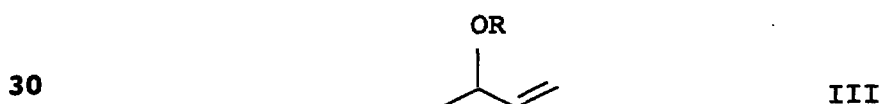


- 15 where R is C₂-C₂₀-alkyl or alkenyl which is unsubstituted or substituted by 1 or 2 C₁-C₁₀-alkoxy or hydroxyl groups, or is C₆-C₁₀-aryl, C₇-C₁₁-aralkyl or methyl, at elevated temperatures and superatmospheric pressure in the presence of a Brönsted acid or in the presence of a complex of an element of Group Ia, VIIA or VIIIA of the Periodic Table of Elements
- 20 with phosphorus- or nitrogen-containing ligands to give a mixture of the adducts of the formulae II



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and III

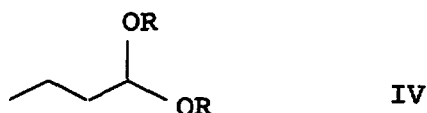


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- 35 b) the adduct III is isomerized to the adduct II,

- c) the adduct II is converted into the acetal of the formula IV

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in the presence of an amount of an alcohol ROH I sufficient to form the acetal IV and of a homogeneous or heterogeneous transition metal catalyst which differs from dicobaltoctacar-

bonyl or hydridocobaltpentacarbonyl, in the liquid phase, under essentially anhydrous conditions, and

- 5 d) n-butyraldehyde and/or n-butanol are then produced from this acetal IV by reacting it, in the liquid phase, with hydrogen and water or water in the presence of a homogeneous or heterogeneous transition metal catalyst which differs from dicobaltoctacarbonyl or hydridocobaltpentacarbonyl, and the alcohol ROH I is liberated

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and the liberated alcohol ROH I is recycled to the reaction in reaction steps a) and/or c).

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