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ACTION

(54) Title: PROCESS FOR THE CO-PRODUCTION OF ALIPHATIC DIOLS AND CYCLIC ETHERS

(57) Abstract: A process is described for the co-production of a diol product (e.g. butane-1, 4-diol) and a cyclic ether (e.g. tetrahydrofuran) by hydrogenation of an aliphatic diester or lactone feedstock, such as dimethyl or diethyl maleate, which contains a minor amount of acidic material, such as the corresponding monoester. It utilises a plurality of hydrogenation zones (8, 9, 10) connected in series, each containing a charge (12, 17, 24) of a granular ester hydrogenation catalyst. The first hydrogenation zone (8) contains a bed (12) of a catalyst (e.g. reduced copper chromite) which is tolerant of a minor amount of acidic material, while the second hydrogenation zone (9) contains a bed (17) of a catalyst which provides enhanced yields of cyclic ethers compared to the catalyst of the first hydrogenation zone (8). A third hydrogenation zone (10) contains a bed (24) of a catalyst which exhibits low selectivity towards conversion of the diester to at least one by product (e.g. 2-4'-hydroxybutoxy)-tetrahydrofuran). The feedstock is supplied to the first hydrogenation zone (8) as a vaporous stream comprising hydrogen and the hydrogenatable material and the zones (8, 9, 10) are typically operated under adiabatic conditions. From the third hydrogenation zone (10) there is recovered a final product stream which is substantially free of the hydrogenatable material and which contains the diol, cyclic ether and other by products, the selectivity to the cyclic ether being greater in the final product stream than in the first intermediate product stream.

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