

A process for removing acetaldehyde from a mixture of methyl acetate, dimethyl ether and acetaldehyde comprising distilling mixtures derived from carbonylating dimethyl ether in the presence of a zeolite catalyst to generate an overhead stream depleted in acetaldehyde as compared to the feed mixture, a base stream depleted in acetaldehyde as compared to the feed mixture and a sidedraw stream enriched in acetaldehyde as compared to the feed mixture and withdrawing from the column the sidedraw stream enriched in acetaldehyde at a point above the feed point of the feed mixture to the column. Purified mixtures may be utilised as feed-stock to processes for the co-production of acetic acid and dimethyl ether.