Title (en)

METHOD FOR PRODUCING ALDEHYDES FROM ALKANES

Title (de)

VERFAHREN ZUR HERSTELLUNG VON ALDEHYDEN AUS ALKANEN

Title (fr)

PROCEDE DE PRODUCTION D'ALDEHYDES A PARTIR D'ALCANES

Publication

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Application

EP 03810428 A 20031103

Priority

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Abstract (en)

[origin: DE10251262A1] A process for the production of saturated aldehydes from alkanes comprises dehydrogenation of the stream to yield (n-1)C-alkenes and byproducts. The alkene undergoes hydroformylation to form the aldehyde (D). Separation of the resulting product mixture yields an aldehyde containing stream and a stream containing alkane and optionally byproducts with at least partial recycle of the alkane. A process (I) for the production of saturated nC-aldehydes from (n-1)C-alkanes comprises: (a) preparation of at least one (n-1)C-alkane stream; (b) dehydrogenation of the stream from (A) to yield a product stream comprising unreacted (n-1)C-alkane, one or more (n-1)C-alkenes and byproducts; (c) hydroformylation of the (n-1)C-alkene at least partially in the presence of the (n-1)C-alkane and optionally the byproducts in the presence of a hydroformylation catalyst with carbon monoxide and hydrogen to form the nC-aldehyde; (d) separation of the resulting product mixture to obtain a nC-aldehyde containing stream and a stream containing (n-1)C-alkane and optionally byproducts and; (e) at least partial recycle of the stream (n-1)C-alkane and optionally byproducts to step (B). Independent claims are included for: (1) a process (II) for the production of saturated 2nC-alcohols from (n-1)C-alkanes by carrying out steps (A) to (E) with aldol condensation of the nC-aldehyde in step (F) and (G) catalytic hydrogenation of the product from (F) with hydrogen to form the 2nC-alcohol; (2) an integrated process (III) for the production of saturated (2n-1)C-alcohols and 2nC-alcohols from (n-1)C-alkanes by carrying out steps (A)-(D) to yield a gas stream comprising (n-1)C-alkane and unreacted (n-1)C-alkene with aldol condensation of the 4C-aldehyde and catalytic hydrogenation to form the 2nC-alcohol; dimerization of unreacted (n-1)C-alkene in the presence of (n-1)C-alkane and byproducts using an olefin-oligomerization catalyst to form (2n-2)C-alkenes with separation and hydroformylation of the (2n-2)C-alkenes with separation and hydroformylation of the (2n-2)C-alkene to form a (2n-1)C-aldehyde and catalytic hydrogenation of aldehyde to form a (2n-1)C-alcohol and; (3) an integrated process for the production of saturated (2n-1)C-alcohols from (n-1)C-alkanes. n = 4-20.

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IPC 8 full level

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CPC (source: EP KR US)

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C-Set (source: EP US)

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