

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  
**EP 1562884 A1 20050817 (DE)**

Application  
**EP 03810428 A 20031103**

Priority

- DE 10251262 A 20021104
- EP 0312201 W 20031103

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.

IPC 1-7  
**C07C 45/50**; **C07C 29/38**; **C07C 47/02**; **C07C 31/125**

IPC 8 full level  
**C07C 29/141** (2006.01); **C07C 45/50** (2006.01); **C07C 45/72** (2006.01)

CPC (source: EP KR US)  
**C07C 5/42** (2013.01 - EP US); **C07C 29/141** (2013.01 - EP US); **C07C 29/38** (2013.01 - KR); **C07C 45/50** (2013.01 - EP KR US); **C07C 45/72** (2013.01 - EP US); **C07C 47/02** (2013.01 - KR); **Y02P 20/10** (2015.11 - EP US)

C-Set (source: EP US)

1. **C07C 29/141** + **C07C 31/125**
2. **C07C 45/50** + **C07C 47/02**
3. **C07C 5/42** + **C07C 11/06**
4. **C07C 5/42** + **C07C 11/08**

Citation (search report)  
See references of WO 2004041763A1

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)  
**DE 10251262 A1 20040513**; AU 2003276238 A1 20040607; CN 1309695 C 20070411; CN 1735579 A 20060215; EP 1562884 A1 20050817; JP 2006504777 A 20060209; KR 20050084668 A 20050826; US 2006122436 A1 20060608; WO 2004041763 A1 20040521

DOCDB simple family (application)  
**DE 10251262 A 20021104**; AU 2003276238 A 20031103; CN 200380108158 A 20031103; EP 0312201 W 20031103; EP 03810428 A 20031103; JP 2004548849 A 20031103; KR 20057007948 A 20050504; US 53395905 A 20051107