

Title (en)  
MULTI-STAGE FERMENTATION PROCESS STARTING FROM SYNTHESIS GAS

Title (de)  
MEHRSTUFIGES FERMENTATIONSVERFAHREN AUSGEHEND VON SYNTHESSEGAS

Title (fr)  
PROCÉDÉ DE FERMENTATION À PLUSIEURS ÉTAPES À PARTIR DE GAZ DE SYNTHÈSE

Publication  
**EP 2847340 A2 20150318 (DE)**

Application  
**EP 13728123 A 20130508**

Priority  
• DE 102012207921 A 20120511  
• EP 2013059608 W 20130508

Abstract (en)  
[origin: WO2013167663A2] The invention relates to a method for producing hydrocarbons substituted with at least one group containing at least one oxygen atom, comprising the steps of A) converting a carbon source comprising at least one carbon source selected from CO<sub>2</sub> and CO into acetate and/or ethanol by means of a first microorganism, B) removing the acetate from the first microorganism, c) converting the acetate into a hydrocarbon substituted with at least one group containing at least one oxygen atom by means of a second microorganism, and optionally D) purifying the hydrocarbon substituted with at least one group containing at least one oxygen atom.

IPC 8 full level  
**C12P 7/02** (2006.01); **C12P 7/06** (2006.01); **C12P 7/24** (2006.01); **C12P 7/40** (2006.01); **C12P 7/42** (2006.01); **C12P 7/46** (2006.01); **C12P 7/54** (2006.01); **C12P 7/6436** (2022.01)

CPC (source: CN EP KR US)  
**C12N 9/16** (2013.01 - KR); **C12P 7/00** (2013.01 - KR); **C12P 7/02** (2013.01 - CN EP US); **C12P 7/06** (2013.01 - KR); **C12P 7/065** (2013.01 - CN EP US); **C12P 7/24** (2013.01 - CN EP KR US); **C12P 7/40** (2013.01 - CN EP KR US); **C12P 7/42** (2013.01 - CN EP KR US); **C12P 7/46** (2013.01 - CN EP KR US); **C12P 7/54** (2013.01 - CN EP KR US); **C12P 7/62** (2013.01 - CN EP KR US); **C12P 7/64** (2013.01 - KR); **C12P 7/6409** (2013.01 - CN EP US); **C12P 7/6436** (2013.01 - CN EP KR US); **Y02E 50/10** (2013.01 - EP KR US)

Citation (examination)  
• WO 2011127409 A2 20111013 - LS9 INC [US], et al  
• WO 2010042664 A2 20100415 - LS9 INC [US], et al  
• WO 2009058028 A1 20090507 - LANZATECH NEW ZEALAND LTD [NZ], et al  
• US 4720457 A 19880119 - ARMSTRONG DAVID W [CA], et al  
• See also references of WO 2013167663A2

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**WO 2013167663 A2 20131114**; **WO 2013167663 A3 20140123**; BR 112014029571 A2 20170627; BR 112014029571 B1 20220201; CA 2872914 A1 20131114; CA 2872914 C 20220111; CN 104271751 A 20150107; CN 111850053 A 20201030; DE 102012207921 A1 20131114; EP 2847340 A2 20150318; KR 102180340 B1 20201118; KR 20150016231 A 20150211; MX 2014013670 A 20150904; US 10787688 B2 20200929; US 2015125912 A1 20150507; ZA 201409014 B 20160330

DOCDB simple family (application)  
**EP 2013059608 W 20130508**; BR 112014029571 A 20130508; CA 2872914 A 20130508; CN 201380024696 A 20130508; CN 202010735971 A 20130508; DE 102012207921 A 20120511; EP 13728123 A 20130508; KR 20147031243 A 20130508; MX 2014013670 A 20130508; US 201314400379 A 20130508; ZA 201409014 A 20141209