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(54) **Title:** PROCESS FOR THE PRODUCTION OF ETHYLENE

(57) **Abstract:** The invention relates to a process for the production of ethylene, comprising the steps of a) thermally converting, by a pyrolysis or a partial oxidation process, a feed charge containing methane into an acetylene containing effluent, and b) in situ hydrogenating, by a non-catalytic reaction, the acetylene produced in the first step into ethylene by intimately mixing the acetylene containing effluent with an ethane feed. The process according to the invention is more efficient than other synthesis schemes, while simplifying the overall process design. This process thus offers an economically attractive scheme for mass production of ethylene from natural gas, based on a well-known and proven acetylene route.

INTERNATIONAL SEARCH REPORT

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<p>According to International Patent Classification (IPC) or to both national classification and IPC</p>		
<p>B. FIELDS SEARCHED</p>		
<p>Minimum documentation searched (classification system followed by classification symbols) C07C</p>		
<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>		
<p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data, CHEM ABS Data</p>		
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 270 016 A (ALAGY ET AL) 14 December 1993 (1993-12-14) column 3, line 6 - line 10 column 6, line 27 - line 38 column 11, line 41 - line 49 example 2	1-16
A	US 4 726 913 A (BROPHY ET AL) 23 February 1988 (1988-02-23) column 1, line 49 - column 2, line 15 column 2, line 52 - column 3, line 17 ----- -/--	1-16
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.</p>		
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<p>Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016</p>		<p>Authorized officer O'Sullivan, Paul</p>

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DATABASE WPI Week 198336 Derwent Publications Ltd., London, GB; AN 1983-755483 XP002418554 & JP 58 126819 A (IDEMITSU PETROCHEM CO) 28 July 1983 (1983-07-28) abstract -----	1-16
Y	----- US 5 824 834 A (BACHTLER MICHAEL [DE] ET AL) 20 October 1998 (1998-10-20) the whole document -----	1-16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/006225

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5270016	A	14-12-1993	NONE	
US 4726913	A	23-02-1988	AU 4838185 A CN 85108595 A DE 3577306 D1 DK 478985 A EP 0178853 A2 JP 61097103 A NO 854129 A NZ 213854 A ZA 8507807 A	24-04-1986 10-05-1986 31-05-1990 19-04-1986 23-04-1986 15-05-1986 21-04-1986 29-04-1988 27-05-1987
JP 58126819	A	28-07-1983	JP 1050211 B JP 1567001 C	27-10-1989 25-06-1990
US 5824834	A	20-10-1998	CN 1155532 A FR 2740131 A1 IT MI962020 A1 RU 2133728 C1	30-07-1997 25-04-1997 02-04-1998 27-07-1999