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(54) Title: SOLUTIONS AND CATALYSTS COMPRISING GROUP VI METAL, GROUP VIII METAL, PHOSPHOROUS AND AN ADDITIVE

(57) Abstract: This invention provides a process for forming a solution composition, which process comprises forming a primary solution by bringing together, in an aqueous medium, i) at least one phosphorus compound, ii) at least one Group VI metal compound, iii) at least one Group VIII metal compound, and iv) an additive which is a) tetraethylene glycol, b) polyethylene glycol having an average molecular weight in the range of about 200 to about 400, c) a mixture of tetraethylene glycol and polyethylene glycol having an average molecular weight in the range of about 200 to about 400, or d) a mixture of (1) tetraethylene glycol and/or polyethylene glycol having an average molecular weight in the range of about 200 to about 400 and (2) one or more of monoethylene glycol, diethylene glycol, and triethylene glycol. The molar ratio of additive to the total moles of Group VI metal and Group VIII metal is above 0.30:1, and the atomic ratio of phosphorus to Group VI metal is at least about 0.33: 1. Optionally, the primary solution is heated at a temperature above about 40°C to form a heated solution. The heated solution is optionally cooled to form a cooled solution. Also provided are compositions formed by such processes, processes for forming catalyst compositions from these compositions, and catalyst compositions formed by these processes.

INTERNATIONAL SEARCH REPORT

International application No PCT/EP2010/062282

A. CLASSIFICATION OF SUBJECT MATTER		
INV. B01J23/888	B01J23/88	B01J27/185
B01J37/02	B01J37/08	B01J27/19
B01J21/04		
ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) B01J		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CA 2 302 969 A1 (AKZO NOBEL NV [NL]) 2 October 2000 (2000-10-02) page 7, line 18 - line 21; examples -----	1-24
X	US 2002/013223 A1 (EIJSBOUTS SONJA [NL] ET AL EIJSBOUTS SONJA [NL] ET AL) 31 January 2002 (2002-01-31) paragraph [0039] - paragraph [0051]; claims; examples -----	1-24
X	WO 96/41848 A1 (SUMITOMO METAL MINING CO [JP]; URAGAMI YUJI [JP]; YAMAGUCHI EIJI [JP];) 27 December 1996 (1996-12-27) page 10, line 26 - line 27; examples page 12, line 13 - line 15 ----- -/--	1-24
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	
"P" document published prior to the international filing date but later than the priority date claimed		
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INTERNATIONAL SEARCH REPORT

International application No

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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.
X	WO 01/02092 A1 (AKZO NOBEL NV [NL]; NIPPON KETJEN CO LTD [JP]) 11 January 2001 (2001-01-11) page 5, line 25 - line 27; claims; examples page 6, line 30 - line 33 page 7, line 4 - page 8, line 6 -----	1-24
X	EP 0 601 722 A1 (SUMITOMO METAL MINING CO [JP]) 15 June 1994 (1994-06-15) page 3, line 50 - line 58; claims; examples -----	1-24
X	WO 2005/035691 A1 (ALBEMARLE NETHERLANDS BV [NL]; NIPPON KETJEN CO LTD [JP]; JANSEN MARCE) 21 April 2005 (2005-04-21) page 3, line 14 - page 6, line 3; example 1 -----	1-24
E	WO 2010/121807 A1 (ALBEMARLE EUROP SPRL [BE]; JANSEN MARCEL ADRIAAN [NL]; TROMP HENK JAN) 28 October 2010 (2010-10-28) the whole document -----	1-24
X	US 6 923 904 B1 (PLANTENGA FRANS LODEWIJK [NL] ET AL) 2 August 2005 (2005-08-02) column 3, line 52 - column 5, line 58; claims; examples -----	16-33
X	EP 1 041 133 A1 (AKZO NOBEL NV [NL]) 4 October 2000 (2000-10-04) paragraph [0021] - paragraph [0022]; claims; examples paragraph [0008] - paragraph [0017] -----	16-33

INTERNATIONAL SEARCH REPORT

International application No.
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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-24

a process for forming a solution composition and said composition

2. claims: 25-32

a process for forming a catalyst and said catalyst

3. claim: 33

a method for hydrotreating, hydrogenitrogenation, and/or hydrodesulfurization

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/EP2010/062282

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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