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(54) Title: A CHELANT AND POLAR ADDITIVE CONTAINING COMPOSITION FOR HYDROPROCESSING OF HYDRO-CARBON FEEDSTOCKS

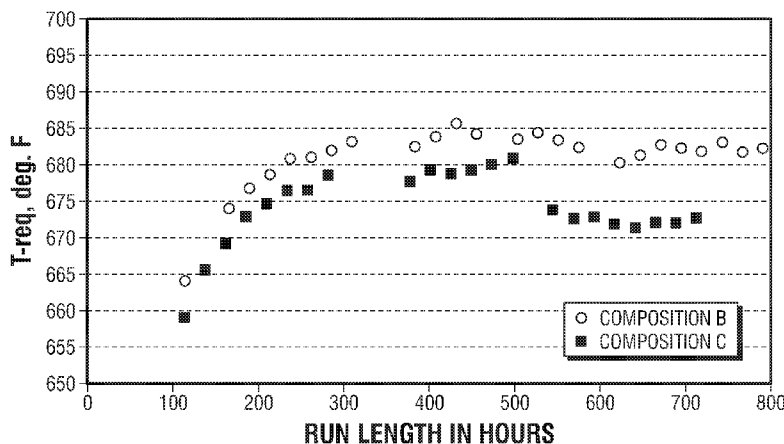


FIG. 1

(57) Abstract: A hydroprocessing catalyst composition that comprises a chelant treated metal containing support material having incorporated therein a polar additive. The catalyst composition is prepared by incorporating at least one metal component into a support material followed by treating the metal incorporated support with a chelating agent and thereafter incorporating a polar additive into the chelant treated composition.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/46690

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B01J 31/00 (2012.01)

USPC - 502/150; 502/16; 502/439

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)

IPC(8)- B01J 31/00 (2012.01);

USPC- 502/150; 502/16; 502/439

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Patents and NPL (classification, keyword; search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWest (US Pat, PgPub, EPO, JPO), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL);
search terms: catalyst, metal, colution, shape, support, base, solid, profile, dry, dried, polar, chelate, agent, additive, compound, LOI,
loss, ignition, surface, area, BET, pore, diameter, volume, hydrocarbon...

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,286,372 A (ARENA et al.) 15 February 1994 (15.02.1994), col 2, ln 43 to col 3, ln 3; col 3, ln 45; col 4, ln 61 to col 5, ln 28; col 7, ln 10-39; col 8, ln 40-57	1-12
Y	US 2009/0298677 A1 (RADLOWSKI et al.) 03 December 2009 (03.12.2009), para [0014], [0019]-[0026], [0038], [0044], [0047], [0050]-[0052]	1-12
Y	US 5,135,740 A (KATZ et al.) 04 August 1992 (04.08.1992), col 2, ln 11-61; col 3, ln 9-12; col 5, ln 25-58; col 6, ln 13-53	11, 12
Y	US 2010/0093958 A1 (LUO et al.) 15 April 2010 (15.04.2010), para [0010]-[0042]	1-12
Y	US 2007/0154388 A1 (MULLER et al.) 05 July 2007 (05.07.2007), para [0024]-[0084]	1-12

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 11/46690

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.: 20
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:

-- Please see Extra 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 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.:

1-12

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.

Box No. III, Observations where unity of invention is lacking:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-12 directed to a method of making a composition, wherein said method comprises:
providing a shaped support;
incorporating a metal-containing solution into said shaped support to provide a metal incorporated support;
drying said metal-incorporated support so as to provide a dried metal-incorporated support having a volatiles content in the range of from 1 to 20 wt % LOI;
incorporating a polar additive into said dried metal-incorporated support to thereby provide an additive impregnated composition; and
incorporating a chelating agent either into said shaped support or into said dried metal-incorporated support.

Group II: claims 13-19 directed to a hydroprocessing catalyst composition, comprising: a metals incorporated shaped support, a chelating agent, and a polar additive.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because under PCT Rule 13.2 they lack the same or corresponding technical features for the following reasons:

Group I does not include the hydroprocessing catalyst composition of group II.

Group II does not include volatiles content nor drying of group I.

The common feature of groups I and II of a composition comprising: a metals incorporated shaped support, a chelating agent, and a polar additive is taught by US 5,286,372 A to Arena et al. (col 3, ln 16-20, col 4, ln 61 to col 5, ln 10); therefore the common feature is not an improvement over the prior art.

None of these technical features are common to the other groups, nor do they correspond to a special technical feature in the other groups. Therefore, unity of invention is lacking.