Title: METHOD FOR PRODUCING WAXES AND GREASE BASE STOCKS THROUGH CATALYTIC DEPOLYMERIZATION OF WASTE PLASTICS

Abstract: A process of depolymerization of mixed polyethylene waste is disclosed. In one embodiment, in a process for converting mixed polyethylene waste to make waxes and grease base stocks through catalytic depolymerization, the mixed polyethylene waste is preheated to form a molten mixed polyethylene waste. Then depolymerization reaction of the molten mixed polyethylene waste is started. The depolymerization reaction uses a catalyst in a high pressure reactor with heaters at a desired temperature. The catalyst is disposed on a stirring blade. Progression of depolymerization reaction of the molten mixed polyethylene waste is allowed to continue until a pressure in the high pressure reactor reaches a desired value. The heaters are turned off and depolymerization reaction of the molten mixed polyethylene waste is stopped upon the pressure in the reactor reaching desired value. The mixed polyethylene waste is converted to waxes or grease base stocks.
Date of publication of the international search report:
8 March 2012
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

See Extra Sheet

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: C07C/__; C08J/–

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 practicable, search terms used)

WPPI;EPDOC;CNKI;ISI;CNPAT: d*polymeriz+,decomposit+,degrade+,grease,wax,PE, polyethylene

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Category*</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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Further documents are listed in the continuation of Box C.

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

"E" earlier application or patent but published on or after the international filing date

"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)

"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

"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

"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

"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

&"document member of the same patent family

Date of the actual completion of the international search
24 Nov. 2011 (24.11. 2011)

Date of mailing of the international search report
05 Jan. 2012 (05.01.2012)

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Form PCT/ISA/210 (second sheet) (July 2009)
# INTERNATIONAL SEARCH REPORT

**Information on patent family members**

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<td>CA 220294 1A1</td>
<td>17.10.1998</td>
<td>None</td>
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<td>GB1 108295A</td>
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<td>21.05.1970</td>
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2011/001642

Continuation of A. CLASSIFICATION OF SUBJECT MATTER
C07C4/08 (2006.01) i
C08J1 1/04 (2006.01) i

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