Title: METHOD OF DELIGNIFYING WOOD

Abstract: A method of delignifying a lignocellulosic raw-material, which contains lignin with a benzylic ring structure. The method comprises carboxylating at least a part of the benzylic ring structure by contacting the raw material at anhydrous conditions with carbon dioxide which is maintained in supercritical conditions to form benzylic carboxylates. The benzyl carboxylate are leached out in an aqueous medium to remove at least a part of the lignin. The present process can be used as a pre-treatment for producing fine mechanical pulp, or producing cellulose. The new method is environmentally friendly in the respect that no sulphur is used, water consumption is small and there might be a reduced need for use of bleaching chemicals.
### INTERNATIONAL SEARCH REPORT

**A. CLASSIFICATION OF SUBJECT MATTER**

**INV. D21C3/00**

According to International Patent Classification (IPC) or to both national classification and IPC.

**B. RELSDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols):

**D21C**

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate of the relevant passages</th>
<th>Relevant to claim</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 5 041 192 A (SUNOL AYDIN K [US] ET AL)</td>
<td>1-15</td>
</tr>
<tr>
<td></td>
<td>20 August 1991 (1991-08-20) cited in the application claims 1,2</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>US 4 714 591 A (AVEDESIAN MICHAEL M [CA])</td>
<td>1-15</td>
</tr>
<tr>
<td></td>
<td>22 December 1987 (1987-12-22) example 1</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>US 4 644 060 A (CHOU YU-ChIA T [US])</td>
<td>1-15</td>
</tr>
<tr>
<td></td>
<td>17 February 1987 (1987-02-17) example 8</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>US 4 308 200 A (FREMONT HENRY A)</td>
<td>1-15</td>
</tr>
<tr>
<td></td>
<td>29 December 1981 (1981-12-29) abstract</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**X** Further documents are listed in the continuation of Box C

**X** See patent family annex

---

<table>
<thead>
<tr>
<th>Special categories of cited documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;A&quot; document defining the general state of the art which is not considered to be of particular relevance</td>
</tr>
<tr>
<td>&quot;E&quot; earlier document but published on or after the international filing date</td>
</tr>
<tr>
<td>&quot;L&quot; document which may throw doubts on novelty or which is cited to establish the publication date of another document or other special reason (as specified)</td>
</tr>
<tr>
<td>&quot;O&quot; document referring to an oral disclosure, use, exhibition or other means</td>
</tr>
<tr>
<td>&quot;P&quot; document published prior to the international filing date but later than the priority date claimed</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Date of the actual completion of the international search</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 June 2009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of mailing of the international search report</th>
</tr>
</thead>
<tbody>
<tr>
<td>29/06/2009</td>
</tr>
</tbody>
</table>

Name and mailing address of the ISA/
European Patent Office, P B 5818 Paleniliaan 2
NL-2280 HV RIJSWIJK
Tel (+31-70) 340-2040, 340-3016
Fax (+31-70) 340-3016

Authorized officer

Naeslund, Per
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 3 707 436 A (O'CONNOR JAMES J) 26 December 1972 (1972-12-26) figure 1</td>
<td>1-15</td>
</tr>
<tr>
<td>A</td>
<td>US 4 397 712 A (GORDY JOHN [CA]) 9 August 1983 (1983-08-09) the whole document</td>
<td>1-15</td>
</tr>
<tr>
<td>Patent document cited in search report</td>
<td>Publication date</td>
<td>Patent family member(s)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 4506544 T</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 9002836 A1</td>
</tr>
<tr>
<td>US 4714591 A</td>
<td>22-12-1987</td>
<td>NONE</td>
</tr>
<tr>
<td>US 4644060 A</td>
<td>17-02-1987</td>
<td>CA 1246551 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 3678034 D1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DK 233886 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0202915 A2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GR 861300 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IE 58427 B1</td>
</tr>
<tr>
<td>US 4308200 A</td>
<td>29-12-1981</td>
<td>NONE</td>
</tr>
<tr>
<td>US 3707436 A</td>
<td>26-12-1972</td>
<td>NONE</td>
</tr>
<tr>
<td>US 4397712 A</td>
<td>09-08-1983</td>
<td>NONE</td>
</tr>
</tbody>
</table>