METHOD OF MANUFACTURE OF PAINT AND ADHESIVE RUBBER FROM VULCANIZED RUBBER

Method of manufacture of paint and adhesive of rubber from vulcanized rubber that is reclaimed, becoming a product that provides impermeability, flexibility and resistance to the pellicle by process of reduction to small particles through cracking beaters mills, immersed in adequate solvents and recovered in ball mills to which is added products such as dyeing, pigments, asphalts, oils, accelerators, resins, etc., which give to the paint or adhesive its final characteristics.
FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Austria</td>
<td>ES</td>
<td>Spain</td>
<td>MG</td>
<td>Madagascar</td>
</tr>
<tr>
<td>AU</td>
<td>Australia</td>
<td>FI</td>
<td>Finland</td>
<td>ML</td>
<td>Mali</td>
</tr>
<tr>
<td>BB</td>
<td>Barbados</td>
<td>FR</td>
<td>France</td>
<td>MN</td>
<td>Mongolia</td>
</tr>
<tr>
<td>BE</td>
<td>Belgium</td>
<td>GA</td>
<td>Gabon</td>
<td>MR</td>
<td>Mauritania</td>
</tr>
<tr>
<td>BF</td>
<td>Burkina Faso</td>
<td>GB</td>
<td>United Kingdom</td>
<td>MW</td>
<td>Malawi</td>
</tr>
<tr>
<td>BG</td>
<td>Bulgaria</td>
<td>GN</td>
<td>Guinea</td>
<td>NL</td>
<td>Netherlands</td>
</tr>
<tr>
<td>BJ</td>
<td>Benin</td>
<td>GR</td>
<td>Greece</td>
<td>NO</td>
<td>Norway</td>
</tr>
<tr>
<td>BR</td>
<td>Brazil</td>
<td>HU</td>
<td>Hungary</td>
<td>PL</td>
<td>Poland</td>
</tr>
<tr>
<td>CA</td>
<td>Canada</td>
<td>IT</td>
<td>Italy</td>
<td>RO</td>
<td>Romania</td>
</tr>
<tr>
<td>CF</td>
<td>Central African Republic</td>
<td>JP</td>
<td>Japan</td>
<td>SD</td>
<td>Sudan</td>
</tr>
<tr>
<td>CG</td>
<td>Congo</td>
<td>KP</td>
<td>Democratic People's Republic of Korea</td>
<td>SE</td>
<td>Sweden</td>
</tr>
<tr>
<td>CH</td>
<td>Switzerland</td>
<td>KR</td>
<td>Republic of Korea</td>
<td>SN</td>
<td>Somalia</td>
</tr>
<tr>
<td>CI</td>
<td>Côte d'Ivoire</td>
<td>LI</td>
<td>Liechtenstein</td>
<td>SU*</td>
<td>Soviet Union</td>
</tr>
<tr>
<td>CM</td>
<td>Cameroon</td>
<td>LK</td>
<td>Sri Lanka</td>
<td>TD</td>
<td>Chad</td>
</tr>
<tr>
<td>CS</td>
<td>Czechoslovakia</td>
<td>LU</td>
<td>Luxembourg</td>
<td>TG</td>
<td>Togo</td>
</tr>
<tr>
<td>DE</td>
<td>Germany</td>
<td>MC</td>
<td>Monaco</td>
<td>US</td>
<td>United States of America</td>
</tr>
</tbody>
</table>

+ It is not yet known for which States of the former Soviet Union any designation of the Soviet Union has effect.
METHOD OF MANUFACTURE OF PAINT AND ADHESIVE RUBBER FROM VULCANIZED RUBBER.

The present invention is related to a method for obtaining industrial paint and adhesive, with proper coloration, approximated to vulcanized rubber which is used as basis prime material.

The method is developed first from vulcanized rubber artefacts which have already been used such as pneumatic, scraps or others within a system that causes in the formation of free radicals in very small particles of rubber in mixture or in suspension in solvents forming a product that is posteriorly combined with fillers, oils, resins, dryers, curing agents, asphalts, etc. According to public knowledge, the adherence of the rubber in the composition of paints and adhesives, guarantees to the final product important and indispensable characteristics to its application such as flexibility, adherence, resiliency, etc. Usually when such requirements are necessary, according to its application, being very used in the conventional technique the incorporation of raw rubber, which can remain in that state or in others, after, this application is submitted to a vulcanization process or cure.
Rare are the occasions when the formulation of paints or adhesives incorporate or employ reclaimed rubber. When this happens, normally it is applied in the condition of fillers, presenting only a reduction in the final product cost, in order to get better commercialization. However, this causes serious inconveniences when employed in small quantities, the reclaimed rubber turns the product rough and irregular, when a smooth and homogenous aspect is necessary. In order to eliminate such disadvantages and inconveniences in the traditional practice and wishing to permit a perfect utilization of the characteristics of the reclaimed rubber and also to obtain a smooth and homogenous final product, this present method has been developed.

According to the manufacture method describe as follows, a reclaimed rubber in perfect integration with the solvent in which it is prepared, is obtained with the addition of other products such as fillers, resins, corants, asphalts, anti-oxidants, oils, etc.

This method consists in obtaining a reclaimed rubber from a vulcanized rubber reduced to small particles through industrial cracking mills of scraps of tyres to be reccaped.

These small particles of vulcanized rubber are selected by passing through separator screens, leaving the refused material to be crushed again in the cracking mills.
These particles are immersed in to adequate solvents, being
given preference to those which belong to the formularization of
paint or the adhesive, to which other products such as oils,
resins, asphalts, pigments, corants, degraders, vulcanizer
agents, etc are added.

This mixture is placed in mills for homogenization and
recuperation of vulcanizer rubber.

In this way, the paint or the adheses can come out ready
from the milling or in case the principal product, is prepared a
composition might be done considering that the preparation of the
rubber is made as previously describe in document PI 8500981.

Here are some examples, which have as objective the
presentation of some practical aspects of the mentioned invention
and shouldn't be considerate as limitatives in relation to the
possibilities pertinent to the invention and understanding of
inventive unity

EXAMPLE 1

To 5Kg of toluene, 1 Kg of scraps of tyres that have passed
through a screen of 5 wires/centimetre and 100gr of oil, is
added. The mixture has been previously beated in a steel ball
mill composed of a league of iron and manganese, during 48h. The
final product obtained has been mixed with 500g of asphalt and
dassec in a 3 cylinder mill to be uniform. The final product has
been co-recert with solvent to be painted with pistol and applied
on a iron sheet or wood properly prepared. The product presented
a smooth, homogeneous and flexible surface.
To 5kg of trichloroethylene, 1kg of scraps of tyres that have passed through a screen of 5 wires/centimetre and 100gr of oil is added. The material has been beaten in a ball mill with steel balls, brass balls during 30h. 10gr of sulphur and 2gr of disphenylquanadine, 20gr of resine phenolic non-reactive, passed in a 3 cylinder mill was added to be uniform. A sample of square wooven and a sheet of polyethilene with low density have been prepared. A layer of the product was applied on the surface of two samples. On this painted ply another superposed one was applied forming between them a strong adherence to the cement slab also painted with the same product, a sheet of polyethylene was applied, presenting to the cement slab a total impermeability to water.
CLAIMING

1- Method of manufacture of paint and adhesive of rubber from vulcanized rubber obtained at first from vulcanized rubber by reduction process to small particles through beater mills, immersed in adequate solvents preferably the same of the paint and adhesive and recovered in a ball mill characterized for producing paint or adhesive adding products like dyeing, pigments, asphalts, oils, accelerators, resins, etc., that give to the paint and adhesive its final characteristics.

2- Method according to a claiming 1 characterized by the fact of the addiction of pigments, corants, fillers, asphalt, oils, accelerations, etc., been added together with the vulcanized rubber to be reccaped.

3- Method according to claiming 1 characterized by the fact that through the milling simultaneous regeneration of the vulcanized rubber and homogenization of the mixture and the final product is obtained.

4- Method that according to claiming 1 characterized by the fact that after vulcanized rubber has passed through the ball mills other products can be incorporate.
INTERNATIONAL SEARCH REPORT

International Application No PCT/BR 91/00014

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5: C 08 J 11/20, 11/06, 11/10, 7/02, 3/12; C 09 D 117/00.

II. FIELDS SEARCHED

<table>
<thead>
<tr>
<th>Classification System</th>
<th>Classification Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int.Cl. 5</td>
<td>C 08 J 3/12, 7/02, 11/04, 11/06, 11/10, 11/20, C 09 D 117/00, C 09 J 117/00</td>
</tr>
</tbody>
</table>

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched *

III. 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 No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Derwent Acession No. 68-639 51P (WPI) &amp; JP, B, 66/11 629 (HAYAKAWA GOMU K.K.) 1966 (66).</td>
<td>(1)</td>
</tr>
<tr>
<td>Y</td>
<td>Derwent Acession No. 77-315 13Y (WPI) &amp; JP, A, 50/98 987 (TOYO RUBBER IND. K.K.) 06 August 1975 (06.08.75).</td>
<td>(1,3)</td>
</tr>
<tr>
<td>A</td>
<td>WO, A1, 86/05 192 (OLIVEIRA DA CUNHA LIMA) 12 September 1986 (12.09.86), see claims.</td>
<td>(1)</td>
</tr>
</tbody>
</table>

* 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 document 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
**Y** later document published after the international filing data or priority data 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
**W** 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
**A** document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search: 10 October 1991 (10.10.91)

Date of Mailing of this International Search Report: 23 October 1991 (23.10.91)

International Searching Authority: AUSTRIAN PATENT OFFICE

Signature of Authorized Officer: [Signature]

Form PCT/ISA/210 (second sheet) (January 1985)
Anhang zum internation- 
nalen Recherchenbericht  
über die internationale  
Patentanmeldung  
Nr.

In diesem Anhang sind  
die Mitglieder der  
Patentfamilien der im  
obengenannten interna- 
tionalen Recherchenbe- 
richt angeführten  
Patentdokumente ange- 
gaben. Diese Angaben  
dienen nur zur Unterrich- 
tung und erfolgen ohne  
Gewähr.

<table>
<thead>
<tr>
<th>Im Recherchenbericht</th>
<th>Datum der Veröffentlichung</th>
<th>Mitglied(er) der Patentfamilie</th>
<th>Datum der Veröffentlichung</th>
</tr>
</thead>
<tbody>
<tr>
<td>angeführtes Patent-</td>
<td>Publication date</td>
<td>Patent family member(s)</td>
<td>Publication date</td>
</tr>
<tr>
<td>dokument</td>
<td>Date de publication</td>
<td>Membre(s) de la famille de</td>
<td>Date de publication</td>
</tr>
<tr>
<td>Patent document cited in search report</td>
<td>Document de brevet cité dans le rapport de recherche</td>
<td>brevets</td>
<td></td>
</tr>
</tbody>
</table>