

UNITED STATES PATENT OFFICE

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PROCESS OF DECOMPOSING LIGNIFIED FIBERS

No Drawing. Application filed January 21, 1930, Serial No. 422,481, and in Germany January 25, 1929.

The present invention relates to a process of decomposing lignified fibers, especially wood, according to the sulfite pulp process.

In the sulfite pulp process the wood, generally in form of chips, is decomposed by an aqueous solution of acid calcium sulfite at temperatures of about 130–150°, said process being described in literature f. e. in "Artificial Silk" by Valentin Hottenroth, London 1928 page 48 ff. This process however requires a prolonged time say up to 16 hours.

Now we have found that the decomposition of wood according to the sulfite pulp process can be achieved in a highly reduced time without injuring the product thereby by carrying out the process in the presence of oxygen or gases containing oxygen, which gases are introduced into the digester during the boiling process thus allowing the oxygen to act upon the boiling wood.

The quantity of oxygen introduced may be varied within the widest limits, generally we add about 2–10% of oxygen calculated on the amount of the wood to be decomposed. The reduction of time achieved depends on the quantity of oxygen introduced, thus the process requiring only one fourth of the time usually necessary when adding about 10% of oxygen. Our invention can be performed in various manners; for example the oxygen can be continuously introduced into the boiler during the whole process, or it can be added interruptedly in portions f. e. after each ten minutes. The oxygen may be introduced directly into the digester or it may be passed into the sulfite lye when the same is caused to circulate by pumping in a cycle during the boiling process. Before starting with introducing the oxygen, we generally heat the reaction mixture to the decomposition temperature, say 130–150°.

The following example serves to illustrate our invention, without limiting it thereto:—

Example.—On one hand 350 kgs. of chips of red pine wood are heated with aqueous acid calcium sulfite lye to 140–150° in the known manner while pumping the lye in a cycle. For finishing the decomposition process 16¼ hours boiling (i. e. without filling

the digester and heating to the boiling temperature) is necessary.

On the other hand the same process is carried out with the addition of oxygen by introducing into the sulfite lye, after having reached the decomposition temperature each ten minutes about 1 kg. of oxygen from a bomb. The process is complete after 4¼ hours.

We claim:—

1. The process which comprises decomposing wood according to the sulfite pulp process with the addition of oxygen.

2. The process which comprises decomposing wood according to the sulfite process with the addition of 2–10% of oxygen calculated on the amount of wood to be decomposed.

3. The process which comprises heating a mixture of chips of red pine wood and acid calcium sulfite lye to about 130–150° and then adding about 10% of oxygen, calculated on the amount of the wood, in small portions to the reaction mixture in the course of about 4 hours, thereby maintaining the temperature.

In testimony whereof, we affix our signatures.

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