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PROCESS FOR THE PRODUCTION OF ACID-PROOF FELTS FOR PAPER MAKING MACHINES

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This invention relates to the production of dry-felts for the use in paper making machines being protected against the destroying influence of present acid especially sulfuric acid.

It is generally known that sulfuric acid is formed by hydrolysis from the aluminium sulfate or alum resp. as are used for gluing purposes in the paper production process. The sulfuric acid bears a destroying influence on the fibre material, particularly on that of the dry-felts, because the use of water leads to a gradual concentration of said acid in the dry-felts resulting in their rapid wasting at the high temperatures prevailing of up to 130° of Celsius.

It has been tried repeatedly to counter-act the said destroying influence of the acid by either wrapping-up the single fibre with a protective layer (synthetic asbestos) or, for instance, by neutralising the acid by ammonia gas blown upon the surface of the felt in the paper-machine. However, in practice, such methods could not find a wide field of application, as on the one hand a protective cover ought to be entirely poreless—which is not the case with the synthetic asbestos or other inorganic condensations—and as on the other hand the treatment in gaseous ammonia necessitated special installation in the paper making machines and, moreover, caused trouble to the operators' respiration. Although the next step was to protect the felt by means of an acid-combining alkaline impregnation, same could not be carried out, as in most cases it was the question of wool felts which are by far still less resistant to alkali than to acid.

The generally known compounds which mainly show an alkaline reaction corrode the felt and, therefore, cannot be used. However, using neutral impregnating mediums according to this invention, the felts are so thoroughly impregnated that it is sufficient for a rather long course of operation without the felt being damaged in any way.

Now, this invention comprises a method according to which the felts are impregnated before they are used—with aldehyde-ammonia compounds. These compounds are entirely neutral and disintegrate into aldehyde and ammonia under the action of the acid formed in the felt; the ammonia forming with the sulfuric acid neutral ammonia-sulfate. In case the aldehyde is formaldehyde, same exerts furthermore a tanning action on the fibre.

The following may be mentioned as an example of such an impregnation: After washing and fulling, the felt is impregnated with an approx. 20% solution of hexamethylentetramin in water, then stretched on the calender, and dried.

It has been also found that also other aldehyde compounds of a neutral action are suitable for such a treatment of these felts. Therefore, this invention provides for the use of aldehyde-amin compounds, for instance alkylaminomethanoles, which form a neutral amin-sulfate with the sulfuric acid formed.

The impregnation of the felts by means of aldehyde-ammonia and aldehyde-amin compounds may be carried out either before the felts are used or also during their use.

The suggestion was already made to atomize other chemicals of an alkaline reaction (ammonia gas or the like) during the course of operation of the felt on the paper-machine. In this case, however, the quantities of the solution would have to match exactly the acid contents of the felt, as any excessive quantity—let it be ever so small—must be of disastrous consequences for the felt, on account of the alkaline reaction, and under consideration of the temperatures prevailing on the paper-machine. In order to find out the exact quantities of such well-known chemical solutions, it will be necessary to permanently check-up the p-H value in the mostly continually working felt which would be time taking, very formal, and could therefore hardly be accomplished.

When the chemical solutions are used as provided for by this invention, it will not be necessary to adapt the additions of the solutions exactly to the acid contents of the felt, as in this case an excessive quantity will not be of any detrimental influence on the felt whatsoever, on account of the neutral character of the said compounds. This means an extraordinary profit of time, labour, and safety of operation for the paper maker.

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