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(54) A method of preparing pulps for manufacturing sized papers by the addition of only one sizing agent and related sizing agent.

(57) A method for continuously producing sized papers, uses only one sizing composition admixed to the paper pulp before feeding the paper machine, said sizing composition consisting of mixtures of aqueous solutions of aluminum sulfate and aqueous dispersions of gemma rosin and/or tall oil modified or not with maleic anhydride and/or fumaric acid with possible addition of cationic holdup agents.

A method of preparing pulps for manufacturing sized papers by the
addition of only one sizing agent and related sizing agent

The present invention relates to a method of preparing pulps for
5 manufacturing sized papers by the addition of only one sizing agent
and related sizing agent.

The invention is particularly suitable for continuous manufacturing
of "sized" papers, i.e. papers suitable for writing, that is of
10 "nonabsorbent" type.

It is known that papers are usually absorbent and on account of said
absorption the writing inks smudge easily on the writing line.

To obviate this general disadvantage papers are used being
15 impregnated or premixed with products that prevent the natural
absorbent effect of the paper, these products being usually sizing
agents.

In particular, the product can be used for making papers meet the
requirements of flotation tests with ordinary ink, such as Pelikan
20 4001 ink and crossed lines test with different inks, such as
"Sheaffer" blue ink, as well as water absorption tests according to
Cobb method (UNI 6437-69 Italian standards).

At the present state of the art, in the paper production, the sizing
25 agent adding step, consist in adding different products into the
pulp for paper manufacturing, before introduction into the paper
machine, according to the following "sizing" principle:

- "sizing" by the conventional method with a basis of rosin, which
is carried out by the addition of two products to the pulp in
30 separate and distinct steps, one after the other:

1. aluminum sulfate in aqueous solution and successively or

previously,

2. aqueous dispersion of resins of natural origin such as gemma rosin or tall oil rosin;

- the above is the most frequently used method;

5 - "sizing" by means of synthetic products, which is carried out by the addition of an only product of synthetic origin of the ketene group or polymers of various origins having bonding characteristics; - this method is not so much used since the resulting papers have different characteristics than those obtained with the conventional
10 method and on account of its being incompatible with said conventional method.

The disadvantages of the two above-mentioned currently-used processes consist essentially in that:

15 - with respect to sizing with a basis of rosin with the addition of two products added successively one after the other:

- this method requires careful checks of the paper machines in order to maintain adequate pH of the pulps and exact amounts of aluminum sulfate in backwater and waste water or waste (waste
20 products);

- the excess aluminum sulfate is discharged with working water thus causing pollution;

- the necessity of maintaining the pulps with acid pH does not allow for the use of alkalinizing loadings, such as calcium
25 carbonate;

- the paper thus obtained has acid pH.

- with respect to sizing with synthetic products:

- higher costs are involved;

- sizing response is not always given when the process is
30 completed therefore the degree of sizing obtained can be valued only after some days;

- it is usually incompatible with the conventional method and requires simultaneous replacement practically on all the machines or units of the paper mill;
- the paper thus obtained is different as regards applications
5 thereof and printing compared with the paper obtained by the conventional method;
- it usually makes the paper resistant to kneading and reutilization of machine broke (mill broke) difficult;
- pollution is increased.

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The object of the present invention is to obviate the above-mentioned disadvantages particularly so as:

1. not to modify the characteristics of the paper with respect to the one obtained by the conventional process and at the same time:
- 15 2. to obtain paper with neutral pH;
3. to make sizing independent of the characteristics of the mixtures and pH thereof;
4. to allow checking the degree of sizing immediately at the end of the machine step production paper;
- 20 5. to reduce sizing costs;
6. to reduce machine checks;
7. to allow for the use of alkalinizing loadings and in particular of calcium carbonate;
8. to reduce pollution;
- 25 9. to eliminate dust during printing.

The invention as claimed solves the problem by previously preparing a mixture of aluminum sulfate in aqueous solution (component A) with aqueous dispersion of resin of gemma rosin and/or
30 tall oil rosin modified or not with maleic anhydride and/or fumaric acid (component B).

In the preferred embodiment the following products are admixed:

- component A: about 40 wt % commercial solutions of $Al_2(SO_4)_3 \cdot 18H_2O$;
- component B: about 30 wt % aqueous dispersion of gemma rosin
5 and/or tall oil rosin modified or not with maleic anhydride or
fumaric acid.

In a further preferred embodiment of the invention the proportions of said two components A and B occur by admixing from about 0.3 to 2
10 (preferably 0.6) weight portions of the component A and 1 weight portion of the component B.

In a further preferred embodiment of the invention the amount of sizing agent derivative by the mixture of the components A + B
15 according to the above-mentioned procedure to be used for obtaining sizing corresponding to the sizing obtained by the conventional method with a basis of rosin, should be calculated making reference only to the contained component B.

For example, for a pulp which by the conventional method should
20 require an amount of the component B equal to 1, an amount of the new product (for instance effected with component A = 0.3 + component B = 1) equal to 1.3 will be used.

Obviously, depending on the pulp, after the addition of the only one
25 sizing agent according to the present invention, the conventional cationic holdup agents can be added as usual. The amount of the component A in the product obtained in accordance with this invention is considerably reduced with respect to the conventional process with attendant cost savings.

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The embodiments discussed are to be considered as exemplary only,

and the true scope of the invention should be determined by a consideration of the 'appended claims.

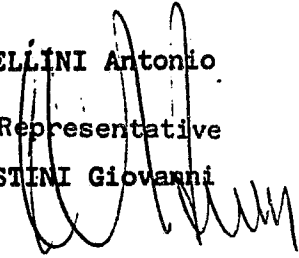
Udine, January 20, 1986

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Claims:

1. Method of preparing pulps for the manufacture of sized papers by the addition of only one sizing agent and related sizing agent, particularly suitable for use in continuous producing of sized papers, characterised in that said method utilizes only one sizing addition agent to the paper pulp before feeding the paper machine, said sizing addition agent comprising the product of admixture of aqueous solutions of aluminum sulfate and aqueous dispersions of gemma rosin and/or tall oil rosin modified or not with maleic anhydride and fumaric acid with possible addition of cationic holdup agents.

2. A method of sizing pulps for paper manufacturing by previously prepared mixtures in accordance with the present invention as claimed in claim 1, characterised in that a mixture of aluminum sulfate aqueous solution (component "A") is previously prepared with aqueous dispersion of resin and/or vegetable oils consisting essentially of gemma rosin and/or tall oil rosin modified or not with maleic anhydride and/or fumaric acid (component "B").

3. A method as claimed in claims 1 and 2, said method using only one sizing agent comprising a mixture of the following components:

- component "A": $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$ solutions, about 40 wt %;
- component "B": aqueous dispersion of gemma rosin and/or tall oil rosin modified or not with maleic anhydride and/or fumaric acid about 30 wt %.

4. A method as claimed in the preceding claims, said method using a sizing agent wherein the ratios of said component "A" to said component "B" occur by admixture of about 0.3 - 2. wt portions of

the component A to 1 wt portion of the component "B".

5. A method as claimed in the preceding claims, said method using a sizing agent wherein the ratios of said component "A" to said component "B" occur by admixture of about 0.6 wt portions of the component "A" to 1 wt portion of the component "B".

6. A method as claimed in the preceding claims, characterised in that the amount of the sizing agent derivative by admixture of the components "A" + "B" thus obtained to be used for obtaining sizing corresponding to the one obtained by the conventional method which provides for the addition of said two components in two distinct steps, first the component "A" and then the component "B", must be such as to respect the amounts used of the only component "B".

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7. Sizing addition agent for sizing the pulps for manufacturing sizing paper in accordance with the method as claimed in claim 1, characterised in that it consists essentially of:

- aluminum sulfate $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$, 0.12 to 0.8 weight portions referred to the dry weight present in the solutions;

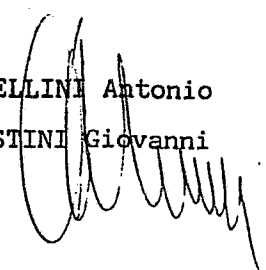
- plant resin gemma rosin and /or tall oil rosin, about 0.3 weight portions, referred to the dry weight present in the dispersion, the whole in aqueous solution and dispersion varying from 30 to 40%.

8. A sizing addition agent for sizing the pulps for manufacturing sized paper in accordance with the method as claimed in claim 1, wherein said component products (aluminum sulfate + plant resin) are in aqueous solution and dispersion in a range comprised from 20 to 50%, preferably from 30 to 40%.

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European Patent
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EUROPEAN SEARCH REPORT

0192952

Application number

EP 86 10 0727

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	GB-A-2 050 453 (TENNECO CHEMICALS) * Whole document *	1-4, 6-8	D 21 H 3/00
X	DE-C- 897 648 (ZSCHIMMER & SCHWARZ) * Page 1, line 1 - page 2, line 58; examples 1,2 *	1-8	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			D 21 H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29-04-1986	Examiner NESTBY K.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			