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54 **Paper machine polymer systems and methods for their use.**

57 A process for the preparation of paper suitable for use as cover sheets for the production of gypsum wallboard which comprises forming a suitable aqueous slurry of paper pulp, passing the slurry through paper-making apparatus wherein successively are added a neutral size material and a retention aid, and wherein the slurry is additionally passed through a machine chest, a plurality of fan pumps, apparatus for forming the paper and subsequently drying the paper, the improvement which comprises the step of introducing a high molecular weight low cationic charge density retention aid polymer into the slurry immediately at the discharge situs of the fan pumps, whereby contaminants present in the slurry are retained and are not deposited on the surfaces of the paper-making apparatus. In an improved embodiment, a small amount of the high molecular weight low charge density polymer is utilized to replace cationic starch to act as a retention aid for the neutral size material, and a low molecular weight high charge density polymer is introduced into the machine chest as a coagulant to further promote the retention of contaminants present in the slurry to avoid their being deposited on the surfaces of the paper-making machine.



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,Y	ABSTRACT BULLETIN OF THE INSTITUTE OF PAPER CHEMISTRY, vol. 52, no. 9, March 1982, abstract no. 9929, page 1050, Appleton, Wisconsin, US; J.G. PENNIMAN Jr.: "Analyzing a new chemical approach to system stability in newsprint", & PAPER TRADE J. 165, no. 14: 34-35 (July 30, 1981)	1,7	D 21 D 3/00
X,Y	--- TAPPI JOURNAL, vol. 67, no. 11, November 1984, pages 72-76, Atlanta, Georgia, US; W.E. SCOTT: "A review of wet-end chemistry process control instrumentation" * Page 74, left-hand column, paragraph 4("dissolved organics"); page 75, right-hand column; page 76 *	1,7	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
X,Y	--- TAPPI JOURNAL, vol. 66, no. 3, March 1983, pages 141-144, Atlanta, Georgia, US; R.A. STRATTON: "Effect of agitation on polymer additives" * Whole article, particularly page 144, middle column, paragraphs 4,5; page 144, right-hand column, lines 9-13 * --- -/-	1,7	D 21 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-07-1986	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			



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X,Y	ABSTRACT BULLETIN OF THE INSTITUTE OF PAPER CHEMISTRY, vol. 50, no. 6, December 1979, page 596, abstract no.5588, Appleton, US; R.A. STRATTON: "Principles of use of polymers as retention aids", & PROC. NE. REG. CONF. WET-END TECHNOL. (Boston), 16th November 1978: 21-42 (IPC, Appleton, WI)	1,7	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
Y	DE-A-1 546 237 (BADISCHE ANILIN-& SODA-FABRIK AG) * pages 4-6; example 4 *	1,7	
A	TAPPI, vol. 63, no. 4, April 1980, pages 87-91, Atlanta, US; J. MARTON: "The role of surface chemistry in fines-cationic starch interactions" * Page 90 *	1,3-5	
A	TAPPI JOURNAL, vol. 66, no. 8, August 1983, pages 85-89, Atlanta, Georgia, US; S. D'INCAU: "Estimates of the rates of strain in the flow in the approach system of a paper machine" * Page 87, middle column, 3rd paragraph ("Pump"); page 88, middle column *	1	
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A	ABSTRACT BULLETIN OF THE INSTITUTE OF PAPER CHEMISTRY, vol. 52, no. 8, February 1982, page 1002, abstract no. 9477, Appleton, Wisconsin, US; Y. KUBOTA: "Method for strengthening paper", & JP - A - 10 709 981 (KYOWA SANGYO CO.) 25-081981		

A	POLYMER SCIENCE AND TECHNOLOGY, vol. 2, WATER-SOLUBLE POLYMERS, 1973, pages 3-19, Plenum Prss, New York, US; W.A. FOSTER: "Water-soluble polymers as flocculants in papermaking"		

A	ABSTRACT BULLETIN OF THE INSTITUTE OF PAPER CHEMISTRY, vol. 53, no. 6, December 1982, page 676, Abstract no. 6196, Appleton, Wisconsin, US; J.E. MAHER: "Role of alkenyl succinic anhydride in alkaline papermaking", & TAPPI PAPERMAKERS CONFERENCE (Atlanta) Proc.,; 45-50 (April 5-8, 1982)		TECHNICAL FIELDS SEARCHED (Int. Cl. 4)

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