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Bleaching

00001

PI: 20202254 JA: 0202

TI: Influence of DHT operating conditions on bleachability pulp chemistry and filtrate chemistry

AU: Eiras K M M; Colodette J L

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 229-241 <Vicososa, Brazil: Federal University of Vicososa, 2001, 2 vols, 870 pp> (K)

CT: BLEACHING SEQUENCE/ CHLORINE DIOXIDE/ CONFERENCE/ ECF BLEACHING/ ELEMENTAL CHLORINE FREE BLEACHING/ KAPPA NUMBER/ KRAFT PULP/ PULP QUALITY/ TEMPERATURE/ YIELD/

AB: Work to optimise the D(HT) stage (D0 at high temperature) kappa factor, pH, temperature, and time for eucalyptus pulp bleaching with the sequence D(HT)EopD and to evaluate the impact of this stage on pulp yield/quality and effluent quality was carried out. The most suitable conditions to operate the D(HT) stage include a 0.22 kappa factor, pH3-4, 95 deg C and 120-180 min and higher delignification efficiency and lower selectivity and brightening action in relation to a conventional D0 stage for similar kappa factor and pH values was observed. The D(HT) stage time and temperature does not appear to significantly affect the optimum pH to run this stage. The high temperature and time used decreases metals content and formation of OX in the pulp and oxalate and adsorbable organic halogen (AOX) in the filtrates. The D(HT) stage gives improved pulp brightness stability and decreased chlorine dioxide requirement by 10%-12%, thereby decreasing bleaching costs. It also decreases overall bleaching yield, viscosity, pulp xylan and hexeneuronic acid contents, as well as increasing refining energy requirement, although it has no significant impact on pulp strength properties. (5 fig, 8 tab, 8 ref)

SO: B

00002

PI: 20202255 JA: 0202

TI: Kraft pulp peroxide bleaching by use of new activating systems

AU: Medvedeva E N; Rybalchenko N A; Babkin V A

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 243-246 <Vicoso, Brazil: Federal University of Vicoso, 2001, 2 vols, 870 pp> (K)

CT: BRIGHTNESS/ CONFERENCE/ DEGREE OF POLYMERISATION/ HYDROGEN PEROXIDE/ INORGANIC SALT/ KRAFT PULP/ PEROXIDE BLEACHING/

AB: Hardwood and softwood kraft pulp alkaline peroxide bleaching was studied in the presence of new activating systems, including 1,10-phenanthroline and inorganic salts, which act as hydrogen peroxide stabilisers. The kinetics of hydrogen peroxide decomposition under the conditions of alkaline peroxide bleaching without lignocellulose were investigated in order to make clear the nature of 1,10-phenanthroline activating action. Under the conditions studied, the reaction of hydrogen peroxide decomposition with and without 1,10-phenanthroline can be satisfactorily described by a first order equation for hydrogen peroxide. In experiments with increasing pH from 10-12, the rate constant of hydrogen peroxide decomposition increased by a factor of 4.9, 3.6 and 6.1 at 60, 70 and 90 deg C, respectively. Kinetic studies have shown that at pH 10-11 and 12, the hydrogen peroxide decomposition rates in the 0-90 deg C interval of temperatures reduced compared with the control. The combined use of 1,10-phenanthroline and the salts used in this study resulted in an essential increase in hardwood and softwood kraft pulp brightness. (2 fig, 1 tab, 11 ref)

SO: B

00003

PI: 20202256 JA: 0202

TI: Recent progress in pulp bleaching catalysed by polyoxometalates

AU: Evtuguin D V; Gaspar A; Pascoal Neto C

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 247-254 <Vicoso, Brazil: Federal University of Vicoso, 2001, 2 vols, 870 pp> (K)

CT: CATALYST/ CONFERENCE/ EUCALYPTUS/ OXYGEN BLEACHING/ OXYGEN DELIGNIFICATION/

AB: Heptamolybdopentavanadophosphate heteropolyanion (HPA-5) used as a catalyst, oxidises the lignin in unbleached pulp and is reoxidised by oxygen in the same process step. HPA-5 belongs to the Keggin type and has a redox potential of around 0.60V at pH 2. In acidic solutions, HPA-5 is a complex mixture of heteropolyanions and vanadate. The vanadate ions are believed to be important in the catalytic oxidation of lignin. Oxygen bleaching experiments were carried out in the presence of HPA-5 in ethanol-water and aqueous media. The presence of ethanol improves the rate and the selectivity of delignification. The use of ethanol also reduces the extent of delignification and increases the viscosity making it unattractive for industrial application. The addition of manganese (II) salts in the last phase of the catalyst synthesis improves results in aqueous media. As well as the high selectivity of the lignin oxidation, HPA-5-based oxygen bleaching is potentially well adapted for application in the total effluent free (TEF) plants concept. (4 fig, 3 tab, 9 ref)

SO: B

00004

PI: 20202257 JA: 0202

TI: Studies on the mechanisms of lignin degradation in new pulp bleaching techniques

AU: Capanema E A

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 255-262 <Vicosa, Brazil: Federal University of Vicosa, 2001, 2 vols, 870 pp> (K)

CT: BIOBLEACHING/ CONFERENCE/ DELIGNIFICATION/ HYDROGEN PEROXIDE/ LACCASE/ LIGNIN MODEL COMPOUND/ OXIDATION/ REACTION MECHANISM/ RESIDUAL LIGNIN/

AB: A comparative study was conducted based on investigation of model compound reactions and changes in the structure of residual lignin in pulp delignification with the Laccase-Mediator Systems (LMS) and in the catalytic hydrogen peroxide delignification. It was found that the mechanism of oxidation of lignin model compounds is very similar in these catalytic systems, however, there are appreciable differences in the mechanisms of residual lignin degradation. In pulp delignification with the LMS the oxidation of lignin is initiated by formation of the cation-radical followed by cleavage of the alpha-beta bonds in the side chains. The lignin oxidation in the catalytic hydrogen peroxide process, however, is initiated by catalytic oxidation of alpha hydroxyl groups to the corresponding ketone structures. Also, oxidation of the residual lignin in the LMS occurs mostly on the fibre surface resulting in minor lignin alterations inside the fibre, while degradation of lignin in hydrogen peroxide delignification catalysed by binuclear manganese (IV) complexes occurs homogeneously. (6 fig, 1 tab, 24 ref)

SO: B

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PI: 20202258 JA: 0202

TI: Oxygen and ozone bleaching of eucalyptus kraft pulp with and without UV radiation

AU: Carrijo K C

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 263-269 <Vicosa, Brazil: Federal University of Vicosa, 2001, 2 vols, 870 pp> (K)

CT: CONFERENCE/ EUCALYPTUS/ KAPPA NUMBER/ OXYGEN BLEACHING/ OZONE BLEACHING/ PHOTOCHEMICAL DEGRADATION/ RESIDUAL LIGNIN/ ULTRAVIOLET RADIATION/ VISCOSITY/

AB: Eucalyptus kraft pulp bleaching using oxygen (O), ozone (Z) and oxygen followed by ozone (OZ) was studied both with and without ultraviolet (UV) radiation. These stages were conducted using a conventional kraft pulp over a range of pulp consistencies (5, 10, 15, 25 and 30%) and kappa number and pulp viscosity were determined after every stage. It was found that UV light significantly increased the delignification of oxygen, ozone and oxygen/ozone pulp treatments. However, in treatments using ozone, the irradiation was deleterious to fibre quality. Irradiated oxygen bleaching gave the best results for kappa number reduction and fibre quality. (3 fig, 23 ref)

SO: B

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PI: 20202259 JA: 0202

TI: Photobleaching of cellulose pulp process: photodegradation of beta-O-4 syringyl and guaiacyl lignin models

AU: Felicio C M

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 271-278 <Vicoso, Brazil: Federal University of Vicoso, 2001, 2 vols, 870 pp> (K)

CT: BLEACHING/ CONFERENCE/ LIGNIN MODEL COMPOUND/ PHOTOCHEMICAL DEGRADATION/ REACTION MECHANISM/ ULTRAVIOLET RADIATION/

AB: The photolysis of three guaiacyl and syringyl beta-O-4 lignin model compounds with a phenol or alpha-O-4 substituted in the penacyl moiety was studied. Three different processes were considered: oxygen active species (OAS) being generated by the photodegradation of hydrogen peroxide, single oxygen generation of photosensitisation using methylene blue and OAS generated by photocatalysis using titanium dioxides. The fragments demonstrated a great dependence of the substituent on the phenacyl moiety. Fragmentation in the ether bond beta-O-4 appears to be the more important route for the degradation mechanism. For the unprotected phenolic model, the production of phenolic fragments was higher than in the labile substituted alpha-O-4 model, however, the photodegradation of a similar protected model in the first of the photolysis systems yielded coniferyl alcohol as the principal product. The other two processes appeared to be the most aggressive of the studied models. (9 fig, 1 tab, 14 ref)

SO: B

00007

PI: 20202261 JA: 0202

TI: Oxidation reaction of lignin model compounds with polyoxometalate

AU: Bianchi M L; Hill C; Schuchardt U

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 285-292 <Vicoso, Brazil: Federal University of Vicoso, 2001, 2 vols, 870 pp> (K)

CT: CONFERENCE/ DELIGNIFICATION/ LIGNIN MODEL COMPOUND/ OXIDATION/ REACTION MECHANISM/

AB: The objective of this study was to obtain more information on the mechanism of oxidation of a non-phenolic lignin compound, in this case 1,2-di-(4-methoxyphenyl)-ethanone, by the Keggin type polyoxometalate (SiVW11O40)⁵⁻. Oxidation reactions were conducted at 60 deg C under argon or oxygen atmosphere and the consumption of the polyoxometalate was monitored. It was found that the polyoxometalate mainly attacks the aliphatic part of the non-phenolic lignin model compound. It is proposed that the reaction of 1,2-di-(4-methoxyphenyl)-ethanone with the polyoxometalate occurs as follows. The oxidation leads to a C-H bond cleavage, then the structure formed in this step reacts with the solvent to give side chain substituted derivatives (acetate and 2-hydroxy-1,2-di-(4-methoxyphenyl)-ethanone. In a subsequent step, 2-hydroxy-1,2-di-(4-methoxyphenyl)-ethanone reacts with the polyoxometalate to form, preferentially, the ketone and traces of aldehyde. (5 fig, 2 tab, 12 ref)

SO: B

00008

PI: 20202263 JA: 0202

TI: Silicate replacement by DTPMPA in peroxide bleaching of industrial

chemimechanical pulps

AU: Barboza O M

CI: 7th Brazilian Symposium on the chemistry of lignins and other wood components, Belo Horizonte, Brazil, 2-5 Sept. 2001, Poster presentations, pp 301-308 <Vicoso, Brazil: Federal University of Vicoso, 2001, 2 vols, 870 pp> (K)

CT: BRIGHTNESS/ BRIGHTNESS STABILITY/ CHELATING AGENT/ CHEMIMECHANICAL PULP/ CMP/ CONFERENCE/ HYDROGEN PEROXIDE/ PEROXIDE BLEACHING/ PHOSPHONATE/

AB: The bleaching performance of an industrial chemimechanical pulp when the silicate is replaced by diethylenetriamine pentamethylene phosphonic acid (DTPMPA) in peroxide bleaching liquor was studied. A hardwood cold soda chemimechanical pulp from a mill was used and bleaching experiences were accomplished on DTPMPA pretreated pulps, following a binary mixture design with silication:DTPMPA ratios of 5:0, 3:0.2, 1:0.4, 0:0.06. The bleaching liquor was composed of 6% hydrogen peroxide, 1.6% sodium hydroxide, sodium silicate and DTPMPA. The pulps were neutralised and washed prior to handsheets being made. It was found to be possible to partially replace silicate, combining 1% of silicate and 0.4% of DTPMPA. Pulps produced using DTPMPA had slightly lower brightness but improved brightness stability resulting from the lower concentrations of metal ions which catalyse the reversion process. Similar results were obtained using a neutral sulphite semichemical (NSSC) pulp. (4 fig, 4 tab, 13 ref)

SO: B

00009

PI: 20202305 JA: 0202

TI: Next step beyond ECF conversion should focus on plant optimization

AU: Brunner L

JN: Pulp Pap. \$IS=0033-4081

CI: vol. 75, no. 9, Sept. 2001, pp 52-53, 55-57 (C, K, P, S)

CT: AOX/ BLEACH PLANT/ BLEACHING SEQUENCE/ CHLORINE/ COST SAVING/ DIRT/ ECF BLEACHING/ ELEMENTAL CHLORINE FREE BLEACHING/ HARDWOOD/ OPTIMISATION/ SCREENING/ WASHING/

AB: Since 1993, BE and K Engineering, in Birmingham, AL, USA, has collected bleaching data from various sources to build a database. This has 230 sources for both hardwood and softwood species and over 60 sources are from operating mills. Using this a robust predictive model was used to study conversion to elemental chlorine free (ECF) bleaching, and its optimum conditions. Special attention was given to the bleaching cost impact of poor screening, brown stock washing, and short sequence bleaching. ECF bleaching could cost up to USD10/adbt more than non ECF bleaching. If there is overbleaching in the first stage this is more serious for ECF bleaching. BE and K used their model to justify installing two new hardwood screening systems. For case one, use of the new screen room resulted in a 92% decrease in offgrade paperboard because of dirt, and 30% lower costs for ECF bleaching. Similar results were obtained for the second case study. The bleaching model was also used to compare the bleaching costs of a short sequence plant and a 4-stage one; the former's potential savings were around USD10/adbt. (5 fig, 1 tab, 4 ref)

SO: B

00010

PI: 20202484 JA: 0202

TI: Calcium oxalate scaling in bleach plants: VCP experience

AU: Zolio A; Silva M R; Peixoto M A L

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 8pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: BLEACH PLANT/ CALCIUM OXALATE/ COMPANY INFORMATION/ CONFERENCE/ SCALING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Votorantim

AB: An investigation was carried out to solve the problem of calcium oxalate and other deposits in the pressing drum and other parts of VCP's pulp plant in Jacarei. Once it was discovered that the deposits were due to the calcium ions four alternative solutions were presented to tackle the problem. The solution adopted involved four actions: a change in the press drum of the Z stage by the cleaner press drum of the PO stage, adjusting the pH after the addition of ozone to 4.5-5.5, implementation of a continuous cleaning system using pressurised water and periodical water jet cleaning. Although VCP has managed to keep the calcium oxalate depositions under control, it is currently optimising the washing pretreatment prior to the ozone stage. (2 fig, 5 ref)

SO: B

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PI: 20202486 JA: 0202

TI: Implementation of a pressurised peroxide stage of sequence OQOpZ(DnD) at VCP Pulp and Paper Company, Jacarei mill

AU: Silva M R

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 9pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: COMPANY INFORMATION/ CONFERENCE/ OZONE BLEACHING/ PEROXIDE BLEACHING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Votorantim

AB: A series of laboratory tests were carried out to adjust and improve the performance of the total chlorine free (TCF) and elemental chlorine free (ECF) bleaching processes implemented in VCP's new pulp plant in Jacarei, Brazil, using both ozone and peroxide. Following the lab assay, the sequence OOZD(PO) was chosen to optimise the sequence OQOpZ(DnD). The pressurised peroxide stage, previously utilised in TCF, was moved to the end of the sequence with the PO stage also washed. Following the modifications, the ECF process was stabilised resulting in pulp with a stable kappa number. (7 fig, 4 tab, 1 ref)

SO: B

00012

PI: 20202487 JA: 0202

TI: Optimisation of the sequence O/ODEP(PO)D of bleach plant operating of eucalypt kraft pulp

AU: Pessotti J P; Colodette J L; Araujo G A T

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 20pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: COMPANY INFORMATION/ CONFERENCE/ ECF BLEACHING/ ELEMENTAL CHLORINE FREE BLEACHING/ MAGNESIUM SULPHATE/ SODIUM HYDROXIDE/

WHITE LIQUOR/

CN: Aracruz Celulose; Associacao Brasileira Tecnica de Celulose e Papel

AB: An investigation was carried out with the objective to optimise the elemental chlorine free (ECF) bleaching process of the eucalypt pulp produced at Aracruz Celulose, Brazil prior to its adoption. Three treatments were initially tested, white liquor without alkali in the stage of oxygen delignification, strongly oxidised white liquor, and sodium hydroxide. These three treatments did not differ regarding whiteness and amount of pentosans. High amounts of sodium sulphide in the white liquor was found to increase pulp degradation. The effect of magnesium sulphate in the double stage of oxygen delignification aimed at maintaining pulp viscosity by minimising its degradation, revealed no significant increase in the kappa number and in the whiteness although it resulted in a pulp with less degraded cellulose chains and lesser tendency to generate fine particles. The addition of an acid stage improved the ECF method and although it had some negative effects on the eucalypt pulp, these were not too great as the pulp properties were still commercially acceptable. (1 fig, 14 tab, 23 ref)

SO: B

00013

PI: 20202488 JA: 0202

TI: The industrial experience with hydrogen peroxide in Cenibra ECF bleaching plant

AU: Henrique P M

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 18pp

<Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: COMPANY INFORMATION/ CONFERENCE/ HYDROGEN PEROXIDE/ PEROXIDE BLEACHING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Cenibra; Degussa-Huls

AB: In an effort to adopt more environmental friendly technology, laboratory and industrial tests were carried out at Cenibra aimed at changing the current chlorine bleaching process to an elemental chlorine free (ECF) one. The industrial tests confirmed the findings of the tests carried out in the laboratory indicating that peroxide could be used in the final bleaching stage without any significant loss in the whiteness of the pulp. The most cost effective methods were those in which the peroxide was added at the end of the sequence together with the chelant, especially the D0eopD1P, which also yielded a high quality pulp. (13 fig, 6 tab, 40 ref)

SO: B

00014

PI: 20202489 JA: 0202

TI: Pretreatment effectiveness in peroxide bleaching of industrial pulps

AU: Barboza O M

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 15pp

<Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: BLEACHING/ BRIGHTNESS/ CHELATING AGENT/ CONFERENCE/ METAL ION/ PEROXIDE BLEACHING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Celulosa Argentina SA

AB: A three-stage investigation was carried out to test the use of peroxide pretreatments of a high yield pulp of eucalypt and salicaceae. In the first stage, assays were conducted to test the effectiveness of four chelants: diethylenetriaminepentaacetic acid

(DTPA), diethylenetriaminepentamethylene pentaphosphonic acid (DTPMA), N-(2-hydroxyethyl)ethylenediaminetriacetic acid (HEDTA) and a mixture of phosphonate compounds and hydroxycarboxylic acids, in removing the metal ions of the pulp. During a second stage the effect of the chelants to pulp brightness was evaluated. A third stage investigated the effectiveness of incorporating an acid treatment previous to the chelation and bleaching. In comparison with the control without any chelant, all four chelants were able to reduce the metal ion concentrations, with no significant differences between the chelants used. It was the lowering of pH to neutral or alkaline levels that caused the greatest elimination of the metal ions in the pulp. This result is consistent with the finding that the acid pretreatment also played an important role in removing the metal ions. (9 fig, 10 tab, 20 ref)

SO: B

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PI: 20202490 JA: 0202

TI: Bleaching simplification by use of polyfunctional chelants

AU: Almeida J M

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 7pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: CHELATING AGENT/ CONFERENCE/ PEROXIDE BLEACHING/

CN: Associacao Brasileira Tecnica de Celulose e Papel

AB: The use of polyfunctional chelants prior to the application of peroxide during pulp bleaching makes it no longer necessary to have a sequence specifically for chelation while reducing the consumption of peroxide. An extensive study to test polyfunctional chelants in Eucalypt pulping was carried out by technicians of Logos Quimica, Baueri, in partnership with the University of Sao Paulo (USP), the Sao Paulo Institute of Technology (IPT), the Luis de Queiroz Agricultural College (ESALQ) and the Federal University of Vicosa (Universidade Federal de Vicosa). The assays involved testing the effects of the polychelant in different charges in the dioxide stage and comparing these with equivalent batches without the polyfunctional chelant. Comparisons were also made between the new simplified sequencing using polychelants with the procedures of old-fashioned system using a chelating sequence. Results given regarding whiteness, kappa number, residual peroxide and viscosity from the use of the traditional diethylenetriaminepentaacetic acid (DTPA) chelant and two polyfunctional chelants showed the many advantages of the latter. (7 tab, 12 ref)

SO: B

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PI: 20202491 JA: 0202

TI: Bleaching sequence changing from DeopDD to DeopDp: Jarcel's industrial experience

AU: Santos L N D

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 10pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: BLEACHING SEQUENCE/ COMPANY INFORMATION/ CONFERENCE/ ECF BLEACHING/ ELEMENTAL CHLORINE FREE BLEACHING/ TESTING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Jarcel

AB: With the objective of reducing the use of environmentally harmful chlorine com-

pounds in the Jarcel pulp plant, a laboratory test was set up to investigate the potential of brightness reversion by substituting the acid stage for an alkaline one in the bleaching process. Since the laboratory results showed values of brightness reversions greater than reported on the industrial scale, three bleaching sequences utilising peroxide in the last stage: DeopDP, DeopD(qP) and D(qEop)DqP were tested on the industrial scale and the results contrasted with the currently used chlorine-based DeopDD sequence. The sequence D(qEop)DqP was found to be the most cost effective one as it allowed the elemental chlorine free (ECF) process with a lesser consumption of peroxide while yielding a more stable pulp brightness. (8 fig, 4 tab, 10 ref)

SO: B

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PI: 20202492 JA: 0202

TI: Polyfunctional chelants as corrosion inhibitors for 304 stainless steel in the hydrogen peroxide bleaching process filtrates

AU: Vilca-Melendez H

CI: 33rd pulp and paper annual congress, Sao Paulo, Brazil, 23-26 Oct. 2000, 8pp <Sao Paulo, Brazil: Associacao Brasileira Tecnica de Celulose e Papel, 2000> (K, P)

CT: CHELATING AGENT/ CONFERENCE/ CORROSION PREVENTION/ HYDROGEN PEROXIDE/ PEROXIDE BLEACHING/

CN: Associacao Brasileira Tecnica de Celulose e Papel; Logos Quimica

AB: A necessary stage in peroxide bleaching is to chelate the iron, copper and manganese ions present in the pulp, as these degrade the peroxide. The mostly used chelant in pulp sequencing is diethylenetriaminepentaacetic acid (DTPA), which acts in an acid medium. New polyfunctional chelants act in a much wider pH range and can also reduce the corrosion of the plant's steel equipment. Electrochemical assays involving anodised polarisation checked the corrosive effect of the filtered water from the bleaching processes on the steel, and tested the effect of polyfunctional chelants to reduce it. Although the DTPA was able to reduce the corrosive effect of the filtered water from the sequence D-qEop-qA-PO-P, the polyfunctional chelant also minimised corrosion in the most aggressive sequence D-qEop-A-qPO-P. (3 fig, 3 tab, 5 ref)

SO: B

00018

PI: 20202538 JA: 0202

TI: ECF or TCF your choice?

AU: Anon

JN: Pap. Print Focus \$IS=0950-3420

CI: vol. 15, no. 178, Oct. 2001, p. 28 (P)

CT: BLEACHING/ ECF PULP/ ELEMENTAL CHLORINE FREE PULP/ PAPER MAKING/ PULP/ TCF PULP/ TOTAL CHLORINE FREE PULP/

AB: The background to the manufacture and use of TCF (total chlorine free) and ECF (elemental chlorine free) bleached pulp for manufacturing paper is presented with particular reference to environmental pressures that brought about the development of the two processes. The role played by chlorine in the generation of dioxins during the pulp bleaching process is seen as being central to encouraging the development of TCF and ECF pulps. ECF bleaching employs chlorine dioxide as the bleaching agent to bypass the problems caused by elemental chlorine, while TCF uses oxygen and hydrogen

and ozone to achieve the same purpose. A survey conducted among 20 UK paper using professionals to gather views regarding ECF and TCF papers indicated a lack of consensus regarding these two paper types, or for recycled paper for that matter. Of the 20 respondents, six viewed environmental accreditation as being important to choosing ECF/TCF papers, while the remainder regarded physical properties and price as being the most important criteria.

SO: B

00019

PI: 20202759 JA: 0202

TI: Selective adsorption: a new approach to cellulose protection during bleaching

AU: Allan G G

JN: Cellul. Chem. Technol. \$IS=0576-9787

CI: vol. 34, no. 5-6, Sept.-Dec. 2000, pp 509-524 (C, K, P, S)

CT: ADSORPTION/ BLEACHING/ CHEMICAL PULP/ CHLORINE DIOXIDE/ KAPPA NUMBER/ MELAMINE/ NITROGEN/ STRENGTH PROPERTIES/ SULPHONIC ACID/ VISCOSITY/

AB: Since all commercial bleaching processes used in the pulp and paper industries for bleaching cellulosic fibres cause degradation of the cellulose polymer to some extent, considerable research has been undertaken to find ways of chemically protecting the fibres during the bleaching process. Experiments were conducted using unbleached spruce kraft pulp, bamboo (*Dendrocalamus strictus*) and mixed hardwood kraft pulp and a range of compounds known to undergo selective adsorption on to the cellulose fibres and protect them during bleaching. The compounds and treatments comprised: caffeine and guanine in chlorination, chloromelamines and recycling of C stage backwater, melamine or sulphamic acid in high temperature chlorination, combined action of melamine and chlorine dioxide in bleaching, melamine as a chain transfer agent in free radical polymerisation, melamine and the delignification rate of a softwood pulp, melamine and sulphamic acid in bleaching of bamboo, and a comparison of the adsorption of melamine by cellulose and lignin. The use of melamine was not found to lead to deceleration in the delignification process or problems in brightness development. The other, oxidatively-stable heterocyclic compounds, such as caffeine and guanine, were found to show similar behaviour. (1 fig, 9 tab, 44 ref)

SO: B

00020

PI: 20202761 JA: 0202

TI: The bleachability of wheat straw alkaline peroxide mechanical pulp

AU: Pan G X; Leary G J

JN: Cellul. Chem. Technol. \$IS=0576-9787

CI: vol. 34, no. 5-6, Sept.-Dec. 2000, pp 537-547 (C, K, P, S)

CT: AGRICULTURAL WASTE/ ALKALINE PEROXIDE MECHANICAL PULP/ BLEACHABILITY/ BLEACHING/ HYDROGEN PEROXIDE/ NONWOOD FIBRE/ OZONE/ PERACETIC ACID/ PLANT RESIDUE/ WHEAT STRAW/

AB: Agricultural residues, such as wheat straw, are increasingly being considered as raw materials for the pulp and paper industries, prompted by predictions of future world-wide fibre shortages. Experiments were conducted, using wheat straw collected from a farm in Alberta, to adapt the alkaline peroxide mechanical pulping (APMP) process for

the pulping of wheat straw. The bleaching trials involved the use of a range of bleaching agents, including hydrogen peroxide, peracetic acid, ozone, borohydride, hydrosulphite, and formamidine sulphinic acid (FAS). Reductive chemicals were not found to be effective in bleaching wheat straw mechanical pulp, but hydrogen peroxide and peracetic acid was successful in bleaching the pulp to reasonable brightness levels, with peracetic acid being more effective than hydrogen peroxide at the same charge levels. Although ozone enhances pulp bleachability, it results in a greater yield loss, particularly when alkaline peroxide bleaching is used in the second stage. (3 fig, 5 tab, 18 ref)

SO: B