



US005589032A

United States Patent [19][11] **Patent Number:** **5,589,032****Chang et al.**[45] **Date of Patent:** **Dec. 31, 1996**[54] **PROCESS FOR PREPARING A BLEACHING LIQUOR CONTAINING PERCARBOXYLIC ACID AND CARO'S ACID**[75] Inventors: **Hou-Min Chang; Hasan Jameel; Junfu Song**, all of Raleigh, N.C.; **Dingru Pan**, Beihing, China; **Bijan Amini**, Moorestown, N.J.; **John R. Webster**, Wilmington; **Bruce A. Evans**, Hockessin, both of Del.[73] Assignees: **North Carolina State University**, Raleigh, N.C.; **E. I. Du Pont de Nemours and Company**, Wilmington, Del.[21] Appl. No.: **123,532**[22] Filed: **Sep. 17, 1993****Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 948,122, Sep. 21, 1992, abandoned.

[51] **Int. Cl.⁶** **D21C 9/16**[52] **U.S. Cl.** **162/76; 162/78; 562/6; 252/186.21**[58] **Field of Search** **562/2, 6; 252/186.21, 252/186.22, 186.23, 186.43, 186.42, 186.29; 162/76, 78**[56] **References Cited****U.S. PATENT DOCUMENTS**

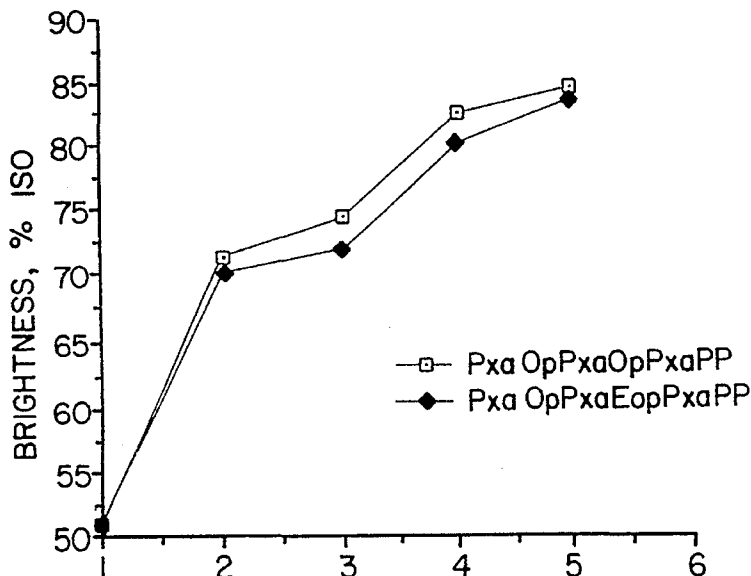
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A process for treating a substrate, e.g., lignocellulosic pulp or cellulosic pulps with a mixed peracid solution comprising percarboxylic acid and Caro's acid which results in a higher conversion rate of the active oxygen in the hydrogen peroxide in order to provide an inexpensive and effective delignification and/or bleaching solution and the process for making the mixed peracid solution.

4 Claims, 3 Drawing Sheets

- 1 Pxa Op
- 2 Pxa OpPxa(Op/Eop)
- 3 Pxa OpPxa(Op/Eop)Pxa
- 4 Pxa OpPxa(Op/Eop)PxaP
- 5 Pxa OpPxa(Op/Eop)PxaPP