



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(51) International Patent Classification <sup>5</sup>:</b><br>D21H 21/22, D06M 13/463, 15/53<br>D06M 13/148 // D21H 17/06<br>D21H 17/07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>A1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>(11) International Publication Number:</b> WO 94/10381<br><b>(43) International Publication Date:</b> 11 May 1994 (11.05.94) |
| <b>(21) International Application Number:</b> PCT/US93/09452<br><b>(22) International Filing Date:</b> 1 October 1993 (01.10.93)<br><br><b>(30) Priority data:</b><br>07/966,794                      27 October 1992 (27.10.92)      US<br><br><b>(71) Applicant:</b> THE PROCTER & GAMBLE COMPANY<br>[US/US]; One Procter & Gamble Plaza, Cincinnati, OH<br>45202 (US).<br><br><b>(72) Inventors:</b> PHAN, Dean, Van ; 6512 Tylers Crossing, West<br>Chester, OH 45069 (US). TROKHAN, Paul, Dennis ;<br>1356 Warvel Road, Hamilton, OH 45013 (US).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>(74) Agents:</b> REED, T., David et al.; The Procter & Gamble<br>Company, 5299 Spring Grove Avenue, Cincinnati, OH<br>45202 (US).<br><br><b>(81) Designated States:</b> AU, BB, BG, BR, BY, CA, CZ, ES, FI,<br>HU, JP, KP, KR, KZ, LK, LV, MG, MN, MW, NO, NZ,<br>PL, RO, RU, SD, SK, UA, UZ, VN, European patent<br>(AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU,<br>MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI,<br>CM, GA, GN, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i> |                                                                                                                                 |
| <b>(54) Title:</b> PAPER PRODUCTS CONTAINING A CHEMICAL SOFTENING COMPOSITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                 |
| <b>(57) Abstract</b><br><br>Fibrous cellulose materials useful in the manufacture of soft, absorbent paper products such as paper towels, facial tissues, and toilet tissue are disclosed. The paper products contain a chemical softening composition comprising a mixture of a quaternary ammonium compound and a polyhydroxy compound. Preferred quaternary ammonium compounds include dialkyldimethylammonium salts such as di(hydrogenated) tallow dimethyl ammonium chloride and di(hydrogenated) tallow dimethyl ammonium methyl sulfate. Preferred polyhydroxy compounds are selected from the group consisting of glycerol, and polyethylene glycols and polypropylene glycols having a weight average molecular weight from about 200 to 4000. The chemical softening compositions are prepared by first mixing the polyhydroxy compound into the quaternary ammonium compound at a specific temperature range wherein the polyhydroxy compound is miscible with the quaternary ammonium compound and then diluting the mixture with water at an elevated temperature to form an aqueous vesicle dispersion suitable for treating the fibrous cellulose material. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                 |

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