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(21) International Application Number: PCT/US97/03063 (22) International Filing Date: 27 February 1997 (27.02.97) (30) Priority Data: 08/614,036 12 March 1996 (12.03.96) US (71) Applicant: THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US). (72) Inventors: McGUIRE, Kenneth, Stephen ; 15 Linden Drive, Cincinnati, OH 45215 (US). HAMILTON, Peter , Worthing- ton; 1107 Devils Backbone Road, Cincinnati, OH 45223 (US). (74) Agents: REED, T., David et al. ; The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, ~~MR~~ , MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, ~~SG~~ , SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>
(54) Title: COMPOSITE FILM FOR CONTROLLING OXYGEN FLUX INTO THERMAL CELLS		
(57) Abstract A composite material for controlling oxygen flux into a thermal cell (10) comprises a bottom sheet (12) formed to have a pocket (14). The bottom sheet is impermeable to oxygen. A plurality of particles (20) is placed in the pocket. The plurality of particles reacts exothermally when exposed to oxygen. A top sheet is sealed to the bottom sheet at a flange around the pocket to enclose the plurality of particles such that the particles cannot fall out of the pocket. The top sheet has a substrate (22) which is highly permeable to oxygen. The substrate is coated with an oxygen permeable silicone based elastomer (24) to a thickness which regulates an oxygen flux into the pocket when the top sheet is exposed to oxygen. The composite material further comprises an oxygen impermeable barrier film (28) bonded to the top sheet by pressure sensitive adhesive (27) for preventing exposure of the top sheet to oxygen until the body warmer is intended to be used. A method for making a top sheet material involves coating a silicone rubber layer onto a smooth surface, partially curing the silicone, pressing a porous substrate against the silicone rubber layer, and completely curing the silicone rubber such that it adheres to the substrate.		