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(21) International Application Number: PCT/US99/14563 (22) International Filing Date: 28 June 1999 (28.06.99) (30) Priority Data: 09/106,488 29 June 1998 (29.06.98) US (71) Applicant (for all designated States except US): POLYEITAN COMPOSITES LTD. [IL/IL]; P.O. Box 212, 36601 Nesher (IL). (71) Applicant (for TJ only): FRIEDMAN, Mark, M. [US/IL]; Alharizi 1, 43406 Raanana (IL). (72) Inventors; and (75) Inventors/Applicants (for US only): COHEN, Yachin [IL/IL]; Komoy 7A, 32761 Haifa (IL). REIN, Dmitry, M. [IL/IL]; Lilach 4/13, 20300 Nesher (IL). VAYKHANSKY, Lev [IL/IL]; HJabas Bracha 1/11, 33393 Haifa (IL). (74) Agent: FRIEDMAN, Mark, M.; c/o Castorina, Anthony, Suite 207, 2001 Jefferson Davis Highway, Arlington, VA 22202 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: POLYMERIC MATERIALS AND PROCESS FOR PRODUCING SAME**(57) Abstract**

An improved process for producing a consolidated polymeric monolith from an assembly (10) of thermoplastic polymer. The assembly (10) is placed under pressure to fill a majority of the voids thereof by mechanical deformation of the fibers, and heated to a temperature too low to melt the fibers at the deformation pressure but sufficiently high to at least partly melt the fibers at a lower transition pressure. The assembly (10) is compressed in a vacuum press mold (12), between a piston (14) and a matrix (16) and during compression, vacuum is applied to ports (18a, 18b, 18c, and 18d) in matrix (16). While maintaining the assembly (10) at this temperature, the pressure is reduced to the transition pressure long enough for partial melting of the fibers to fill the rest of the voids, and then is increased to a consolidation pressure at least as high as the deformation pressure. The process allows accurate control of thermal expansion coefficients of the product.

