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(21) International Application Number: PCT/US97/07654 (22) International Filing Date: 6 May 1997 (06.05.97) (30) Priority Data: 08/642,219 6 May 1996 (06.05.96) US (71) Applicant (for all designated States except US): AMERON INTERNATIONAL CORPORATION [US/US]; 245 South Los Robles Avenue, Pasadena, CA 91101 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): FRIEDRICH, Ralph, S. [US/US]; 205 31st Street, Hermosa Beach, CA 90254 (US). HEMPHILL, Duane, G. [US/US]; No. 5 Sycamore Circle, Burkburnett, TX 76345 (US). FOLKERS, Joie, L. [US/US]; 2417 Merrimac, Wichita Falls, TX 76308 (US). FRANCIS, Brian, M. [US/US]; 2536 Tinker Trail, Wichita Falls, TX 76306 (US). ROBERTSON, Gordon, G. [US/US]; 201 Vanderpool Lane #48, Houston, TX 77024 (US). (74) Agent: LANGTON, Grant, T.; Christie, Parker & Hale, LLP, P.O. Box 7068, Pasadena, CA 91109-7068 (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, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, 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 claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: FIBER-REINFORCED RESIN PIPE HAVING IMPROVED IMPACT RESISTANCE		
(57) Abstract Fiber-reinforced resin pipe (10) fittings have a structural pipe wall (12) formed from helically wound reinforcing fiber that is bonded together with a polymer resin. An intermediate layer (16) is disposed around the structural pipe wall, and a fiber-reinforced resin layer (18) is disposed around the intermediate layer. The intermediate layer is formed from material selected from the group consisting of impact attenuating and impact absorbing materials. The fiber-reinforced resin layer comprises layers of helically wound reinforcing fiber bonded together with a polymer resin. The materials selected to form the fiber-reinforced resin layer can be the same or different from that used to form the structural pipe wall. The pipe may comprise a single intermediate and fiber-reinforced layer disposed around the structural pipe wall, or may comprise an impact resistant jacket disposed around the structural pipe wall, wherein the jacket is made up of alternating intermediate and fiber-reinforced resin layers. Fiber-reinforced resin pipes, constructed according to the principles of this invention, have improved impact resistance when compared to conventionally constructed fiber-reinforced resin pipes. 		