



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G02F 1/1335, G02B 5/30, C09K 19/38, C08G 65/22, 65/26	A1	(11) International Publication Number: WO 97/23805 (43) International Publication Date: 3 July 1997 (03.07.97)
(21) International Application Number: PCT/EP96/05747 (22) International Filing Date: 16 December 1996 (16.12.96) (30) Priority Data: 95203567.3 22 December 1995 (22.12.95) EP (34) Countries for which the regional or international application was filed: NL et al. 96201247.2 7 May 1996 (07.05.96) EP (34) Countries for which the regional or international application was filed: NL et al. 96202646.4 23 September 1996 (23.09.96) EP (34) Countries for which the regional or international application was filed: NL et al. (71) Applicant (for all designated States except US): AKZO NOBEL N.V. [NL/NL]; Velperweg 76, NL-6824 BM Arnhem (NL). (72) Inventors; and (75) Inventors/Applicants (for US only): DE WIT, Paulus, Pieter [NL/NL]; Klapstraat 46, NL-6931 CK Westervoort (NL). PICKEN, Stephen, James [GB/NL]; Wichard van Pontlaan 22, NL-6824 GM Arnhem (NL). STEENBERGEN, André [NL/NL]; Apeldoornseweg 108, NL-6814 BN Arnhem (NL). BOSMA, Martin [NL/NL]; Koningsweg 32A, NL-6816 TG Arnhem (NL).		(74) Agent: SCHALKWIJK, Pieter, Cornelis; Akzo Nobel N.V., Patent Dept. (Dept. APTA), P.O. Box 9300, NL-6800 SB Arnhem (NL). (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, 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, ARIPO patent (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>

(54) Title: TEMPERATURE MATCHED RETARDATION LAYER**(57) Abstract**

The invention is directed to a liquid crystalline display comprising a display cell containing liquid crystalline material and a retardation layer, said retardation layer comprising a, preferably slightly cross-linked, high-molecular weight material layer and a substrate, wherein the high-molecular weight material has a nematic phase above its T_g and a dynamic viscosity at the working temperature of at least 100 Pa.s, and the difference of the T_c of the high-molecular weight material and the T_c of the low-molecular weight material of the display cell ($T_{c_{cell}}$) is in the range of $-30\text{ }^{\circ}\text{C}$ to $+30\text{ }^{\circ}\text{C}$, preferably in the range of $-20\text{ }^{\circ}\text{C}$ to $+20\text{ }^{\circ}\text{C}$, and more preferably in the range of $-10\text{ }^{\circ}\text{C}$ to $+10\text{ }^{\circ}\text{C}$; and the T_g of the high-molecular weight liquid crystalline material is lower than $50\text{ }^{\circ}\text{C}$. It was found that if high-molecular weight material is used with a T_c comparable with that of the, preferably low-molecular weight, liquid crystalline material of the active cell, the temperature dependency of the retardation value of the retardation layer is comparable with that of the active cell. Thus, the retardation value of the retardation layer is comparable with that of the active cell within the temperature range in which displays are used. It was further found that by cross-linking of the high-molecular weight liquid crystalline material, the retardation layers according to the invention become less susceptible to pinhole forming and unwanted variation of the twist, and have improved mechanical stability.