

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau200003443-9
IPPS copy -
For reference only

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: G02B 5/124, 5/128	A1	(11) International Publication Number: WO 99/36806 (43) International Publication Date: 22 July 1999 (22.07.99)
(21) International Application Number: PCT/US98/26180 (22) International Filing Date: 10 December 1998 (10.12.98) (30) Priority Data: 09/006,292 13 January 1998 (13.01.98) US (71) Applicant: MINNESOTA MINING AND MANUFACTURING COMPANY [US/US]; 3M Center, P.O. Box 33427, Saint Paul, MN 55133-3427 (US). (72) Inventors: O'NEILL, Mark, B.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). WEBER, Michael, F.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). BENSON, Olester, Jr.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). WHEATLEY, John, A.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). JONZA, James, M.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). HANSON, Gary, B.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). (74) Agents: JENSEN, Stephen, C. et al.; Minnesota Mining and Manufacturing Company, Office of Intellectual Property Counsel, P.O. Box 33427, Saint Paul, MI 55133-3427 (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, 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, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, 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: REFLECTIVE ARTICLE WITH CONCEALED RETROREFLECTIVE PATTERN		
(57) Abstract		
A reflective article has a multilayer film covering a patterned retroreflective layer. In one embodiment the patterned retroreflective layer includes a separate indicia layer covering a retroreflective substrate. The indicia are substantially hidden under normal viewing conditions but easily detectable under retroreflective lighting conditions. Various types of retroreflective layers are disclosed. The article can also include microstructured relief patterns which produce holographic images under ambient lighting but which disappear under retroreflective conditions. The multilayer film includes alternating layers of at least a first and second polymer, and has a relatively high reflectivity for normally incident light within a first spectral range which is approximately coextensive with the visible spectrum, and a relatively low reflectance for normally incident light within a second spectral range. The second spectral range can include a transmission window of 15 % or less fractional bandwidth located at least partially in the visible spectrum. Film constructions are disclosed which achieve sharper spectral transitions than previously attainable. Film constructions are also disclosed which preserve such sharp transitions even at high entrance (tilt) angles.		