OPTICAL ASSEMBLY HAVING A DISPLAY PANEL AND METHODS OF MAKING AND DISASSEMBLING SAME

Abstract of the Disclosure

An optically clear adhesive layer includes a liquid optically clear adhesive having a viscosity of less than about 20 Pa·s at a shear rate of 1 sec^{-1} and a thixotrope. The optically clear adhesive layer has a haze of about 2% or less, a viscosity of between about 2 and about 30 Pa·s at a shear rate of 10 sec^{-1}, a displacement creep of about 0.2 radians or less when a stress of 10 Pa is applied for about 2 minutes and a recovery time of about 60 seconds or less to reach a delta of 35 degrees after a torque of about 100 microN·m is applied for about 60 seconds at a frequency of 1 Hz and immediately followed by a torque of 80 microN·m at a frequency of 1 Hz. The adhesive layer can be used in an optical assembly to bond a display panel to a substantially transparent substrate. The adhesive layer provides a cleavage strength between glass substrates of about 15 N/mm or less such that the optical assembly can be disassembled with little or no damage to the display panel or the substrate. Optical assemblies and methods of making the optical assembly are also disclosed. The optical assembly may be used in an optical device such as a handheld device, a television, a computer monitor, a laptop display, or a digital sign.