

**Mathematical modeling of weather-induced degradation of polymer properties.** Hamid, S. H.; Prichard, W. H. Chem. Dep., City Univ., London, UK. Journal of Applied Polymer Science (1991), 43(4), 651-78. CODEN: JAPNAB ISSN: 0021-8995. Journal written in English. CAN 115:93138 AN 1991:493138 CAPLUS (Copyright (C) 2008 ACS on SciFinder (R))

**Abstract**

Weather-induced degrdn. of polymer properties is caused by all the factors of weather, which include solar radiation, temp., humidity, wind, rain, environmental pollutants, thermal cycling (cold night and hot days), and sand abrasion. LLDPE is exposed to natural weather, and degrdn. is monitored by the mech. properties testing system, FTIR spectroscopy, and DSC. Three math. models are developed with weather parameters as independent parameters and mech. property (tensile strength), chem. change (carbonyl growth), and thermal property (percent crystallinity) as dependent parameters. The mech. property is more dependent on the UV portion of the total solar radiation, chem. change are synergistically affected by UV and total solar radiation, and change in thermal property is because of UV, total solar radiation, and temp. Humidity and other weather parameters play a less significant role in the weather-induced degrdn. of LLDPE properties.