

Failure Analysis of Windshield Glass of Automobiles

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Abstract : An automobile industry is using variety of materials for better comfort and utility. The present work describes the details of failure analysis done for windshield glass of a four-wheeler class. The failure occurred in two different models of the heavy duty class of four wheelers, which analysed separately. The company reported that the failure has occurred only in their rear windshield when vehicles parked under shade for several days. These glasses were characterised by dilatometer, differential thermal analyzer, and X-ray diffraction. The glasses were further investigated under scanning electron microscope with energy dispersive X-ray spectroscopy and X-ray dot mapping. The microstructural analysis of the glasses done at the surface as well as at the fractured area indicates that carbon as an impurity got segregated as banded structure throughout the glass. Since carbon absorbs higher heat, it causes thermal mismatch to the entire glass system, and glass shattered down. In this work, the details of sequential analysis done to predict the cause of failure are present.

Keywords : failure, windshield, thermal mismatch, carbon

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