



SEBS ELASTOMERS: INFLUENCE OF THE TYPE OIL PLASTICIZER ON THE EMISSIONS BEHAVIOR AND PHYSICAL, MECHANICAL AND RHEOLOGICAL PROPERTIES

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Thermoplastics elastomers (TPE) based on styrene block copolymers play an important role in automotive industry. However, volatile components from the polymers, additives and plasticizer can increase the level of emissions (volatile organic compound-VOCs and semivolatile organic compound-SVOCs) from TPE parts and reduce its applicability in automotive interior applications due to the effect of windscreen fogging. This effect, caused by the build up of greasy deposits on the interior of the windscreen, can reduce the transparency and visibility by light-diffusing effect, thus is seen as safety critical factor. In this sense, the aim of this work is to study the emission behavior (fogging) from SEBS/PP/oi/calcite composites with different hydrocarbon oil plasticizers. It was evaluated the relation between the fogging value, the plasticizer volatile content and the oil carbon distribution (%). SEBS/PP/oil/calcite composites were processed at temperatures profile from 170 to 190°C, using a co-rotating twin-screw extruder with L/D ratio of 40/1 and 45 mm screw diameter. The ratio of SEBS/PP/oil/calcite used was 100/33/158/32 phr (part per hundred rubber). The composites emissions was characterized by reflectometric fogging test. Composites also were characterized by physical (density), mechanical (hardness and compression set - DPC) and rheological properties (melt flow index - MFI). Preliminary results showed a reduction in fogging effect with the reduction of plasticizer volatile content. However, it was not identified the relationship between the plasticizer distribution of carbon and fogging effect. It was observed that the presence of aromatic carbons in process oil leads to a decreasing in hardness and DPC properties. From the rheological measurements was observed a decrease of melt flow index in the composites with naphthenic oil and oils with content of the aromatic carbon, probably due to the improvement of interaction between the polystyrene domains and the ethylene/butylene phase.