

### IIIe04-018

#### **Characterization of Al-Si coating on press hardening steel (PHS) submitted to a natural weathering test**

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Targeting the reduction of stamped sheet metal thicknesses, higher mechanical properties and better crash performance arise the hot stamping process as viable alternative. This is achieved by heating up a steel blank to approximately 900 °C for the austenitization, soon after it is transferred to the hot stamping press, to be conformed and cooled, aiming a martensitic microstructure, After that, the finished part presents a tension strength about 1500 MPa. At the blank moving between furnace and press, oxidation occurs on the sheet metal surface, and Al-Si coating has been used as a good surface protection, which works against the oxidation process through a protection barrier. For corrosion analysis and a behavior evaluation of the coating subjected to climatic agents, the most trustful way is by means of the utilization of the natural weathering test, in the present case in an urban environment. It was used samples of 22MnB5 steel plates after different heat treatment conditions, achieving, in this way, weathering results based in technical standards obtained by means of light microscopy techniques.