PAPER ID:103

A STUDY ON PHOSPHATABILITY OF THE PINPRICK DEFECTS PRESENT IN GALVANNEALED STEEL SHEET

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ABSTRACT

Surface quality of galvanized and galvannealed materials is of prime importance due to increasing demand of auto body outer panels. The surface defects from continuous galvanizing line is a perennial issue. The surface defects not only can degrade material properties but also the aesthetics of the product. The auto-body outer panels are used after painting. So, the appearance of such defects after painting is an important subject to study. In the present study, the surface defect commonly known as 'pin-prick' is studied in detail. The microstructural analysis of the defect reveals the depth of the defect to be about 34 micron. However, the galvannealed coating remains undamaged inside the defect region. The phosphating, which is the prior step for painting and provides adhesion to painting is done on the defect and defect-free regions. The phosphate crystal growth is similar in defect and defect-free zones, as observed under scanning electron microscope. However, the defect region does not get suppressed even after phosphating and affects the visibility of the surface which may lead to product degradation.

Keyword: galvannealed; surface defect; phosphating;