

**표면처리강판의 결함이 도장표면에 미치는 영향**  
**TOPOGRAPHY ASSESSMENT OF COATED STEEL SHEET SURFACE**  
**IMPERFECTIONS IN RELATION TO APPEARANCE AFTER PAINTING**

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**1. 서론**

This study examined the evolution of the surface topography of imperfections in response to painting. The research consisted of creating and sampling imperfections on coated surfaces, and carefully characterizing topography. Changes in the surface were then measured after painting simulations, and visibility after painting was assessed. The results were analysed to understand the changes that occurs during painting, and to understand the factors controlling visibility of imperfections.

**2. 본론**

Imperfections evaluated in this work involving a variety of laboratory-simulated imperfections, as well as real surface imperfections on commercial coated sheet products for automotive application. Successful methodologies were developed to simulate geometric features of real imperfections, thereby creating reproducible surface imperfections for systematic investigation. Three-dimensional optical profilometry was demonstrated to be a powerful technique for accessing imperfection topographies and their evolution during painting. Visual inspection was conducted on 4□ x 12□ or larger sample areas. The methodology developed for this study yielded considerable quantitative information, and was able to quantify the surface geometries at much higher resolutions than the capability of the human eyes with 3-D optical profiler. That is all imperfections detectable through visual inspection were easily characterized with the instrumental techniques employed in this study, and many inspections that were completely invisible through human inspection after painting were still measurable by 3-D topography.

**3. 결과 요약**

The most important topographic characteristic of imperfections that controls visibility after painting was suggested to be the depth or height and width. Key paint system variations in this study included a liquid primer surface over the conventional electrolytic primer, a developmental 2-step electrolytic primer, and a conventional high-build powder primer surfacer, all in combination with black basecoat plus clearcoat. Substantial differences in the ability of the different paint systems to cover or attenuate imperfections were noted, with the high-build powder system showing substantially better attenuation of imperfections, and the 2-step electrolytic primer showing somewhat less attenuation.

**참고문헌**

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