

## 電着塗装の光劣化解析結果

### Result of Photo-Degradation Analysis of E-coat

小島 圭介

#### 要 旨

自動車ボデーの塗装工程において、従来の中塗り工程を廃止した塗装プロセスを開発した。工程削減に伴う代表的な課題として、中塗り廃止時における電着塗装への光線透過が挙げられる。電着塗装は550 nm以下の光線により劣化することが判っているが、特に紫外線を照射した際に、電着塗装内部にまで劣化に伴う化学組成が変化することが新たに判った。この結果から、上塗りが電着塗装との界面近傍で剥がれる可能性が増大してしまうため、中塗り工程を廃止しても、550 nm以下の光線を遮断する層が必須であることが言える。

#### Abstract

We developed a new paint short process for automobile's body which removes a primer process to reduce energy consumption.

One of the subjects for removal of primer process is light transmittance to e-coat layer. E-coat is easily photo-degraded. If e-coat will be photo-degraded, peeling of paint can be occurred. To avoid paint peeling, only base coat and clear coat have to shield the light. As a result, color variation is limited about brightness and vividness to shield the light.

E-coat is well known to be photo degraded by the irradiation of the light under 550nm. However, the e-coat's chemical structure changes are not well known. Therefore, this paper reports the analyzed results of the chemical structure changing by FT-IR after irradiation by spectral apparatus. The analyzed portion is not only the surface of the e-coat but also the internal.

The result is that the harmful light degrades e-coat. Especially, the internal of e-coat was degraded by short wavelength light such as UV with decreasing bis-phenol resin that is a main binder of e-coat.

As a result, if a paint process is removed, e-coat must be shielded from harmful light such as under 550 nm. Then, it is possible to ensure color variation and paint quality.

キーワード：電着、光劣化、光波長、内部の劣化挙動、官能基の追跡

**Keywords:** E-coat, Photo-degradation, light wavelength, Degradation behavior of inside, Chasing of the functional group