

Black Chromate-free Coated Steel Sheet “ECO-BLACK™” with Excellent Press Formability†

1. Introduction

Pre-coated steel sheets are frequently used in the back covers of large-size fat-panel televisions. As these back covers have complex shapes, the material must provide not only a high design property, but also excellent press formability, making it possible to maintain a beautiful black appearance after press forming. In response to the rapid decrease in the price of fat-panel televisions in the market, there is also an increasing need for development of products with cost advantage

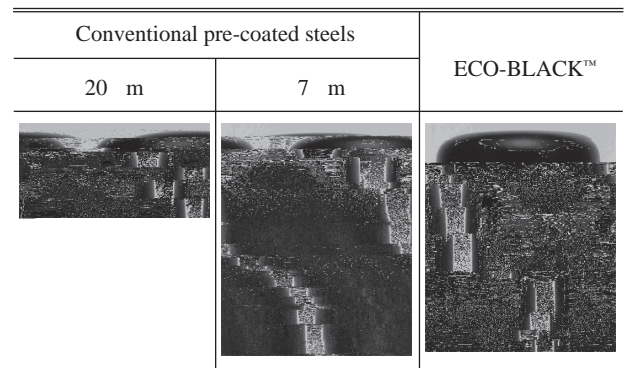


Photo 1 Appearances of ECO-BLACK™ and conventional coatings after deep draw forming

Figure 1 shows the cross-sectional structure of “ECO-BLACK™.” In this coating structure, a black-colored special organic/inorganic composite coating is applied to the surface of a Zn-plated electrogalvanized steel sheet. “ECO-BLACK™” displays a beautiful black

(JFE Excel Coat™) used conventionally in the back covers of thin-panel televisions. As an additional fea-

ture, damage of the black coating layer during press forming is extremely slight.

Photo 1 shows the appearance of a conventional pre-coated steel sheet and the same material when the coating thickness was simply reduced to 1/3 of the ordinary level after cylindrical deep draw forming. When the coating thickness of the pre-coated steel sheet was simply reduced to a thin film, an adequate black appearance could not be obtained after forming due to deterioration of the covering property for the underlying steel sheet. With the “ECO-BLACK™” coating, a beautiful black appearance was successfully obtained after forming while using a thin film because extremely fine black particles are used in the coating.

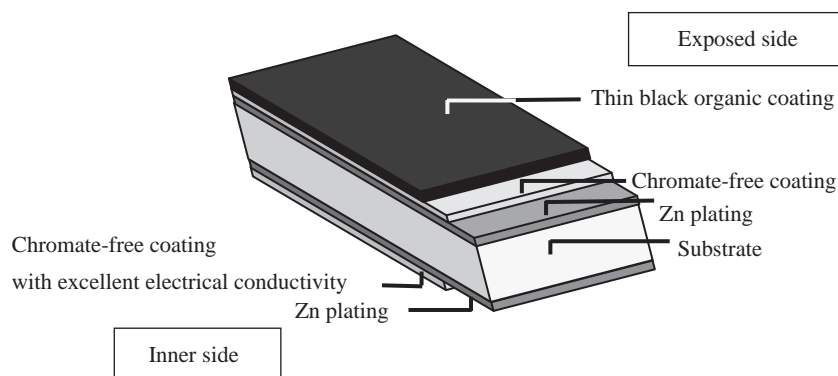


Fig. 1 The coating structure of ECO-BLACK™

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