eifeler

CHROME-X®

Minimized material adhesions, better demoldability, and shinier surfaces in plastic injection molding

voestalpine eifeler Coating GmbH
www.eifeler.com

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ONE STEP AHEAD.

In plastic injection molding, the surface of the tool is constantly exposed to material adhesions, which influence the surface quality of the manufactured plastic components. The new coating solution from Eifeler offers ideal protection for the preservation of highly polished tool surfaces to produce plastic parts with a defined and constant surface quality. Therefore, the new CHROME-X® contributes to an improved the surface quality of plastic parts.

THE CHALLANGE

Since many plastic components constitute a mass-product, the fundamental challenge is to ensure a consistent surface quality over numerous production cycles. Improved demolding and minimization of material adhesions represent key features for the reduction of cycle times or maintenance work and eventually for an optimized quality of the plastic part. Furthermore, with complex structured plastic mold surfaces there is a challenge in reproducing the image accuracy of the texture, especially over several injection cycles.

THE SOLUTION

Compared to arc evaporated PVD coatings, the CHROME-X® by eifeler is magnetron sputtered and offers numerous technological advantages. CHROME-X® is deposited at low temperatures (< 250 °C) and requires no post-treatment due to the dense and droplet-free coating growth. This results in a hard coating with minimized roughness having a positive impact on the requirements in plastic injection molding, such as reduced material adhesions and an improved demolding behavior.

CHROME-X® is a food-safe coating.

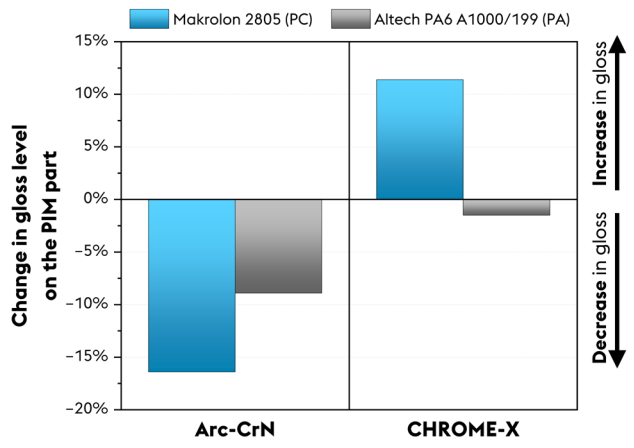

Fig. 1: Change in gloss on a plastic molded part compared to a molded part that was manufactured with an uncoated tool. Compared to Arc-CrN, CHROME-X® leads to an increase or preservation of gloss.

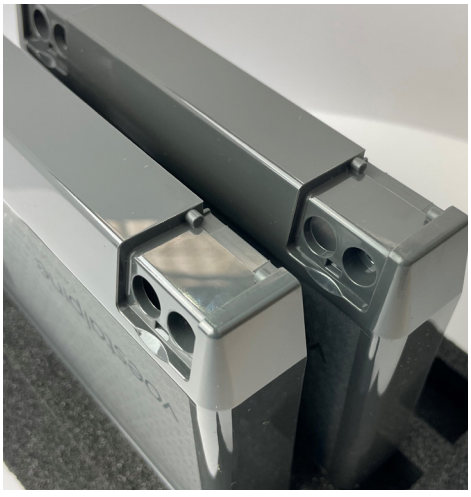

Fig. 2: Molded ABS plastic parts, manufactured with TiN-coated (left) and CHROME-X®-coated (right) tools

THE RESULT

In comparison to common coating systems for plastic injection molding, CHROME-X® preserves the level of gloss on the tool, so that the manufactured plastic parts almost retain their gloss with increasing injection cycles (PA) or, in the case of polycarbonate (PC), even experience a significant increase in gloss (cf. Fig. 1). This means that plastic components appear shinier and significantly more intense in color (see Fig. 2). In addition, CHROME-X® improves the demolding behavior by visibly reducing demolding marks on particularly critical component geometries.

„The CHROME-X® coating was developed specifically for the preservation of highly polished surfaces in plastic injection molding. Using the sputtering technology, a near-net-shape and almost defect-free surface with a minimized roughness profile is generated, which can reproduce plastic components with a predefined gloss level and consistent quality over several manufacturing cycles. An almost invisible protective film with a decisive influence on the final molded plastic part!“

Dr.-Ing. Alexander Fehr, PVD Research & Development at voestalpine eifeler Vacotec GmbH

Thanks to our close cooperation with Eschmann Textures, CHROME-X® can be applied in combination with surface structures such as fine textures or holograms to give plastic components an individual and characteristic surface (Fig. 3). The gloss level preservation of CHROME-X® ensures significantly improved image accuracy of filigree structures.

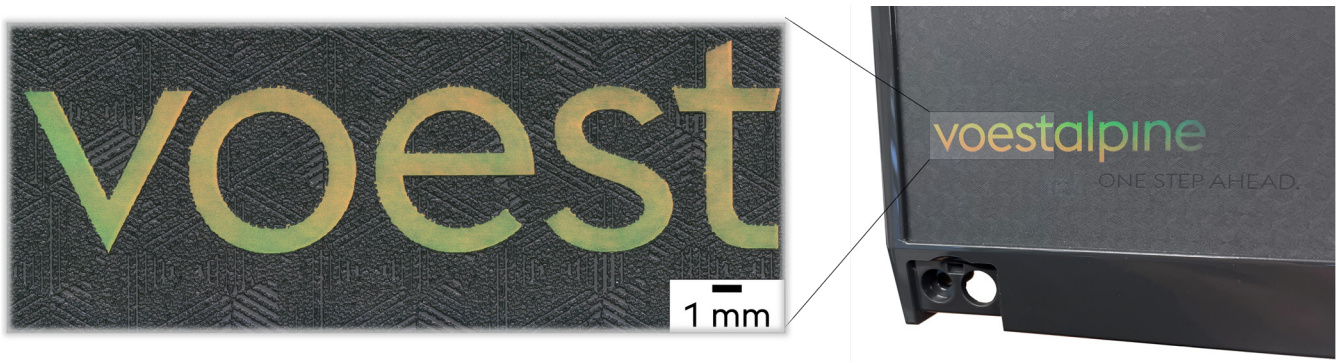

Fig. 3: Precise molding of fine textures and holograms on ABS plastic moldings

Further information at:

https://www.voestalpine.com/highperformancemetals/deutschland/en/solutions-for-plastic-injection-molding/

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