

Improving the Injection Molding of PVC Plastic Face Masks with Dursan® Coated Molds



A SILCOTEK® CASE STUDY WITH:



Dongguan Gowin Precision Mold Co., Ltd.

“[Dursan] can effectively prevent the products from sticking to the mold, enhance the corrosion resistance of molds, and improve the service life of molds. Mold cavity and core surface are easy to clean.”

-Dongguan Gowin Precision Mold Co., Ltd.

SUMMARY:

Dongguan Gowin is a company that specializes in the production of packaging injection molds for the pharmaceutical/medical/food/daily chemical industries. Like many molding companies, Dongguan Gowin was experiencing sticking with one of their molds and contacted SilcoTek for assistance. This Game-Changing Story will cover the challenges faced by Dongguan Gowin and how SilcoTek's Dursan coating process solved them.

CHALLENGES:

SilcoTek's Dursan CVD (chemical vapor deposition) coating is used in many molding applications for a variety of surface performance benefits, but a customer of Dongguan Gowin was experiencing ZH-44D medical grade transparent PVC plastic sticking during injection molding. Initially, the molds were made of 2083 (a common mold steel) and when opened, the products stuck to the mold and were difficult to remove, creating a low production efficiency. In an effort to improve release, the molds were coated with titanium nitride which was still an insufficient solution to the sticking problem.

HOW SILCOTEK HELPED:

SilcoTek was able to easily coat the molding surfaces of the 2083 steel mold using our patented CVD process and apply the patented Dursan® technology. The CVD process ensured all surfaces were evenly coated with a non-stick and corrosion resistant layer of Dursan. This version of the mold proved to meet the customer's needs by preventing the products from sticking and provided improved corrosion resistance.

GAME-CHANGING BENEFITS:

Thanks to the Dursan coating application, sticking is no longer a problem that contributes to production inefficiency. Dongguan Gowin reports “the face masks release easily and drop off the molds automatically which solves our customer’s problem of the masks sticking to the mold.” Improved part release efficiency and easier surface cleaning now allows the customer to increase production at a lower cost.

SilcoTek’s Dursan coating successfully creates higher molding efficiencies because of its ability to improve surface lubricity by 36% (over stainless steel) while reducing surface energy by 8x (Figure 1). This partnership between Dongguan Gowin and SilcoTek has allowed their customer to produce medical grade PVC facial masks more efficiently and reliably.

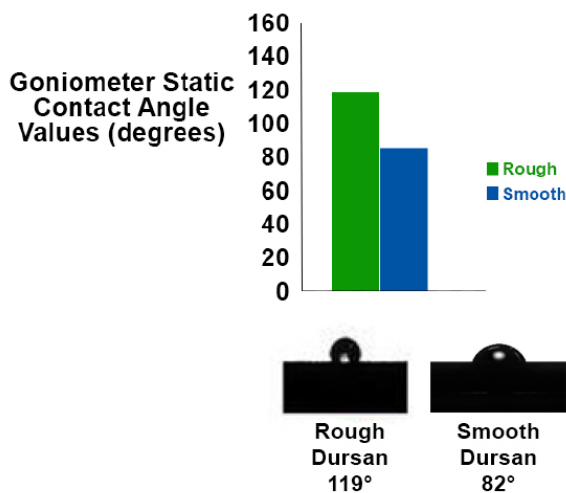


Fig. 1. Rough and smooth SS coupons showing goniometer readings (119° & 82° respectively).

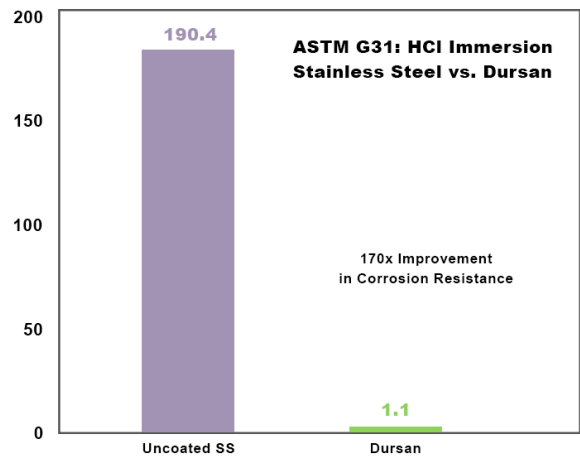


Fig. 2. Dursan-coated stainless steel outperforming uncoated SS by 170x.



Fig. 3. Dursan-coated face mask mold.



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