

# ENVIRONMENTALLY FRIENDLY PASSIVATION PRODUCTS FOR CONTINUOUS GALVANIZING LINE (CGL)

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Case study



# GENERAL

Through Shanghai Xingyu-Ecosil Surface Material Co., Ltd., we have provided a series of environmentally friendly passivation products for steel mill clients since 2014. These products include:

- ❖ Silane-based, Cr-free passivation for galvanized steel sheets (GI or HDG) (XCF-100, XAF-200, XSL-100)
- ❖ Silane-based, Cr-free passivation for zinc-aluminum-magnesium alloy-coated steel sheets (Zn-Al-Mg) (XAF-230)
- ❖ Cr-free, thin organic coating (TOC) for 55%Al-Zn alloy-coated steel sheets (Galvalume, GVL) (XAF-230)
- ❖ Trivalent chromium (Cr3) based passivation for GI (XTC-300, XTC-300Z)
- ❖ Trivalent chromium (Cr3) based passivation for Zn-Al-Mg (XAF-221)

We are continuing to improve these products and to create new products to meet evolving client needs. Besides, our team also provides after-sales services which is responsible to problem diagnoses and problem solving. Clients for the above products are Baosteel, Jiusteel (JISCO), Panzihua steel, Ansteel, Sougang steel and many others.

 BAOWU HBIS

 JISCO

 SHOU GANG

 ANSTEEL

 CHINA

# EXAMPLE 1. CR-FREE, THIN ORGANIC COATING (TOC) FOR 55%AL-ZN ALLOY-COATED STEEL COILS FOR HOME APPLIANCES MARKET



XAF-230 solution applied onto GVL sheet by the roll-coater

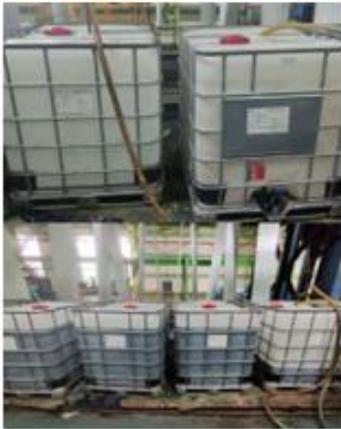


**Client:** Panzihua Iron & Steel Group Chengdu Plate Co., Ltd. is a manufacturing enterprise under Ansteel Group engaged in steel rolling and processing. The company's main products include pickled coils, cold-rolled coils, galvanized coils and color-coated coils. The annual production capacity of galvanized coils is 300,000 tons. The target markets for its galvanized coils include construction, home appliances, internal building structures and tubing.

**Pain points:** this company has used traditional TOC product which is loaded with Cr6 compound for its 55%Al-Zn alloy-coated steel coils. However, the Cr6-TOC product is no longer accepted in home appliance markers such as Haier. The company must switch to Cr-free TOC product.

**Our solution:** our team proposed XAF-230, a Cr-free, thin organic coating (TOC) especially designed for 55%Al-Zn alloy-coated steel (GVL) sheets. XAF-230 has been trialed with excellent test results. Figure 1 shows the application of XAF-230 onto GVL sheet on CGL. The GVL strip specifications are 0.6 mm thick x 1200 mm wide and the steel grade 51D+AZ with 55%Al-Zn alloy coating thickness 80 g/m<sup>2</sup>. The CGL production line speed is 90-100 m/min. The subsequent baking oven has a temperature of 550°C (1022°F) with hot air flowing. The measured PMT temperature using a temperature measuring paper (blue) in Figure 1(b) is >110°C(230°F). The dry-through TOC thickness is 1.2 -1.4 μm, measured by Infrared thickness gauge

## EXAMPLE 2. CR3 PASSIVATION OF GALVANIZED STEEL COILS FOR HOME APPLIANCE MARKET



**Client:** Ansteel Cold Rolled Steel Sheet (Putian) Co., Ltd., The company's main business is the production of cold-rolled steel sheets with an annual capacity of 1 million tons. Its products cover cold-rolled steel sheets and galvanized steel (GI) sheets for home appliances and automobiles.

**Pain points:** this company has used a Cr3 product to passivate GI sheets for years. Their downstream clients recently requested that the provided Cr3-passivation GI sheets should be self-lubricated so that no metal forming oils are needed during stamping or bending the GI sheets. This is for the purpose of cost saving.

**Our solution:** our team contacted this company and recommended XTC-300Z, a self-lubricating Cr3 passivation product. After 3 times of line trials, the company has confidently switched to XTC-300Z. Figure 2 shows the application of XTC-300Z at the plant.

