

**SILSBOND AS A
HEXAVALENT
CHROMIUM-FREE
SEALER FOR
ELECTROLYTIC
TINPLATE (ETP) SHEETS**

Case study



CLIENT & PAIN POINT

Client: ZHONGCAI GROUP (CHINA) produces electrolytic tinplate (ETP) with an annual output of 160,000 tons. ETP is used as packaging material for canned food, inner and outer sheaths of cables, instrument and telecommunications parts, flashlights and other small hardware. The ETP industry uses an electrolytic process with a chromate solution containing $\text{Cr}6$ ions to seal and passivate the surface of fresh tin-plated sheets to obtain a protective nano-scale thin layer. The as-formed thin layer consists of $\text{Cr}3$ oxide and metallic Cr , offering corrosion resistance and adhesion to ensure the safety of packaged food. However, the chromate solution used in the passivation step still poses a significant health hazard to workers.

Pain point: This customer had two major pain points: 1) increasing pressure by environmental regulations to eliminate the use of $\text{Cr}6$ chemicals on the ETP production line; 2) Grey wet storage stain occurring on ETP surface during humid environments. To solve these problems, ZHONGCAI GROUP has already tested several non-Cr pretreatments as a passivation sealer for fresh ETP sheets. All tested non-Cr pretreatments can provide excellent adhesion to lacquers but completely failed in the grey wet storage stain test.

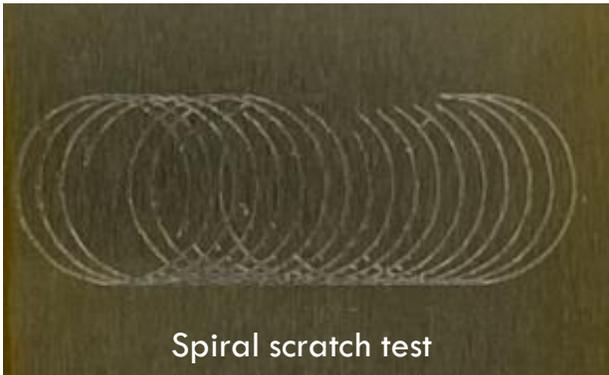


Application of SILSBOND 808 on a ETP line : immersion→ squeezing

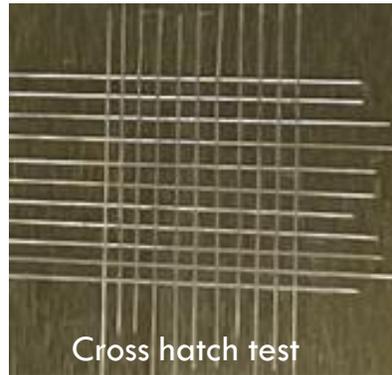
OUR SOLUTION & OUTCOMES

Our solution: our team visited this customer's ETP production plant in 2020 and recommended SILSBOND 808 to solve their pain points. In this application, the fresh ETP sheet was immersed into SILSBOND 808 solution for 1-3 sec and then the excessive solution was removed from ETP sheet by Squeezing roller. The typical line speed of this ETP production line is 150 -300 m/min.

Outcome: It has been proven that SILSBOND 808 can not only provide excellent adhesion to lacquers but also successfully prevent ETP coils from grey wet storage stain (2-year testing period).

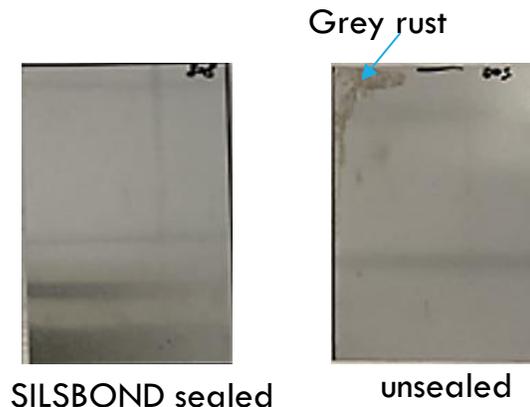


Spiral scratch test



Cross hatch test

Lacquer adhesion tests: no lacquer delamination



SILSBOND sealed

unsealed

Wet stack test (240 hr/50%Rh/50°C)