Canadian Sheet Steel Building Institute

Sheet Steel Facts 15

September 2017

Prepainted Coil-Coated Sheet Steel for Cladding

The *Canadian Sheet Steel Building Institute* (CSSBI) conducts extensive work in the development of standards for material selection and construction practice in its efforts to assist specifiers, buyers, fabricators and erectors of sheet steel cladding. These standards are based on sound engineering principles and are complemented by years of experience. They include recommended minimum requirements for such features as strength (grade) of steel, thicknesses, metallic coating designation, prepaint properties and performance characteristics.

Recently, prepainted metallic coated sheet steel sourced outside of Canada has been offered to the market place. This Fact Sheet is intended to make consumers aware of the standard of performance expected by the Canadian building industry as outlined in CSSBI S8 *Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products*, and to highlight the risks associated with using non-standard prepainted steel.

The introduction of new products into the industry should be preceded by an evaluation of that product against existing established product standards. Failure of these products to meet these minimum requirements should concern building owners and cladding applicators. Use of sub-standard materials will affect the appearance of a building, impair its service life and damage the reputation of sheet steel building products.

The performance of prepainted galvanize and Galvalume™ coated steels is judged on their ability to resist both corrosion and the weathering of the paint. Prepainted products are a system, incorporating metallic coating, pretreatment, primer, and topcoat. Members of the CSSBI have conducted extensive research to optimize the performance of the overall system. The result of these efforts is a prepainted building product system that fully meets the standard of performance outlined in the CSSBI S8 specification. The following case study illustrates the dramatic differences in performance that exist between CSSBI member-recommended products and imported products offered as equivalent.

Corrosion Performance

The following photographs compare the corrosion performance of a product meeting CSSBI S8 with a product developed outside Canada adn recently offered to Canadian builders.

These samples were tested for 400 hours using the ASTM G85 (Prohesion) method. The Prohesion test is a cyclic accelerated corrosion test that has become more commonly used than the traditional Salt Spray testing as the industry standard to evaluate prepainted products for atmospheric exposure.

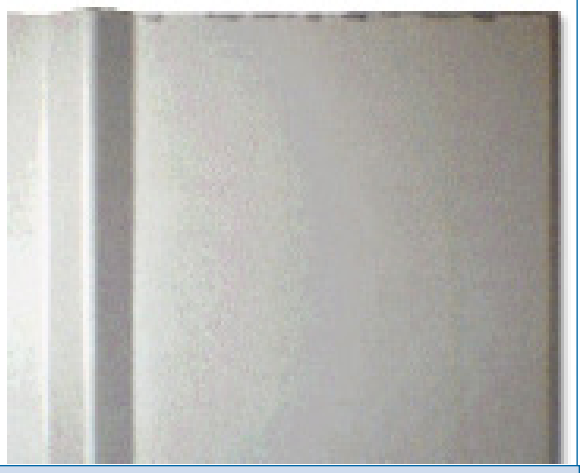

Figure 1: Canadian Product Meeting S8

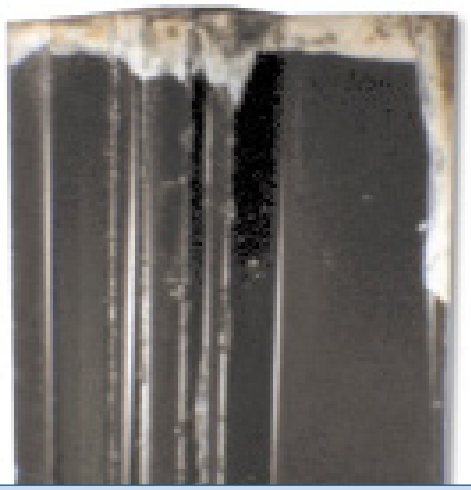

Figure 2: Imported Product

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The results clearly show the poor edge corrosion and tension bend performance fo the imported sample. Edge corrosion of the imported prepaint sample is 6 times greater than the standard product meeting the CSSBI S8 specification. Extensive paint blistering is evident along tension bends while the standard product shows none. The outstanding performance of the Canadian product is the result of the ongoing development conducted by CSSBI member companies. The combination of zinc phosphate pretreatment, G90 galvanized coating thickness, and a superior paint system provides the outstanding corrosion resistance needed in the corrosive acid rain environment of eastern Canada (Ontario, Quebec and Atlantic provinces). The imported product will exhibit premature corrosion.

Weathering Performance

Prepainted coatings provide the desired aesthetic appearance for the building, adding colour to the entire structure, or as an accent to other building materials. Deterioration of the paint in forms such as colour fade, chalking, or peeling will detract from the appearance of the building and can also affect its service life.

Prepainted products recommended by CSSBI members as meeting the existing standard undergo extensive research and development, including evaluation of weathering performance in a variety of environments. These systems are tested in some of the harshest environments in North America to ensure that they will perform in all of our market regions.

The photographs in Figures 3 and 4 compare the colour change (ΔE) of a product meeting the CSSBI S8 specification with a competing silicone-polyester characteristic of an imported product after 3 years natural weathering exposure in South Florida. The top portion of each panel is unexposed for comparison. An un-washed sample may contain dust particles, whereas a washed sample may remove some chalk.

The difference in performance is striking. Competing products may claim equal performance but often cannot support their claims with natural exposure data. Selecting the right product requires an understanding of the product features, the interactions between various components of the system, and the demands of the diverse environmental conditions within the Canadian market.

Not all paint systems are created equal. For a quality product, insist on verification that the prepainted material offered meets or exceeds the minimum standards set by the Canadian sheet steel industry to ensure a long-life and durable product. Consult the CSSBI or one of its member companies for more information.

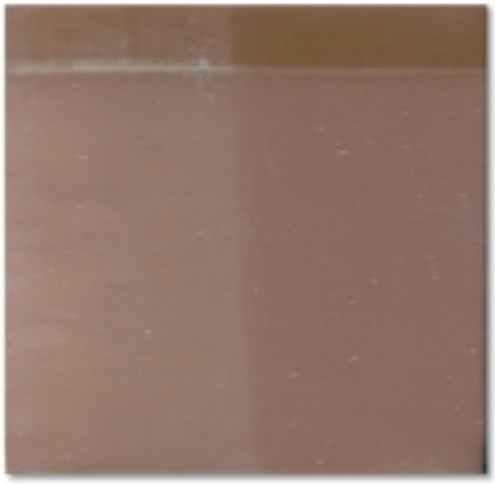

Figure 3: Canadian Product meeting S8

Figure 4: Competing Silicone Polyester

Colour Change (ΔE)			
Canadian Product Meeting S8		Competing Silicone Polyester	
Unwashed	Washed	Unwashed	Washed
3.5	2.1	9.4	5.9