Sheet Steel Facts 3

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Care and Maintenance of Prefinished Sheet Steel Building Products

Introduction

Prefinished sheet steel building products, such as wall and roof cladding, liner sheet, flashing, and associated items, have experienced an enviable growth record during the past twenty years or so. Coil coated prefinished sheet steel in a variety of colours and paint systems has greatly enhanced the appearance of thousands of industrial, commercial, institutional, recreational, residential and farm buildings, providing an economical, durable and attractive alternative to traditional materials. As with all materials, a little care and maintenance pays off handsomely in terms of longevity and repair costs. The recommendations which follow have been learned at first hand and represent the collective industry experience with thin-film paint systems applied to metallic coated sheet steel by the coil coating process. In this publication the term “thin-film paint system” refers to a modified silicone polyester or a fluorocarbon type having a coating thickness about 25µm.

When the guidelines listed below have been observed, thin-film paint systems have been used successfully for all types of environments other than severe industrial atmospheres which require special consideration. The guidelines are not intended for barrier coatings, laminates, and new formulations which have different characteristics than the thin-film paint systems on which these guidelines are predicated.

Design, Detail and Colour Considerations

- Architectural details should permit natural rain-flow cleaning of the cladding.
- On roofs or other horizontal surfaces, standing water can contribute to the premature failure of the paint system and substrate. Detailing should preclude damming or ponding of rain-flow at stacks, ventilators, air control equipment and other objects.
- Due to colour tolerances, there may be differences in colour shade between production runs. Where possible, ensure that each building elevation is clad with material from the same production lot. If different production lots must be used on one elevation, as may occur when making an addition to an existing building, try to begin the cladding on an elevation change or break in the building to minimize the effect of possible colour variations.
- A sufficient roof slope to permit drainage is recommended (e.g. 1 in 48 minimum, and greater where rainfall is heavy, drainage is restricted, etc.).
- Roof surfaces, defined as those up to 60 degrees from the horizontal, are subject to more severe exposure conditions than vertical surfaces. Conditions such as extended exposure to ultraviolet light may be resisted by using a light colour for the roof. Acid precipitation and drip edge puddling are other conditions that could affect the appearances and durability of the paint finish. Drip edge puddling may be minimized with a steeper roof slope or by modifying the edge details. If severe acid precipitation is experienced, a more resistant prefinish system may be required.
- The building design should seek to minimize the installation of mechanical equipment on a prefinished roof. Walkways should be provided where regular traffic is necessary for maintenance.
- In wall applications, horizontal portions of the cladding and base flashing should be sloped to prevent moisture from puddling.
- Walls shadowed by overhangs and all soffit areas have an increased time of wetness relative to other areas. The increased time of wetness creates a more aggressive environment for the cladding so affected; therefore, architectural details should try to minimize these areas.
- To decrease the visibility of “oil canning”, select an adequate material thickness, a narrower flute and a lighter colour.

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- To prevent unwanted galvanic corrosion, the architectural details should not allow the contact of dissimilar metals (e.g. steel and aluminum or copper) or should provide an adequate means of separation. The path of rainfall runoff should also be directed to prevent water runoff across one type of material to another which can also cause galvanic corrosion.

Site Storage

- Storage time should be minimized by installing cladding panels as soon as possible after delivery. Good planning will ensure that panels are used on a first-in first-out basis.
- If cladding must be stored for an extended period, the most desirable storage place is under-roof in a cool, dry, well ventilated area.
- When storing outdoors is unavoidable, the following is recommended: (1) use good covers, loosely shrouded over stacks and firmly anchored to prevent wind blow off, but plastic covers should not be used for storage (2) tilt bundles for drainage (3) ventilate bundles but do not allow entry of wind-driven rain (4) block bundles off the ground for effective drainage and ventilation (5) block long panels to prevent sagging (6) store out of direct sunlight if possible (7) store away from chemically aggressive substances (e.g. salt, cement, fertilizer), away from material that could contaminate the surface (e.g. diesel oil, paint, grease) and away from site traffic.
- Shipments of bundled cladding panels should be inspected upon delivery.
- Moisture can cause wet storage staining of prefinished material and usually occurs in one of three ways: (1) condensation from high humidity and/or temperature cycling; (2) wet shipping conditions; or (3) wind-driven rain penetration (outdoor storage). The usual progression is from visible water staining to unsightly white staining (dark grey to dull black on aluminum-zinc alloy coated material) to red rust. On material where wet storage staining has occurred, it should be noted that a nominal amount of white staining is not detrimental to the functioning of the product and is usually considered acceptable.

Field Painting and Touch-Up

- Painting over a new installation is not recommended. All coil coated paint films have internal additives that do not allow good adhesion between field-applied paint and the coil-coated paint layer. Also, because touch-up paint will not last as long as the original, keep the touch-up to a minimum. A small artist's brush or a small air brush should be used. For additional guidance about painting, refer to CSSBI Fact Sheet 4: Painting of Prefinished Sheet Steel.
- Replace a panel rather than attempt to touch-up large areas; a spot 20 mm (3/4") in diameter will become more prominent in time.
- For repainting, consult a fabricator member of the CSSBI who will provide recommendations

Maintenance

- A thorough building clean-up after completion of construction should be conducted to remove all debris, metal filings, metal fines, etc. from walls and roofs.
- An occasional cleaning of prefinished material can extend the service life and help to maintain the appearance of the finish. For protected areas (i.e. overhangs) an annual spring cleaning is recommended. Simply washing with plain water is often sufficient. Waxing is an additional method of prolonging the service life of prefinished material.
- In areas where heavy dirt deposits dull the surface, a solution of water and detergent may be used: 100 ml (1/3 cup) of a typical laundry powder detergent per 4 litres (1 gallon) of water. A soft bristle brush should be used for scrubbing followed by a clear water rinse.
- Mildew may occur in areas subject to high humidity. To remove mildew along with the dirt, the following is suggested: (1) 100 ml (1/3 cup) laundry detergent (2) 200 ml (2/3 cup) trisodium phosphate (TSP) (3) 1 litre (1 quart) 5% sodium hypochlorite solution (laundry bleach) (4) 3 litres (3 quarts) water Use in a well ventilated area and follow with a clear water rinse.
- Solvent and abrasive cleaners should be avoided. Caulking compounds, oils, grease, tars, wax and similar substances can be removed with mineral spirits applied only to the affected areas. Detergent cleaning and thorough rinsing should follow the use of solvent.

For More Information

For more information on sheet steel building products, or to order any CSSBI publications, contact the CSSBI at the address shown below or visit the web site at www.cssbi.ca