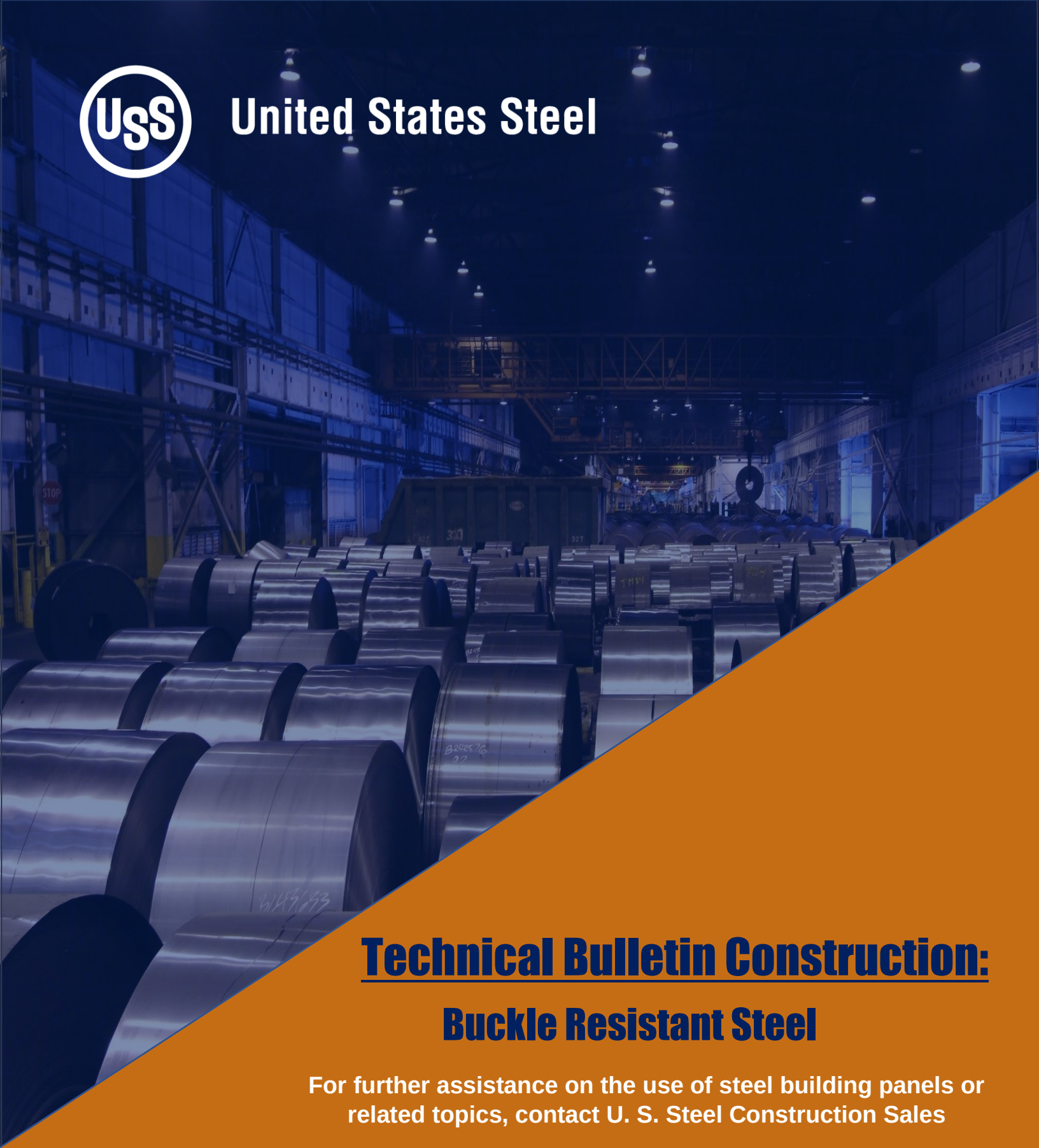
United States Steel



Technical Bulletin Construction:

Buckle Resistant Steel

For further assistance on the use of steel building panels or related topics, contact U. S. Steel Construction Sales

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Background

Hot-dip galvanized (HDG) and GALVALUME Coated Steel Sheets (55% Al-Zn alloy coated steel) are widely used in the construction industry for roofing and siding applications. Standing seam panels with wide flat sections are gaining popularity in both residential and commercial buildings. The issue of oil canning becomes a concern as it detracts from the appearance of newly installed roof or wall panels.

What is Oil Canning?
Oil canning is a cosmetic condition that occurs with metal roofing and wall panel systems. It is the perceived waviness of the panel. The waviness is more pronounced in thinner gauges and broad flat areas of the metal roof or wall system. Oil canning can occur in all types of metal used in construction including cold-rolled steel, aluminum, copper, and zinc.

What Causes Oil Canning?
There are many factors in the production and installation of metal roofs and wall panels that can influence oil canning. Beginning with the rolling and coating production of the flat sheet in the mill, care must be taken to make a flat sheet with minimal edge wave, full center, and camber. Next, the continuous painting process must maintain the shape of the sheet. Color and gloss choices can highlight or minimize the visual perception of oil canning. When forming panels at the roll former, care should be taken to make sure the machine is aligned properly and tooling is adequately lubricated and not worn. At the job site, panels must be installed by an experienced installer. Over-driven fasteners and angled fasteners can also contribute to oil canning. Proper handling and storage of formed panels to prevent damage and warping will also minimize oil canning. Finally, an out-of-square building and inadequate compensation for thermal expansion and contraction can lead to oil canning.

Remedies to Minimize Oil Canning:
Oil canning described above can be minimized on roof and wall panels with proper material selection and careful color and gloss selection. Choosing an experienced panel manufacturer and knowledgeable installer will minimize oil canning and lead to a successful project.

- Thicker gauge material
- Light colors and low gloss finish
- Proper (suitable) panel design
- Backer rods behind panels during installation
- Experienced manufacturer and installer

Benefits of USS Buckle Resistant Steel:
USS has developed special processing in the mill help to minimize the appearance of oil canning in the formed panel. This product is available in Galvanize and Galvalume products.
ASTM A653
Grade 33,37,40, 50
ASTM A792
Grade 33,50

*Inquire about gauge x width restrictions.