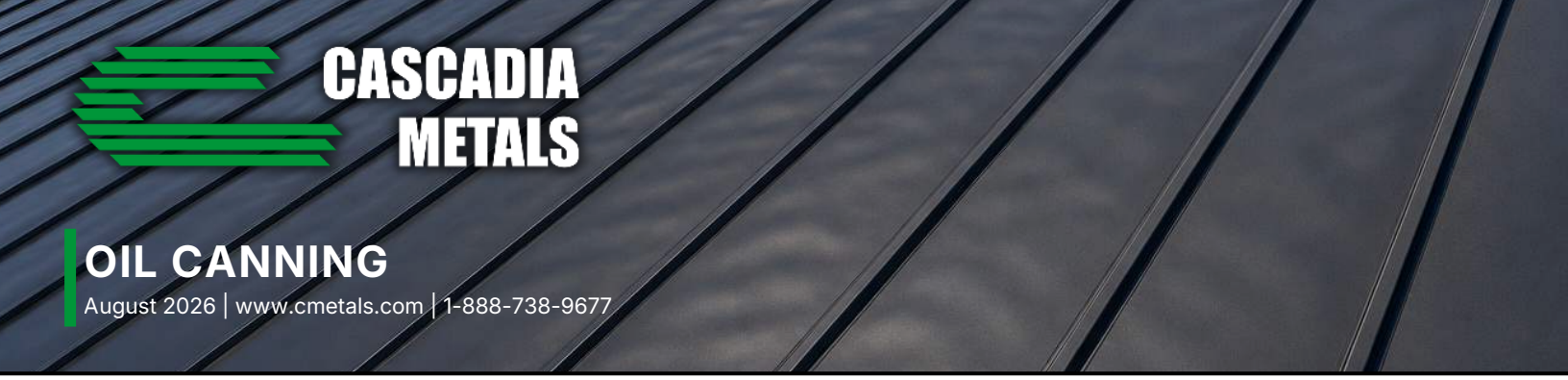


CASCADIA METALS

OIL CANNING

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WHAT IS OIL CANNING?

Oil canning is the visible waviness or distortion that may appear in broad, flat areas of light-gauge sheet metal. It is an inherent characteristic of architectural metal products and may occur in steel, aluminum, stainless steel, copper, zinc, and other metals. Oil canning is primarily an aesthetic condition and does not affect the structural integrity, weather resistance, or service life of the panel. Because it can result from material properties, fabrication, handling, installation, and environmental conditions, it is generally not considered a manufacturing defect or grounds for product rejection. While oil canning cannot be completely eliminated, proper material selection, panel design, fabrication, and installation practices can significantly reduce its occurrence.

WHAT CAUSES OIL CANNING?

Oil canning is caused by differential stresses within the metal itself. As the metal tries to relieve these stresses in panels with high width to thickness ratios, material buckles out of plane producing the characteristic waviness of oil canning. These stresses may be introduced during manufacturing, fabrication, transportation, installation, or throughout the building's service life. Common contributing factors include:

- Residual mill stresses and coil slitting
- Roll forming and brake forming
- Panel thickness, width, and length
- Uneven or misaligned substrates
- Building movement or structural deflection
- Improper installation or over-driven fasteners
- Restricted thermal expansion and contraction
- Improper handling or storage
- Lighting conditions and viewing angle

In many cases, oil canning results from several of these factors acting together rather than a single cause.

HOW CAN OIL CANNING BE MINIMIZED?

Coil producers and panel manufacturers generally attempt to minimize unintentional non-flat conditions. Research continues on improved fabrication methods. While a number of factors are involved in panel design, there are steps that the project designer, fabricator, and installer can take to reduce the probability, severity, and visual impact of oil canning.

Material Selection
Specify the thickest practical gauge for the application. Narrower panel widths and shorter panel lengths generally reduce the likelihood of visible oil canning.

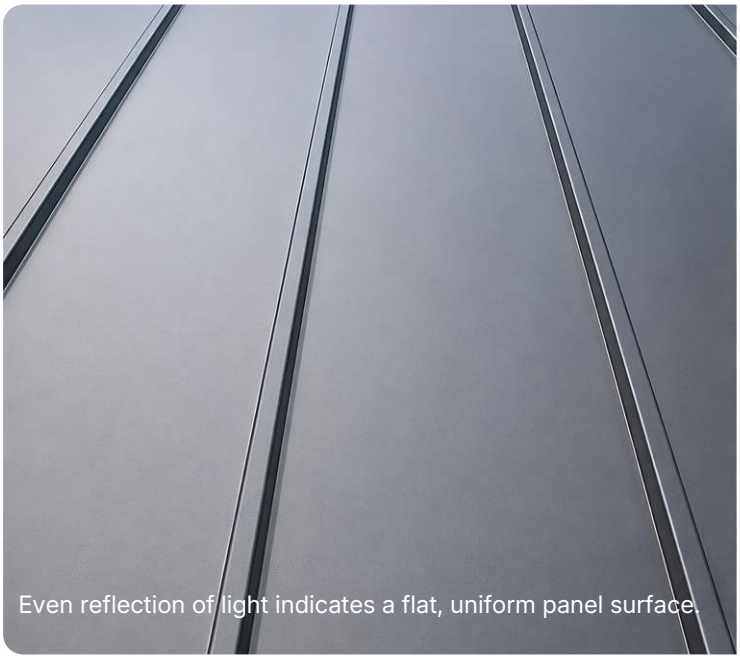
Panel Design
Incorporate ribs, striations, pencil beads, or other stiffening features where aesthetics are critical. Attachment systems should allow for thermal movement without introducing unnecessary stresses.

Panel Finish
Lighter colours, matte or textured finishes, and embossed surfaces tend to make oil canning less noticeable than dark, smooth, or high-gloss finishes due to reduced light reflection.

Installation
Ensure supporting substrates are flat, properly aligned, and within specified tolerances. Avoid over-driving fasteners, allow for thermal expansion, and follow manufacturer recommendations for handling, storage, and installation.

CONCLUSION

Oil canning is an inherent characteristic of light-gauge sheet metal and is recognized throughout the industry as an aesthetic phenomenon rather than a product defect. Because numerous factors influence its occurrence, no manufacturer, fabricator, or installer can guarantee an oil canning-free installation. However, through proper design, material selection, fabrication, and installation practices, its visibility can be minimized and the overall appearance of the finished project optimized.


Even reflection of light indicates a flat, uniform panel surface.


Wavy, distorted reflection of light indicates oil canning.

The appearance of oil canning will vary depending on light conditions, viewing angle, panel colour, and surface finish.