

Some products have qualities that might fade over time, or the sample has characteristics that don't appear when installed on the building, or it looks different in the shade vs the sun, in the morning, or at the sidewalk level. Managing the designer's and owner's expectations are paramount to the process.

In order to manage the designer and owner expectations, understanding the unique qualities of different products is important. If our project team has no experience with a product, they should be asking the Trade Contractor and/or AECOM's Construction Quality Department. (We are here to help!)

One item that comes up frequently is oil canning in metal panels. This type of product will, to some degree, have oil canning that might not be expected or desired. Getting out in front of the potential issue is key to managing expectations and will avoid having a conversation once the panels start going on the building. Lastly, understanding what could help the condition during specification or bidding will also minimize the condition and better manage expectations.

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### Several facts were taken from the Metal Construction Association Technical Bulletin 2013 – Oil Canning in Metal Roof and Wall Systems.

- ASTM E1514-Section 4.3 Oil Canning “Oil canning is an inherent characteristic of products covered by this specification, particularly those with broad, flat areas. It is the result of several factors that include, but are not limited to, induced stresses in the base material, fabrication methods, and installation and thermal forces. While oil canning is an aesthetic issue, structural integrity is not normally affected. **“Oil canning is not grounds for panel rejection, unless it does not meet prior standards established by the specifier.” Note that mock-ups might not show actual conditions.**
- Oil canning is an aesthetic issue and not a cause for rejection. The system performance and structural integrity of the panel are not affected. Manufacturers cannot guarantee the elimination of oil canning, however, if consideration is paid to the selection and thickness of material, panel design and installation practice, oil canning can be minimized.



- Discussing the issue of oil canning with the Architect and the Owner will help manage expectations early and avoid unnecessary disappointment in the installation
- All types of metal and installation direction will have oil canning.
- Oil canning can be defined as waviness, pillowing, bumpy metal surface. (looks like a basketball hit the metal).
- Lighting conditions, time of day, and the point of view can increase or decrease the visual frequency and size of the oil canning...several minutes in the sun can make the difference.
- Thermal expansion fluctuations will cause oil canning throughout the day and seasons.
- Thicker panels and reducing the panel width will help decrease oil canning.**
- Adding rib(s) will reduce the likelihood of oil canning.
- Gloss of the panel will increase the perception of oil canning.
- Oil canning will develop once the installation of the panel begins; it won't likely not be noticeable until after installation.
- Oil canning can occur due to stresses in the panel from fabrication of the coil, forming the panel, or handling during installation.
- Larger metal coils that are slit in to smaller coils will increase the likelihood of oil canning due to increase stresses in the panel.
- Making sure that the substrate is flat (minimal undulations), will help minimize oil canning.
- Camber in the structure might be a cause for oil canning, such as in a roof beam or joist.
- Oil canning could also be caused by differential movement caused by the structure.
- Panel attachment, including frequency, type, and tightness might be a cause for oil canning. **Sliding clips or slotted holes are best for installation.**
- Overdriven fasteners might be a cause for oil canning.**
- Laminated products such as composite panels (ACM & MCM) and insulated wall panels can provide a greater level of flatness than a single skin panel. Discuss if this is an option.