

## • FIELD CHECKING FOR OIL CANNING

### What is oil canning?

Oil Canning is an inherent characteristic of light gauge cold formed metal products, particularly products with broad flat areas. It is a visual phenomenon seen as waviness or distortion in the flat surfaces metal roofing and siding products. Oil canning is subjective and is normally an aesthetic concern only and does not affect a products strength or performance. Environmental conditions such as temperature, time of day, annual seasons, skies (sunny vs. cloudy) can enhance the appearance of oil canning.

### What Causes oil canning?

Oil canning is caused by internal stresses within thin gauge metals. These stresses can be introduced during field installation, as well as mill production of the coil and during fabrication such as slitting and forming. Additionally, field installation conditions, techniques and tolerances will greatly impact the presence of oil canning:

- 1) **Misalignment of support system** – a support system with large tolerances may cause stresses on the panels as they are fixed to this surface. This stress on the panels can cause oil canning.
- 2) **Over engagement of panels** – Most panels allow for expansion and contraction by flexing of webs and slight room at the side joints. If the panels are pulled or pushed during engagement more than designed, the stress will cause deflection in the flat pan of the panel.
- 3) **Over driving of fasteners** – this operation causes stresses on the panel, particularly with concealed fastened panels connected directly into the support system. In addition if the fasteners are not driven into the panels or clips at the same level of tension, normal expansion and contraction of the panels due to regularly temperature changes can amplify a visual waviness. This waviness caused by thermal forces (expansion and contraction) is different from other forms of oil canning since it can appear and disappear daily as the sun rises and sets.
- 4) **Movement of primary structure** – if the primary structure of the building has excessive variation in deflection, racking, or drift it can cause waviness in the flat of the panel, once installed. In addition, settlement of the primary structure can also cause oil canning. This oil canning could be temporary or permanent.
- 5) **Handling of panels in the field** – The manner in which the panels are handled in the field can induce oil canning. Twisting the panels while lifting and removing from a bundle can induce a wavy appearance. Walking on panels can also cause oil canning.

### Field Checking Panel Flatness:

There is no accepted Standard for field checking questioned flatness or oil canning. The following is a reasonable means to help determine the probable

source or cause of oil canning. The intent is to systematically investigate the field conditions, handling, and installation process observing when the oil canning appears and therefore its most likely source or cause.

- 1) Examine the storage area and condition of the crated or packaged materials. Are the materials in a dry protected location, properly supported and retained in a natural manner that does not induce unusual twist or stress on the materials?  
**OBSERVE**
- 2) Remove a panel or two from its packaging. Orient it horizontally; allowing it to hang down on its side yet supported along its top rib approximately every 8 to 10 feet by workers or other aligned supports. **OBSERVE**
- 3) Have the panel(s) transported in the normal manner, both horizontally and vertically, to the location where they will be installed. **OBSERVE**
- 4) Lay the panel(s) flat and loosely on the substrate to which they will be installed without any clips or other means of attachment. **OBSERVE**
- 5) Install panel into (or on to) already installed adjoining panel. **OBSERVE**
- 6) Install clips/fasteners as required and fasten appropriately to the substrate.  
**OBSERVE**

If oil canning is a concern or issue discovered in the field, please contact your AEP Span sales representative before moving forward on your installation.

There is no ASTM or other identifiable standard for measuring oil canning on a job site. However, with

close and judicious observation, one should be able to determine at which step(s) oil canning first appeared, if any subsequent step(s) changed its appearance, and what possible steps may be initiated to minimize its presence.

### Conclusion:

Oil canning is an aesthetic issue that is subjectively identified and evaluated. System performance and structural integrity are not affected unless the distortion is extreme. Since many uncontrollable factors are involved in inducing oil canning, no Manufacturer can assure the total elimination of oil canning. Oil canning is not a cause for rejection. However, if attention is paid to the selection of material, panel design and installation practice, oil canning can be effectively minimized.