

Understanding Oil Canning

Oil canning is often described using terms like wrinkling, distorting, pillowing, or breathing. While it can sometimes be perceived as adding a natural, dynamic element to metal surfaces, in most cases, oil canning is considered an undesirable effect that should be mitigated wherever possible.

There are many factors that contribute to oil canning, and while fabricators and installers do their best to minimize it, complete prevention cannot always be guaranteed. It's important to understand that oil canning is not classified as a material defect and is seen as more of an aesthetic issue, therefore, is not grounds for rejecting the material.

What is Oil Canning

Oil canning refers to the visible waviness or ripple effect that can appear in the flat sections of metal roofing and wall cladding products. This effect often occurs due to changes in conditions such as ambient temperature or the viewing angle in relation to direct sunlight. Typically, the oil canning effect may fluctuate and can even disappear depending on these conditions.

Figure 1 Colorbond Ultra

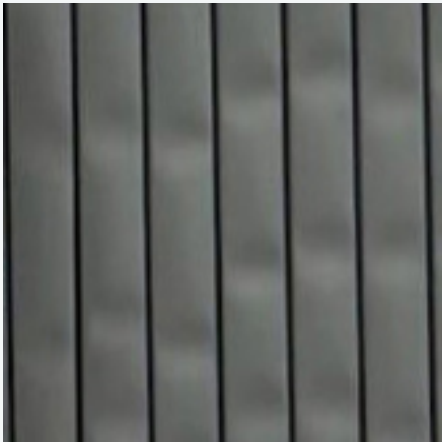
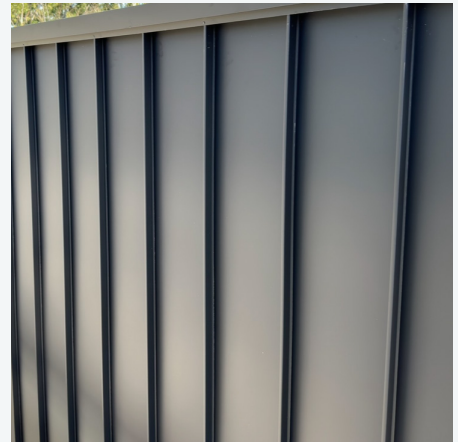


Figure 2 Colorbond Night Sky



Figure 3 Colorbond Matt Monuent



*** The three images above illustrate the different reflective qualities of Colorbond Ultra, standard Colorbond paint, and Colorbond Matt finishes, highlighting how imperfections are visible on each surface.*

What Causes Oil Canning

Manufacturing Process

During the manufacturing stage, varying tensions may be introduced into the metal. This can happen when coils are rolled or slit to the correct width before roll-forming. Traditional corrugated or multiple ribbed profiles are formed from the centre outward, which can push tension towards the edges. Architectural profiles, with wider flat sections and higher ribs, may trap tension in the centre or flatter areas. ZMR use modern, well maintained equipment and professional processes can help minimise these issues.

Handling of Materials

Proper handling of finished products is crucial. Avoid lifting long panels from one end or a corner, and take care when packing, unpacking, or tilting bundled products. Always carry panels in a way that prevents undue stress, and use multiple people to help during transportation, loading, and installation to avoid unwanted twisting or flexing.

Installation Guidelines

Engaging experienced installers who adhere to product guidelines is essential. The substrate must be square and plumb, as any imperfections or misalignments will likely become visible once the panels are installed. Install all materials in a relaxed state, without applying unnecessary force or flex. This prevents visible distortion as the metal expands or contracts.

Ensure flashings, capping, or accessory fixings do not create points of restriction that could impede normal thermal movement. Where expansion slots are used, avoid over tightening fixings and ensure screws are correctly positioned.

How to Minimize Oil Canning

Installation and Handling -Pay close attention to installation techniques and handling practices. Make sure substrates and accessories are properly detailed to minimize the potential for oil canning.

Surface Finishes

Highly reflective or glossy surfaces tend to show imperfections more visibly. The perceived severity and position of oil canning can be influenced by the coating or finish applied to the product. Consider using patterned or textured finishes that reduce reflectivity or opt for matt colours with unique ripple paint systems that diffuse reflected light.

Colour and Panel Size

Darker colours absorb more radiant heat, resulting in greater thermal movement and increased risk of oil canning. Shorter and narrower panels experience less expansion and contraction, reducing the likelihood of oil canning.

Panel Design and Material Choices

Rolling striations or flutes into flat pans or increasing the base metal thickness can help reduce oil canning. In some cases, fitting architectural panels to a solid substrate, such as plywood, or using a breathable mesh underlay, can encourage sheets to expand uniformly, making oil canning less noticeable.