

TECHNICAL  
BULLETIN

**AAF**

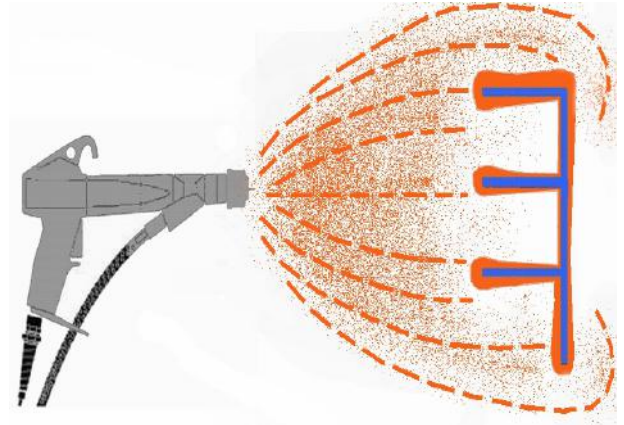
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## POWDER COAT THICKNESS

In conventional wet spray painting, the painter directs the spray paint in a particular area of a part. However, in powder coating, the metal part attracts the charged powder particles to it. Typically, edges attract more of the powder particles and recessed areas attract less. As a result, powder coat thickness will naturally vary across the parts surface profile. In general, the more complex the shape, the more likely that paint thickness will vary across its surface.

As specified in the Australian Standard AS3715, sec 2.5.3. The “Average Coating Thickness”\* on “Significant Surfaces”# shall be a minimum of 60µm. Individual measurements are permitted to be as low as 48µm (80% of 60µm) so long as the average of the sampled item achieves an average coating thickness minimum of 60µm (microns).



Given the nature and complexity of the various parts and extrusions required to be coated, there is no maximum coating thickness specified in AS3715. Typically, coating thickness in the range of 60-120 µm on external significant surfaces would be considered normal for the majority of bulk ordered architectural extrusions.

On small parts and prefabricated parts with a lot of open area, it is more difficult to obtain even coating thicknesses; so these parts may also result in higher than typical coating thicknesses.

The figure above is an exaggerated representation of coating thickness electrostatically applied to an extrusion. It can be seen that outer edges achieve more coating than recessed areas.

Notes:

\* Measured using prescribed statistical method in AS 2331.1.4 over multiple measuring points & areas.

# Significant Surfaces “do not including edges, deep recesses and secondary surfaces”.

## OPACITY

Similar to liquid paint, Powder coatings contain pigments to provide an appearance of the required colour. Just as we experience in painting a ceiling or wall. As the layer of paint applied becomes thicker, less of the original colour of the substrate can be seen through the paint. Thus the coating is said to become more opaque & less translucent with increasing thickness.

Even though powder coatings commonly exhibit a natural wavy appearance that suggests they may be thick, the typical powder coat layer is less than 1/10<sup>th</sup> of a millimetre thin (< 100 µm). Alike to that experienced by a house painter, different colours exhibit varying abilities to cover

(or “hide”) the substrate for the same thickness of paint. This property of paint to cover is termed its “Opacity”.

As there is a large selection of colours to choose from, we find that the various pigments used to create colours, each have varying degrees of “Opacity”. As an example, the pigments used to create certain white/yellow colours, such as “White Birch”, “Satin White” & “Chalk USA” tends to have lower Opacity than other colours. As a result, at the same coating thickness, more of the substrate can be seen through the paint when compared to other colours.

Whilst this phenomenon does not occur regularly, understandably, the probability of such increases when a lower opacity colour is applied to a job that contains complex sections and /or involves assembly of various post coated items on the same plane.

### **EDGE-PULL**

Another related phenomenon with paints and powder coatings is known as “Edge Pull”. This occurs in areas when a sharp edge is present on the metal substrate. Whilst the powder coating is being cured and is in a gel state, the sharp edge can cause the powder to pull away. The result is lower powder build along that sharp edge. In certain colours with lower opacity, this sharp edge can be seen through the coating and appears as a fine grey line.

### **EDGE-PULL RISK REDUCTION**

To minimise the risks of Edge Pull becoming apparent, it is suggested that

- Items be designed/manufactured with as large a radius as possible.
- Wherever possible, use higher opacity options over known “Low Opacity” Colours

### **NOTE**

Details contained herewith do not constitute specific advice, merely they are provided as a matter of courtesy and as general information only. You should seek your specialist’s advice, to ensure that any information or suggestion meet your specific requirements. Reference should be made to the respective standards for the finish concerned as well as Australian Aluminium Finishing Pty Ltd (AAF) Terms and Conditions of Sale. Latest releases of Australian Standards are available for purchase via the following website; [www.standards.com.au](http://www.standards.com.au)

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