

What Does the Term “Suitable for Coil Coating” Mean?

Coil Coating facilities may have similar, yet, at times, very different processes that enable them to produce materials to meet the needs of our customers. For example, some coaters may have multiple cleaning, brushing, rinsing and treating stages as well as pre- or post-tension leveling within their coating lines. These multiple stages may allow them to process metal coils that other coaters who have single stages of cleaning, rinsing, treating and coating may not be able to run.

Customers should investigate the capabilities of coaters, suppliers and mills or service centers before selecting a partner and should match those capabilities to the needs of their specific applications. Particular care must be taken when metal availability is limited. This is especially true at those times when metal may be sourced from suppliers not usually involved with applications involving coil coating, and the metal processed may not be as compatible with the demands of the coil coating process.

Listed below are some suggestions to assist in establishing metal properties and requirements for a successful product. If a material must conform to an ASTM or other published industry standard, be sure to specify this requirement on the purchase order.

Substrate:

- Must be purchased as prime, unless secondary is agreed upon with the coater and supply chain.
- Determine the capability of your coater to process coils.
- Most metal products are manufactured to meet an ASTM or other published industry standards.
- Most mills will know the capabilities of the coaters with whom they have experience, but it is best to define and quantify the requirements on critical applications.
- In the case of coated metals, such as zinc and zinc alloys (iron or aluminum), there are requirements for weight, thickness, adhesion and appearance. These requirements are found in ASTM or other published industry standards.

Shape:

- Terms such as “flatness critical”, “no edge wave”, “no center buckle”, “no camber”, etc. are not typically achievable or quantifiable; however, there are available ASTM and other published industry standards to quantify expectations.
- The best practice would be to develop a mutual agreement with the mill or service center and the coater and, if necessary, level material during the blanking process to achieve flatness.

Surface Cleanliness:

The cleaning needed for metal surfaces is understood, and pretreatment suppliers can recommend cleaners that will provide coil coaters with a well prepared surface for subsequent pretreatment. The following comments provide a coater with some ways of monitoring cleanliness:

- Adhesion issues may be related to cleanability but are also related to pretreatment and the full paint system. In general, it is preferable to use other methods for identifying cleanability issues before using adhesion as a check. Once the adhesion issue has been related to cleanability, it can be a useful measure of the issue.
- Sudden severe loss of adhesion is likely to be a result of a change in the cleanability of the substrate.
- Most substrates will have occasional stains that can not be removed in a coil line cleaner.
 - CRS can have dark stains.
 - HDG can have white rust or dark stains.
 - Passivated Galvalume can have dark stains.
 - Aluminum can sometimes have a light, off colored stain.

Treatments, Oils and Passivates:

- For HDG, CRS and Aluminum it is expected that the surface will have a light oil for rust prevention and is not passivated.
 - If metal has passivation and/or medium to heavy oil, consult with the coater and the supplier base to determine if a solution is available to process material.
 - Interest in painting passivated HDG on a coil line is growing. There are ways of preparing the surface for this but painting passivated HDG can involve significant paint performance and/or warranty issues.
- For Galvalume it is expected that the surface will have a chromate passivate.
 - Galvalume, in addition to being passivated, may also have a light oil for rust prevention
 - Galvalume may be lightly oiled and not passivated.
- Aging is a significant issue with all oiled and passivated surfaces. As the substrate ages the oils and passivates become more difficult to clean and pretreat. Defining a suitable age of material is difficult due to the impact of the environment under which it is stored.
- There are industry standard oils used in the USA. If there is any question about the ability of the coater to remove oil, or if the oil is coming from abroad, the best thing to do is to provide a sample to the coater so its treatment supplier can test the material for cleanliness and treatability.

Edge Sealers:

- Most coil coaters will not accept coils with edge sealers.

Holes and Welds:

- Most coil coaters will not accept holes or welds within the coil.

Edge breaks, saw tooth edge, and edge burrs:

- Most coil coaters will not accept saw tooth edges. Also, coaters do not like to have edge burrs in excess of 0.003" as both conditions will cut coating rolls. Burrs should be burr face down rather than face up.

Additional items of concern:

- There may be other items that affect the suitability of material for coil coating, including, but not limited to, the following: rust, zinc dross, mill marks, pits, stains, laminations and previously treated, painted or stenciled substrate.