


COATINGS & FINISHES



A few examples of the myriad of vinyl films available. Embossing the laminated metal creates additional texturing for a unique aesthetic appearance. Source: Clad Rex

Vinyl Clad Metal: THE NEW PRE-PAINT?

It may be time to consider this little known material for your product lines.

by bill emery

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Vinyl Clad Metal (VCM) is one of the best kept secrets in the appliance industry. Why? VCM is only produced by a few manufacturers domestically and a handful overseas. There are many pre-painted and powder coated metal producers in every major industrial area and one of their core markets is the appliance industry. Pre-paint sales representatives number in the thousands, while there are only a small number of people in the U.S. offering VCM to appliance manufacturers.

VCM has been in use in appliance manufacturing since the 1960s and was originally used for television side panels. The early microwave ovens were predominantly designed with wood grain sides, which were made from vinyl clad metals. In the past, other appliances that were manufactured using VCM included vending machines, juke boxes, and cable boxes.

Currently, many appliances utilize pre-painted metals for visible exteriors. VCM offers designers many more options

versus pre-paint as vinyl film comes in a myriad of colors, wood grains, leathers, natural stone, geometric patterns, and textures. Additionally, VCM is a superior alternative to pre-painted or powder coated metals as vinyl clad metal is much more durable, more resistant to scratches and scuffs, more sound dampening, and less prone to condensation.

VCM is produced by laminating rolls of vinyl film to various sized full sheet product. The sheets are often sheared into smaller blanks as required by the manufacturer. Additionally, first stage fabrication or complete fabbed parts can be furnished as specified. VCM is also available in coil form for any appliance manufacturers that have a high volume stamping line. Vinyl can be applied to carbon steel, aluminum, and also to stainless where corrosion resistance is critical. For instance, the exterior of a cabinet could use VCM for its decorative and durable appearance, but the interior may house food or medical equipment and must

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Here are some diverse examples of appliances that utilize vinyl clad metal for durability and appearance, including a drinking fountain, sound amplifier, beverage cooler, and medical equipment. *Source: Clad Rex*

be stainless.

Vinyl laminated to metal, when properly applied, will follow almost any fabrication that the substrate metal can perform. Fabrication would include laser and water-jet cutting, press braking, roll forming, stamping, perforating, punching, hemming, lock forming, etc. The key to making superior VCM processed parts is to start with product that has excellent adhesion of the vinyl to the metal throughout the entire starting sheet.

Proper adhesion starts with metal that has been cleaned properly and then processed to slightly roughen the smooth surface. The metal is then heated to the optimum temperature at the time that the adhesive is applied with a series of rolls. Water quenching is needed to cool down the finished product allowing the adhesive to set quickly, creating an excellent bond of the vinyl to the substrate material. Hot melt PUR (polyurethane) systems are utilized as another method to manufacture VCM. This process employs glue that has been heated before application to ambient temperature metal. PUR is the preferred method of applying vinyl to wood or particle board for millwork, furniture, and cabinets.

Vinyl clad metal can be produced in small quantities as well as large production runs. This flexibility is crucial to manufacturers' designers. Prototypes oftentimes need to be built, tested and shown before larger scale production is started. Most vinyl films and metal substrates are readily available, resulting in short lead times and quick implementation of managed stock inventories as required by the manufacturer.

Some typical products that are currently incorporating VCM:

- ▶ Front and side panels of water coolers
- ▶ Skins of wine, beer, and beverage refrigerators
- ▶ The bases and sides of refrigerated store cases and displays
- ▶ Portable space heaters
- ▶ Microwave wraps
- ▶ Amplifier and sound equipment cases
- ▶ Electronics cabinets
- ▶ Medical equipment exteriors

Why should appliance manufacturers use vinyl clad metal as an alternative to pre-painted metal? The vinyl film is 6 to 14 mils in thickness whereas powder coat may be only 1 to 2 mils thick. The heavier vinyl coating is much more durable which creates appliances that will maintain their appearance for a longer period of time – a huge benefit for the ultimate consumer of the product. Additionally, appliance manufacturers can offer a much broader selection of exterior finishes to their customers as vinyl offers thousands of patterns and textures. While powder coated suppliers have

recently developed more textures and some simulated wood grains, VCM is far superior when it comes to the depth and textured clarity of the wood grain or pattern.

The slightly higher cost of VCM as compared to pre-paint can be justified by the manufacturer whose goal is to be the premier choice by the consumer in their respective industry. Appliance designers that can offer their marketplace a much more durable product that has a superior decorative appearance will build brand loyalty from their company's customers. VCM is an excellent alternative to fulfill the end users' constant quest for new and innovative products and/or enhancements to existing product lines.

Many thanks to the designers, product managers, and executives in the appliance industry who have taken the time to read this article and learn about vinyl clad metal. Consider this little known material for your product lines and get a leg up on your competition. The secret is now yours to keep! ■



When vinyl has been properly applied to the metal, VCM can be fabricated with most any process and will show no signs of delaminating. *Source: Clad Rex*