



## VISUAL INSPECTION STANDARDS FOR VACFORMABLE FILM LAMINATE PRODUCTS

**INSPECTION STANDARD PURPOSE:** To delineate specific guidelines for visual and structural inspection of laminate/vacformed finished products.

**SCOPE:** These standards shall apply during the production of decorative laminated sheet products by Rowmark Custom Laminations and shall constitute the basis for determining a products approval for shipment to RCL customers. Sheet products falling outside of these guidelines will be deemed as rejectable and therefore unacceptable for shipment.

**BACKGROUND:** Vacformed products vary widely in their propensity to show visual and/or aesthetic defects depending on the different characteristics of each product. Each product has built in variables such as how many lamination passes each product has and the limitations of various foils that are used. Further aesthetic damage can and does occur during processing. These defects can be minimized by careful handling and shipment methods. To expect 100% defect-free material to flow through this process is unrealistic. To minimize visual defects, with the objective of delivering defect-free parts while incurring minimal costs to all concerned, results only from the cooperative efforts of all parties within the supply chain to Rowmark Custom Laminations.

**INSPECTION:** (reference ASTM D 3359)

A. Physical: Decorative film laminates/vacform material will be subject to a 3M S10-tape test to verify surface bonding. This is done to three areas on the sheet (i.e., top, bottom, and across the middle). All decorative film laminates material will be subject to a crosshatch test after vac-forming. We do this by taking a razor knife and scoring a tic-tac-toe pattern through the hardtop. Then we take a four-inch piece of 3M 610 tape and put down over the tic-tac-toe pattern adding 5-10 lbs. of pressure with a blunt object. Snatching the tape, it is required that the product meets the ASTM 3359 standard, scale 12.9. Failure is denoted as a score of ZB on the ASTM scale. In addition, any clear cap product is to withstand 1000 QUV hours with no significant aesthetic damage.

- B. Visual/Aesthetic inspection of vacform decorative laminates
1. All decorative finishes shall be color/pattern correct within 5% of the original master standard. This determination will be made by a consensus of three or more people using Pantone Color Viewing Light @ Daylight 5000 setting.
  2. Visual finished surface inspection will consist of the following:
    - a. There shall be a minimum of 24 inches of base foil coverage, with a tolerance of one inch around the perimeter of the sheet, unless otherwise specified and agreed on by RCL and their customer.



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- b. Holding the finished product perpendicular at arms length approximately 29 inches, at a 105 degree angle, (see diagram) and for a period of 20 seconds, it shall be visually inspected under cool white Watt Miser bulbs (F40CW-RS-WM) lighting inspection table for discoloration, blemishes, and pattern breaks. Any irregularity of decorative surface, in excess of the Maximum Defects Chart found below will be rejected. Irregularities not seen by the naked eye at 29 inches will be deemed acceptable.
- c. Any irregularity found 2 inches or 50mm around the perimeter of the sheet shall be excluded due to the vacform process.
- d. Maximum Defects Chart refers to any surface irregularities or degradation. For example: pits, porosity, gels, craters, bumps, sink spots, fisheyes, voids, etc..

### MAXIMUM DEFECTS CHART

Viewing area 736mm (27") X 736mm (27")

Defect must be 100mm (4") apart within the Viewing area

#### **ZONE A**

< 1.5mm, 5 max

#### **ZONE B**

< 1.5mm, 6 max      < 2mm, 2 max

#### **ZONE C**

< 1.5mm, 6 max      <2mm, 2 max

Note: Defects will be measured using the RCL size estimation chart (millimeters scale)