

## Quality Guidelines – Visual Inspection For Coated & Non-Coated Glass

Manko's glass complies with the following ASTM Standards Specifications. All standards are for 1/4" or less; glass thicker than 1/4" and less than or equal to 1/2" may contain proportionally more and larger blemishes based on Quality Q-3. These specifications are based on monolithic single glass; multiple lites as in insulated glass and/or insulated glass with laminated glass; would qualify each lite for its appropriate specification or specifications and may contain proportionally more and larger blemishes. Multi-layers of heat-treated glass will result in a considerable higher level of roll wave distortion.

### FLAT GLASS

ASTM C-1036-01; Standard Specification for Flat Glass

### COATED GLASS

ASTM C-1176-03; Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass

### HEAT-TREATED GLASS

ASTM C-1048-04; Standard Specification for Heat-Treated Flat Glass – Kind HS, Kind T Coated and Uncoated Glass

### LAMINATED GLASS

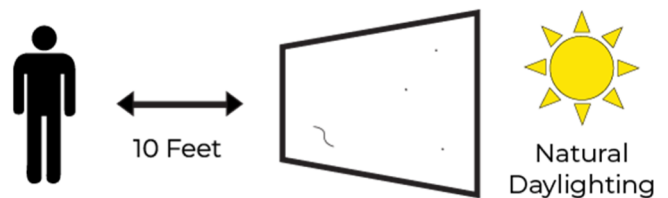
ASTM C-1172-03; Standard Specification for Laminated Architectural Flat Glass

### VISUAL INSPECTION FOR COATED & UNCOATED VISION GLASS

Normal viewing distance is 10 feet for vision glass and 15 feet for spandrel glass. The viewing angle should be 90° perpendicular to the surface using natural daylight (without direct sunlight), or with uniform background lighting that simulates daylight.

Visible scratches or blemishes greater than 2", detectable from 10 feet in the central viewing area, which is defined by 80% of the length and 80% of the width dimensions centered on a lite of glass are not acceptable.

Pinholes up to 1/16" are allowed in the central viewing area and 3/32" in the outer. No more than two readily apparent blemishes (a cluster) are allowed in a 3" diameter circle, and no more than five are allowed in a 12" circle. Clusters greater than 1/32" and visible from 10 feet are acceptable only outside the central viewing area.



#### Dimensional Tolerances

Single Glass (up to 1/4"): (+/-) 1/16"  
 Single Glass (3/8" to 1/4"): (+/-) 1/8"  
 Laminated Glass: + 1/4" / - 1/8"  
 Polished Glass (1/8" - 1/4"): (+/-) 1/16"  
 Polished Glass (3/8" - 1/2"): (+/-) 1/8"

#### Insulated Glass Tolerances

Insulated Spacer Sight Line: 1/2" + 1/16"  
 Insulated Sealant Sight Line: 9/16" + 1/16"  
 Insulated Glass Thickness: (-) 1/16" (+) 1/32"  
 Insulated Glass Offset: (+/-) 1/8"  
 Muntin Alignment: (+/-) 1/4"

#### Glass Edge Tolerances

Laminated Glass Offset + 1/4" / - 1/8"  
 Shell Chips Less than 1/4" Allowed