

PERMISSIBLE SPOT DEFECTS IN LAMINATES

Spot defects include opaque spots, bubbles and foreign bodies.

Size of Defect		0.5≥1mm	1≥3mm			
Size of Laminate		Any Size	≤1m ²	1≤2m ²	2≤8m ²	>8m ²
No. Permissible Defects	3 Ply	No limits but no accumulation of defects.	1	2		
	5 Ply		2	3		
	7 Ply		3	4		
	≥9 Ply		4	5		

An accumulation of defects occurs if four or more defects are at a distance of <200mm from each other for 3 ply laminates, reduced to 180mm for 5 ply laminates, reduced to 150mm for 7 ply laminates, and reduced to 100mm for over 9 ply laminates. Defects less than 0.5mm are not considered and defects greater than 3mm are not permitted. The number of permissible defects in table above shall be increased by one for each individual interlayer that is thicker than 2mm.

PERMISSIBLE LINEAR DEFECTS IN LAMINATES

Linear defects include foreign bodies and scratches or gazes. Linear defects less than 30mm are permitted.

Area of Laminate	No. Permissible Defects ≥30mm in length
≤5m ²	Not Allowed
5≤8m ²	1
>8m ²	2

DEFECTS IN LAMINATE EDGES THAT WILL BE FRAMED

Framed laminate edges are those that will be fully framed within a system in that edges will not be visible once installed. Defect sizes less than 5mm are allowed. Laminate edges that will not be framed are permissible if they do not become obvious when observed from a distance of 2 metres with the laminate in a vertical position in front of and parallel to a matt grey screen lit by diffuse daylight or equivalent.

Laminate Size	Size of Edge Area	Size of Defect	Defect Permitted	Bubbles Tolerance
≤5m ²	15mm	≤5m ²	Permitted	≤5% of edge area
≤5m ²	15mm	>5m	Not Permitted	≤5% of edge area
>5m ²	20mm	>5m	Not Permitted	≤5% of edge area

VENTS, CREASES & STREAKS

Vents are sharp tipped fissures or cracks running into glass from an edge. Creases are distortions created from the interlayer visible after manufacture. Streaks are caused by interlayer defects.

Vents	Vents are not permitted within laminate panels.
Creases & Streaks	Creases and streaks are not permitted in the visual area so are permitted if they are located on edges that will be framed and are within tolerances specified.

INSPECTION TOLERANCES

All Laminate Products	Edge Finish	Visible distortions and textures on laminate edges can be caused through normal production processes and trimming methods and are permissible, unless a specific edge finish is requested by the customer when ordering.	
	Bow (Float & Toughened Laminates)	L & W <1000mm	2mm
		L & W 1000≤2000mm	4mm
		L & W 2000≤3000mm	6mm
		L & W >3000mm	9mm
	Bow (Glass to Polycarbonate Laminates)	≤5mm Per Linear metre	
	Holes & Notches	All Products & Thickness	±2mm
Length & Width	All Products & Sizes	±2mm	
	Quality Marketing	All laminate products are to be stamped with a quality mark where information displayed on them will be in accordance with relevant standards, third party certifications and manufacturing licences.	
LCD	Clear Border	A tolerance of up to 5mm for clear borders along all edges of LCD laminates is permitted.	
	Edge Film Optical Distortion & Creases	A tolerance of up to 4mm in length for optical distortions or creases within the LCD film is permitted up to 5mm from all edges.	
Coloured Surfaces & Interlayers	Colour Variances	Visual colour differences are permitted between samples and finished product where lighting, background conditions and panel size can create subtle changes.	

Tolerances for Laminated Glass INSPECTION TOLERANCES – BS EN 12543-5 : Dimensions & Edge Finish	
Length & Width	
<1100mm	±2mm
<1500mm	+3mm -2mm
<2000mm	+4.5mm -2mm
<2500mm	+4.5mm – 2.5mm
>2500mm	+5mm – 3mm
Thickness	
3 Ply Laminates	±0.4mm
5 Ply Laminates	±0.6mm
7 Ply Laminates	±0.8mm
9 Ply Laminates	±1.0mm
11 Ply Laminates	±1.2mm
13 Ply Laminates	±1.4mm
15 Ply Laminates	±1.6mm
Stepped Laminates Misalignment	
L&W<1000mm	±2mm
L≤2000mm / W≤1000mm	±3mm
L≤4000mm / W≤2000mm	±4mm
L&W>4000mm	±6mm
Edges	Laminates containing toughened or heat strengthened glass cannot be cut, sawn, drilled or edge worked once laminated. Cut edges must be ground off or edge worked so to minimise the risk of cuts when handling. Possible edge working techniques include arrissing, ground edge, smooth ground edge, polished edge, sawn edge, water jet cut edge, and bevelled edge which must have an angle no greater than 60°±3°.