

APPENDIX

1.1 Sirim QAS International Test Report

Sample: Tempered Glass

Nominal Thickness: 12mm

Method of Test: AS/NZS 2208:1996

Clause	Requirements	Results	Remarks																		
2.2	Thickness Requirements																				
	Standard nominal thickness of safety glass	12mm	PASS																		
	Glass Thickness Limits: Minimum 11.8mm Maximum 12.3mm	Sample 1 - 11.914mm Sample 2 - 11.913mm Sample 3 - 11.893mm Sample 4 - 11.882mm																			
2.3	Size Tolerance Requirement																				
	<table border="1"> <thead> <tr> <th rowspan="3">Standard Nominal Thickness</th> <th colspan="4">Tolerance Limits</th> </tr> <tr> <th colspan="2">Non-Patterned</th> <th colspan="2">Patterned</th> </tr> <tr> <th>>1200</th> <th>≥ 1200</th> <th><1200</th> <th>≤1200</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>+2</td> <td>+3</td> <td>+4</td> <td>+5</td> </tr> </tbody> </table>	Standard Nominal Thickness	Tolerance Limits				Non-Patterned		Patterned		>1200	≥ 1200	<1200	≤1200	12	+2	+3	+4	+5		
	Standard Nominal Thickness		Tolerance Limits																		
Non-Patterned			Patterned																		
>1200		≥ 1200	<1200	≤1200																	
12	+2	+3	+4	+5																	
Declared Size: 1938mm x 876mm	1938mm x 876mm	PASS																			
2.4	Squareness or Rectangular Panels																				
	Does not exceed 5mm where the largest dimension is less than 1200mm and 10mm for all other panel	0mm	PASS																		
2.5	Flatness Requirements																				
	The flatness of panels shall be within the following limits	0mm	PASS																		
	Localized ward 1.0mm over any 200mm span. Overall bow and warpage for 1501mm to 3000mm: 1mm in every 300mm.	0mm	PASS																		
3.2	Impact Test	Sample																			
	All four test pieces shall not break, or shall break safely as defined for the specified material when tested, at any drop height appropriate to the class for which the material is intended.	* Remain unbroken until 1500mm drop height. * Weight of 10 largest crack-free particles: 23.430 grams	PASS																		
	For Grade A, the test shall be started from 300mm drop height. If the specimen does not brake and remains intact within the frame, the drop height shall be increased as follows; Grade A 300mm, 450mm, 600mm, 750mm, 900mm, 1200mm and 1500mm.	* Remain unbroken until 1500mm drop height. * Weight of 10 largest crack-free particles: 29.010 grams	PASS																		
	Where breakage occurs it shall comply with the requirement as below:																				
	1) The 10 largest crack-free fragments selected 3 minutes after impact, together weight no more than the mass equivalent to 6500mm ² for the original test piece. The maximum weight for area of 6500mm ² for specimen with thickness of 5mm shall be 196.11 grams.	* Remain unbroken until 1500mm drop height. * Weight of 10 largest crack-free particles: 20.725 grams	PASS																		
2) If the test piece does not break at the selected maximum drop height, use a centre-punch with sufficient force to deform or break the glazing material and examine the fracture pattern.	* Remain unbroken until 1500mm drop height. * Weight of 10 largest crack-free particles: 32.725 grams	PASS																			
3.3	Fragmentation Test																				
	When tested, the sample shall comply with the minimum of 40 particles per square of 50mm side.	Sample 1: 41 pieces	PASS																		
1.6	Classification																				
	All safety glazing materials shall be classified as either Grade A or Grade B	Grade A	PASS																		

Sample: Laminated Glass

Nominal Thickness: 6.38mm

Method of Test: AS / NZS 2208:1996
(Safety Glazing in Building)

Sample Description:

	First Layer	Second Layer	Third Layer
Materials	FL3	0.38 CLR	FL3
Thickness	3mm	0.38mm	3mm

Clause	Requirements	Results	Remarks																		
2.2	Thickness Requirements																				
	Standard nominal thickness of safety glass	12mm	PASS																		
	Glass Thickness Limits: Minimum 5.6mm Maximum no limit	Sample 1 - 6.07mm Sample 2 - 6.07mm Sample 3 - 6.06mm Sample 4 - 6.06mm																			
2.3	Size Tolerance Requirement																				
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Declared Size: 1938mm x 876mm	1938mm x 876mm	PASS																			
2.4	Squareness or Rectangular Panels																				
	Does not exceed 5mm where the largest dimension is less than 1200mm and 10mm for all other panel	0mm	PASS																		
2.5	Flatness Requirements																				
	The flatness of panels shall be within the following limits	0mm	PASS																		
	Localized ward 1.0mm over any 200mm span. Overall bow and warpage for 1501mm to 3000mm: 1mm in every 200mm.	0mm	PASS																		
3.2	Impact Test																				
	All four test pieces shall not break, or shall break safely as defined for the specified material when tested, at any drop height appropriate to the class for which the material is intended.	Sample 01: * Break safely at 450mm drop height	PASS																		
	When breakage occurs it shall comply with requirements for breakage as given.	Sample 02: * Break safely at 600mm drop height.																			
	1) It has broken and numerous cracks or fissures appear but no shear or opening develop within the body of the glazing material through which a 76mm diameter sphere can be passed freely, additionally if fragments are detached after 3 min impact, they shall in total weight no more than the mass equivalent to 10 000mm ² of the original test piece and the largest single fragment shall weigh less than the mass equivalent to 4400mm ² of the single piece.	Sample 03: * Break safely at 450mm drop height.	PASS																		
2) If the test piece cracks or deforms but is held together in a safe manner, it passes.	Sample 04: * Break safely at 450mm drop height	PASS																			
3.3	Boil Test for Laminated Glass																				
	When tested, the test sample might crack, but no bubbles or other defects shall develop more than 12mm from the edge of the test sample or from any crack that have developed.	No physical defect observed	PASS																		
1.6	Classification																				
	All safety glazing materials shall be classified as either Grade A or Grade B	Grade A	PASS																		

Sample: Tempered Laminated Glass

Nominal Thickness: 9.52mm

Method of Test:

AS / NZS 2208:1996

(Safety Glazing in Building)

Sample Description:

	First Layer	Second Layer	Third Layer
Materials	TPFL4	1.52 CLR	TPFL4
Thickness	4mm	1.52mm	4mm

Clause	Requirements	Results	Remarks																		
2.2	Thickness Requirements																				
	Standard nominal thickness of safety glass	12mm	PASS																		
	Glass Thickness Limits: Minimum: - Maximum: -	Sample 1 - 9.64mm Sample 2 - 9.65mm Sample 3 - 9.21mm Sample 4 - 9.23mm																			
2.3	Size Tolerance Requirement																				
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Declared Size: 1938mm x 876mm	1938mm x 876mm	PASS																			
2.4	Squareness or Rectangular Panels																				
	Does not exceed 5mm where the largest dimension is less than 1200mm and 10mm for all other panel	0mm	PASS																		
2.5	Flatness Requirements																				
	The flatness of panels shall be within the following limits	0mm	PASS																		
	Localized ward 1.0mm over any 200mm span. Overall bow and warpage for 1501mm to 3000mm: 1mm in every 300mm.	0mm	PASS																		
3.2	Impact Test																				
	All four test pieces shall not break, or shall break safely as defined for the specified material when tested, at any drop height appropriate to the class for which the material is intended.	* Break safely at 1500mm drop height	PASS																		
	When breakage occurs it shall comply with the requirement as given:	* Break safely at 1500mm drop height.																			
	1) It has broken and numerous cracks or fissures appear but no shear or opening develop within the body of the glazing material through which a 76mm diameter sphere can be passed freely, additionally if fragments are detached after 3 min impact, they shall, in total, weigh no more than the mass equivalent to 10 000mm ² of the original test piece and the largest single fragment shall weigh less than the mass equivalent to 4400mm ² of the single piece.	* Break safely at 1500mm drop height.	PASS																		
	2) If the test piece cracks or deforms but is held together in a safe manner, it passes.	* Break safely at 1500mm drop height	PASS																		
3.3	Boil Test for Laminated Glass																				
	When tested, the sample might crack, but no bubbles or other defects shall develop more than 12mm from the edge of the test sample or from any cracks that have developed	No physical defect observed	PASS																		
1.6	Classification																				
	All safety glazing materials shall be classified as either Grade A or Grade B	Grade A	PASS																		