

Technical Data Sheet

UltraMirror™ Plus

V.042025

Mirror Specification:

Standard reference

EN1036-1-2008-03 Glass in building mirror from silver-coated float glass

JIS R3220-2011 Glass in building – Silvered, flat-glass mirror

ASTM C 1503-18 Standard specification for silvered flat glass mirror

GENERAL

- | | | |
|---------------------------|---|-----------------------------|
| a. Silver plated | : | 65 - 75 mg/ft ² |
| b. Paint Thickness | : | Min 1.6 mil (40 micron) |
| c. Paint Color | : | Pistachio Green |
| d. Layer of paint coating | : | Double coat |
| e. Mirror type | : | Silvered copper free mirror |

OPTICAL PROPERTIES

a. UltraMirror™ Plus Clear

Clear mirror	2mm	3mm	4mm	5mm	6mm
%Reflectance	>93%	>92%	>91%	>90%	>88%
Zebra	≥40°	≥45°	≥50°	≥50°	≥50°

b. UltraMirror™ Plus Crystal

Ultra-clear mirror	5mm	6mm
%Reflectance	>94%	>92%
Zebra	≥ 55°	≥ 55°

c. UltraMirror™ Plus Tinted

Tinted mirror	Euro Grey mirror 5mm	Euro Grey Mirror 6mm	Euro Bronze Mirror 5mm	Euro Bronze Mirror 6mm
%Reflectance	>27%	>23%	>30%	>26%
L*	62.0-65.0	58.0—61.0	59.0 - 62.0	55.0-58.0
a*	0-2.0	0-2.0	4.5-6.5	3.5-5.5
b*	(-1.0) – 1.0	(-3.0)-0	9.5-11.5	7.5-9.5
Zebra	≥45°	≥45°	≥45°	≥45°

TOLERANCES ON DIMENSIONS (THICKNESS/ LENGTH AND WIDTH)

a. UltraMirror™ Plus Clear

Thickness (mm)	Tolerance (mm)*
2.0	1.8-2.2
3.0	2.8-3.2
4.0	3.8-4.2
5.0	4.8-5.2
6.0	5.8-6.2

Size	Tolerance (mm)	
Width & Length	+1	-2

*Refer to EN572-1:2016.

Remark that thickness and thickness tolerance are negotiable depending on customer request and Guardian's capability

b. UltraMirror™ Plus Crystal

Thickness	Tolerance (mm)	
5, 6 mm	±0.2	
Size	Tolerance (mm)	
	≤3000 mm	>3000 mm
5, 6 mm	±2	±3

c. UltraMirror™ Plus Tinted (Euro Bronze/Euro Grey)

Thickness	Tolerance	
5, 6 mm	±0.2 mm	
Size	Tolerance	
	≤3000 mm	>3000 mm
5, 6 mm	±2 mm	±2 mm

EDGE QUALITY

Flake	≤ Glass thickness
Bevel/Flare	
Corner	

PHYSICAL PROPERTIES

- a. Paint Adhesion Test : #4 (ASTM-D-3359)
- b. Solvent Rubs Test : >400 (ASTM-D-5402)

APPEARANCE

Reflection side/Mirror side defect	Scratch/corner dig	Cannot be observed at 50 cm distance (through fluorescent lamp) 300 lux
	Spot defect (bubble, tin, stone)	Allowed with density control as SPOT FAULT table
	Stain	Not allowed
	Cloudiness	Not allowed
	Black spot/red spot	Not allowed
	Dirtiness	Allowed for removable dirtiness
Coating side/Paint side defect	Paint peel off	Not allowed
	Paint blister	Not allowed
	Paint blip/void	Not allowed
	Paint inclusion	Cannot be observed at 50 cm distance (through fluorescent lamp) 300 lux
	Dirtiness at paint	Allowed for removable dirtiness

SPOT FAULT**a. UltraMirror™ Plus Clear**

Spot fault (bubble, tin, stone)	Spot faults (mm)	Block size** (Max/sheet)	Cut size (Max/sheet)
	$L \leq 0.3$	Accepted	Accepted
	$0.3 < L \leq 0.4$	4	2
	$0.4 < L \leq 0.8$	2	1
	> 0.8	Not allowed	Not Allowed

**Block size means cut size over 1829 x 2134 mm.

b. UltraMirror™ Plus Crystal

Spot fault (bubble, tin, stone)	Defect size L(mm)	Allowed defect quantity (/sqm)
	$L \leq 0.3$	Dense presence is not allowed
	$0.3 < L \leq 0.5$	2
	$0.5 < L \leq 1.0$	0.5
	$1.0 < L \leq 1.5$	0.2
	$1.5 < L$	0

c. UltraMirror™ Plus Tinted (Euro Bronze/Euro Grey)

Spot fault (bubble, tin, stone)	Defect size L(mm)	Allowed defect quantity (/sqm)
	$L \leq 0.5$	Dense presence is not allowed
	$0.5 < L \leq 1.0$	2
	$1.0 < L \leq 2.0$	1
	$2.0 < L \leq 3.0$	0.2
	$3.0 < L$	0

DURABILITY OF MIRROR

The durability of the silvered glass mirror shall be assured according to the following procedure.

Test method	Requirement	Criteria	Reference
Neutral salt dip test @3% NaCl 18-28°C 24 hr	Stain or cloud in silver coating	None	JIS 3220
	Bubble in protective coating	None	JIS 3220
	Edge corrosion	1.5 mm or under	JIS 3220
	Spot corrosion	>3mm: None 0.5-3mm: 2 spots 0.2-0.5mm: 5 spots <0.2mm: Accept if not cloudy	JIS 3220
CASS test @pH 3 48°C 120 hr	Stain or cloud in silver coating	None	JIS 3220
	Bubble in protective coating	None	JIS 3220
	Edge corrosion	1.5 mm or under	EN 1036
	Spot corrosion	0.2-3mm: 2 spots <0.2mm: Accept	EN 1036

INTERLEAVING

Powder interleaving