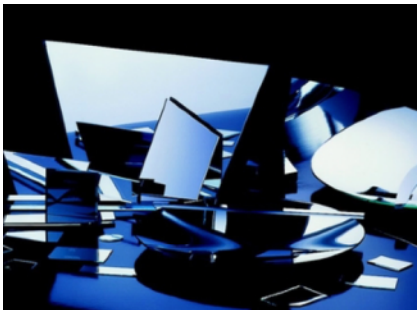

SCREEN-TECH
VISUAL COMPONENTS

ST-GS - Oberflächen-Glasspiegel für Projektion	
Beschreibung	hochwertiger, absolut verzerrungsfreier Glasspiegel ohne Doppelbilder
Werkstoff	Floatglas klar
Dicke - Planität - Maximalmaß	3 mm - 8/8/2 - 124 x 80 cm 5 mm - 20/20/4 - 125 x 80 cm 6 mm - gemäß Floatglas - 270 x 180 cm
Beschichtung	einseitig Aluminium mit reflexionsverstärkender Interferenzbeschichtung
Durchbiegung	< 0,1 mm /100 mm
Oberflächenschutz	dünne, leicht und ohne Rückstände entfernbare Schutzfolie
Abriebtest	200 Hübe, 566 g, mit Tuch
Haftungstest	mit Scotch, 3M 8981
Feuchtraumtest	48 h, 95% relative Luftfeuchtigkeit, 50°C
Tauchen in Salzlösung	37 g/l, 24 h bei Raumtemperatur
Salzsprühtest	nach ISO 9227 NSS, 48 h
Wischtest	20 Wischbewegungen mit Isopropylalkohol, Glasreiniger, Aceton
Tauchen in Isopropylalkohol	2 h bei Raumtemperatur
Klimawechsel	4 h bei 80°C, 4 h bei - 30°C, 16 h nach ISO 6270 Teil 1, 4 Zyklen
Langzeitwärmelagerung	7 Tage bei 100°C

Mindest-Reflexionswerte		
Wellenlänge in nm	**6° Lichteinfallswinkel**	**45° Lichteinfallswinkel**
400	> 92 %	> 92 %
450	> 93 %	> 93 %
550	> 94 %	> 94 %
600	> 90 %	> 90 %

Glas- und Oberflächenfehler			
Fehlerart	**Einzelfehlergröße**	**Maximal zulässige Fehleranzahl**	**Mindestabstand zweier Fehler**
Punktfehler	> 0,7 mm	nicht zulässig	50 mm
Pinholes	> 0,2 bis 0,7 mm	unbegrenzt	
Glasfehler	> 0,2 mm	nicht bewertet, aber keine Wolkenbildung	
Kratzer	Breite bis 0,08 mm	Gesamtlänge kumuliert, max. 1/3 der längsten Kante	50 mm

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ST-GS Specification FSM-ED-001

Front Surface Mirror for Projection Systems

1.0 Description:

This specification defines the quality and performance criteria for a thin film front surface mirror coated product on glass substrates for use in rear projection TV systems.

2.0 Reference Documents

The following Screen-Tech documents form a part of this specification to the extent specified herein:

Snap Tape Adhesion Test Cheesecloth Rub Durability

Humidity Test
Salt Spray (Fog) Test

3.0 Performance/Operating Characteristics Required

3.1 Physical Characteristics:

3.1.1 Substrate thickness:

Nominal Thickness	Normal Tolerance Range
3 mm	2.92 - 3.40
5 mm	4.57 - 5.05
6 mm	5.56 - 6.20

3.1.2 Flatness:

ED Mirror shall be manufactured from substrates having flatness characteristics of standard commercial grade soda lime float glass. More critical flatness characteristics may be quoted on request.

3.2 Optical Performance:

Spectral reflectance performance of the front surface mirror coating at a 45° angle shall meet the following minimum values:

Wavelength	Minimum % Reflectance
40 nm	91.5 %
450 nm	94.0 %
500 nm	94.0 %
550 nm	93.5 %
600 nm	91.5 %
650 nm	89.0 %
700 nm	85.0 %

3.2.1 Optical drawlines:

This optical effect is inherently connected to the surface flatness of the glass and will ALWAYS be visible in nowadays high resolution projection system.
One can only reduce its visibility by setting parameters like number of mirrors, thickness of all mirrors involved, beam angle in the optical paths, polarization, size of the mirror, which is connected to the possibility to orient the drawlines to make them least visible. Only optically polished glasses don't show this effect. However, they are not available for such applications.

3.3 Environmental / Durability Characteristics:

Adhesion: The coating shall show no damage after 3M Snap Brand No.610 tape (or equivalent) is pressed firmly against the front surface mirror coating surface and removed quickly by a snap of the wrist.

Abrasion Resistance: The coating shall show no damage after a 200-rub test with a dry cheesecloth pad approximately ⅜“ (9.525mm) diameter by ½“ (12.7mm) thick. The bearing force shall be one pound ± ¼ pound (0.454 kilograms ± 0.114 kilograms).

Humidity Resistance: The coating optical performance (section 3.2) shall not deteriorate after exposure to 24-hour humidity test of 49° C / 95% relative humidity.

Corrosion Resistance (Salt Fog): The coating optical performance (section 3.2) shall not deteriorate after exposure to a 24-hour salt fog test (5% NaCl by weight) at 35° C.

3.4 Dimensional Tolerances:

All fabricated parts are sized with tolerances specified by the customer’s drawing.

3.5 Surface Quality Characteristics:

Edge Chips:

Chip Length	Quantity Allowed
> 5 mm (0.200“)	None Allowed
< 5 mm (0.200“)	Disregard
Chip Depth	Quantity Allowed
> 2.5 mm (0.100“)	None Allowed
< 2.5 mm (0.100“)	Dieregard

Minimum Usable Area:

Fabricated parts will be inspected to a 100% usable surface area, minus a 10 mm border.

Defect Category	Aceptance Criteria Quantity of Defects per square foot (304.8 mm²)
Linear (size 100) **Width of Scratches:** Scratches or other imperfections, which are long and narrow in nature and visible by reflection or by transmission. Defects are evaluated at the widest point.	> 0.10 mm width no allowed (> 0.004“) 3 linear defects 0.05 - 0.1 mm width (0.002“ - 0.004“) per square foot Smaller defects are disregarded
Circular (size 120) Imperfections that are round in nature visible by transmission or by reflection. **Diameter** is mean diameter measured as (L+W)/2)	> 1.2 mm width not allowed (> 0.048“) 5 circle defects diameter 0.50 - 1.20 mm (0.020“ - 0.048“) per square foot Ignore circular defects < 0.25 mm (0.010“)
Stains	Visiblw stains are not allowed

Fractures: None allowed.

4.0 Quality Assurance Provisions

A Certificate of Compliance shall be supplied upon request.

5.0 Preparation for Delivery

Approved protective film is applied to the mirror's front surface.

Mirrors are separated by special interleaves.

Shipping labels will put on the boxes with following information: product type, item number, production date and quantity.

6.0 Notes

Screen-Tech reserves the right to make changes in processes, materials and packaging which do not affect the form, fit or function of the mirror in the intended application of rear projection televisions.

Variations, exceptions or clarifications to any of the specification requirements contained herein shall be noted in the applicable Screen-Tech quotation.

7.0 Safety Information

Screen-Tech strongly recommends the wearing of personal protective equipment when handling glass mirror product.

Please use our unpacking instruction for Screen-Tech boxes.