



**AGC**

## **Technical Data Sheet**

### **Sunlux Gold SS**

October 2023 – Version 1

Your Dreams, Our Challenge

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# 1 INTRODUCTION

This Technical Datasheet gives information about the range of Solar reflective glass “Sunlux Gold SS”. The information by this document are related only to stock sizes.

## 2 NORMATIVE REFERENCES

The following standards contain provisions for normative references of Sunlux Gold SS products.

- ISO 11479 - Glass in building - Coated glass -
- JIS R3221 – Optical Coated Glass
- SNI-ISO 11479 - Glass in building - Coated glass –
- ISO9050 - Glass in building – Determination of light transmittance, solar direct transmittance, total solar energy transmittance, ultraviolet transmittance and related glazing factors following a production factory.

And its glass substrate has been produced under a national standard as follows:

- SNI-15-0047-2005 (*Clear and tinted float glass*)

Sunlux Gold SS is produced in factories being ISO 9001 certified and the factories have established their original QMS with high-performance QC methods of their own.

## 3 EXAMPLE DATA OF GLASS COMPOSITION AND THERMAL PROPERTIES

### 3.1 CHEMICAL COMPOSITION

Sunlux Gold SS is produced with float glass substrate whose composition complies to

SiO <sub>2</sub>	69 to 74 %
Na <sub>2</sub> O	10 to 16 %
CaO	5 to 14 %
MgO	0 to 7 %
Al <sub>2</sub> O <sub>3</sub>	0 to 3 %
Others	0 to 5 %

### 3.2 THERMAL PROPERTIES

- Softening point: 700-740 °C
- Distortion point 500-540 °C
- Linear expansion coefficient:  $\alpha = 85-92 \text{ (} \times 10^{-7}/^{\circ}\text{C)}$

## 4 DURABILITY OF SUNLUX GOLD SS COATINGS

All Sunlux Gold SS coatings conform to JIS R3221 which requires three types of durability tests as

Abrasion resistance	100 cycles by Taber type abrasion tester
Acid resistance	6 hours in HCl aq – 1 kmol/m <sup>3</sup> at 23 +/- 3 deg-C
Alkali resistance	6 hours in NaOH aq – 1 kmol/m <sup>3</sup> at 23 +/- 3 deg-C

## 5 LIGHT, SOLAR PROPERTIES

### 5.1 CONVENTION FOR COATING POSITION

Sunlux Gold SS should not be installed with its coated surface outside.

### 5.2 PHOTOMETRIC PROPERTIES and TOLERANCES

The photometric properties of Sunlux Gold SS have been controlled in factories following its QMS. Measurements are performed with a spectrophotometer in process of an actual factory and each property is calculated per ISO9050. Controlled items and their symbols are :

- LT ( $\tau_v$ ): Light transmittance
- LRg ( $\rho_{vg}$ ): Light reflectance on glass side
- LRf ( $\rho_{vf}$ ): Light reflectance on coated side
- SDT ( $\tau_e$ ): Solar Direct transmittance

LT, LRg, LRf values have tolerances of +/- 3 %  
SDT has a maximum limit control as stated in Section 5.3

With the items of our internal QC process, typical example data like below can be obtained.

- SET ( $\eta$ ): Total Solar Energy transmittance
- SC: Shading coefficient

“ Notes: there are no direct tolerances on SET and SC as these values are calculated from the previous ones.”

### 5.3 SOLAR PERFORMANCES OF SUNLUX GOLD SS PRODUCTS

The table lists the light, solar properties of the Sunlux Gold SS products. For other performance data, see [www.agc-glassasia.com](http://www.agc-glassasia.com).

6mm	Item code	LT	LRg	LRf	SDT
Sunlux Gold SS	13/20 Annealed	13	24	34	10
	13/20 Tempered	13	27	36	9
	30/35 Annealed	29	14	16	22
	30/35 Tempered	30	15	19	24

Sunlux Gold SS is a single-stock product, coatings can be used with or without heat treatment depending on the type of performance required, sealant used and edge-deletion is not required. The solar performance of Tempered Sunlux Gold SS in the table is an example by the standard heat profile of the production process QC.

## 6 ACOUSTIC PROPERTIES

The table lists example data of the acoustic properties of glass products. The discrepancy of this property between coated and non-coated would be neglectable.

Thickness designation(mm)	Rw (C, Ctr)	Rw + C	Rw + Ctr
<b>5</b>	30 (-1, -2)	29	28
<b>6</b>	31 (-2, -3)	29	28
<b>8</b>	32 (-1, -2)	31	30

# 7 TOLERANCES ON DIMENSIONS

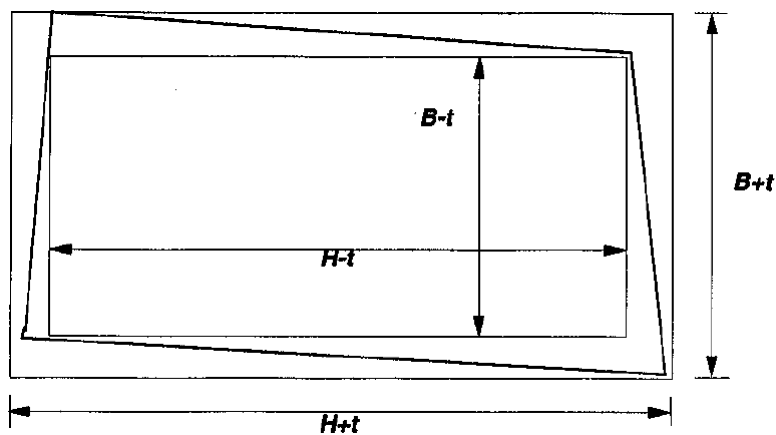
## 7.1 THICKNESS

The actual thickness of each designation(mm) are controlled in accordance with below table.

Thickness designation(mm)	Minimum (mm)	Maximum (mm)
<b>5</b>	4.8	5.2
<b>6</b>	5.8	6.2
<b>8</b>	7.7	8.3

## 7.2 LENGTH AND WIDTH

The tolerances on nominal dimensions length H and width B are respectively  $\pm 3$  mm and  $\pm 2$  mm.



The limit of squareness is described by the difference between diagonals. The difference should be 5 mm or less.



## 8 QUALITY REQUIREMENTS

### 8.1 INTRODUCTION

The defect affecting appearances are:

- Specific to the coating: see hereunder.

If a defect specific to the glass substrate is more visible because of the coating, it will be treated as a coating punctual defect.

### 8.2 DEFINITIONS OF DEFECTS

The following definitions apply:

- **Uniformity defect:** Slight visible variation in colour, in transmission or reflection, within a coated glass pane or from pane to pane
- **Stain:** Defect in the coating larger than punctual defect, often irregularly shaped, partially of mottled structure.
- **Punctual defect:** Punctual disturbance of the visual transparency looking through the glass and of the visual reflectance looking at the glass  
Note: Spot, pinhole and scratch are types of punctual defects.
- **Spot:** Defect that commonly looks dark against the surrounding coating, when viewed in transmission
- **Pinhole:** Punctual void in the coating with partial or total absence of coating and normally contrasts clear relative to the coating when viewed in transmission
- **Scratch:** Variety of linear marks, whose visibility depends on their length, depth, width, position and arrangement
- **Cluster:** Accumulation of very small defects giving the impression of stain.

### 8.3 DETECTION OF DEFECTS

#### 8.3.1 GENERAL

The defects are detected and controlled by in-process inspection in each production factory. The method described in 8.3 is an example and the actual QC method in-process may be an equivalent system with higher performance. (i.e. not by human eye but an automatic defect detector)

#### 8.3.2 INSPECTION ENVIRONMENT

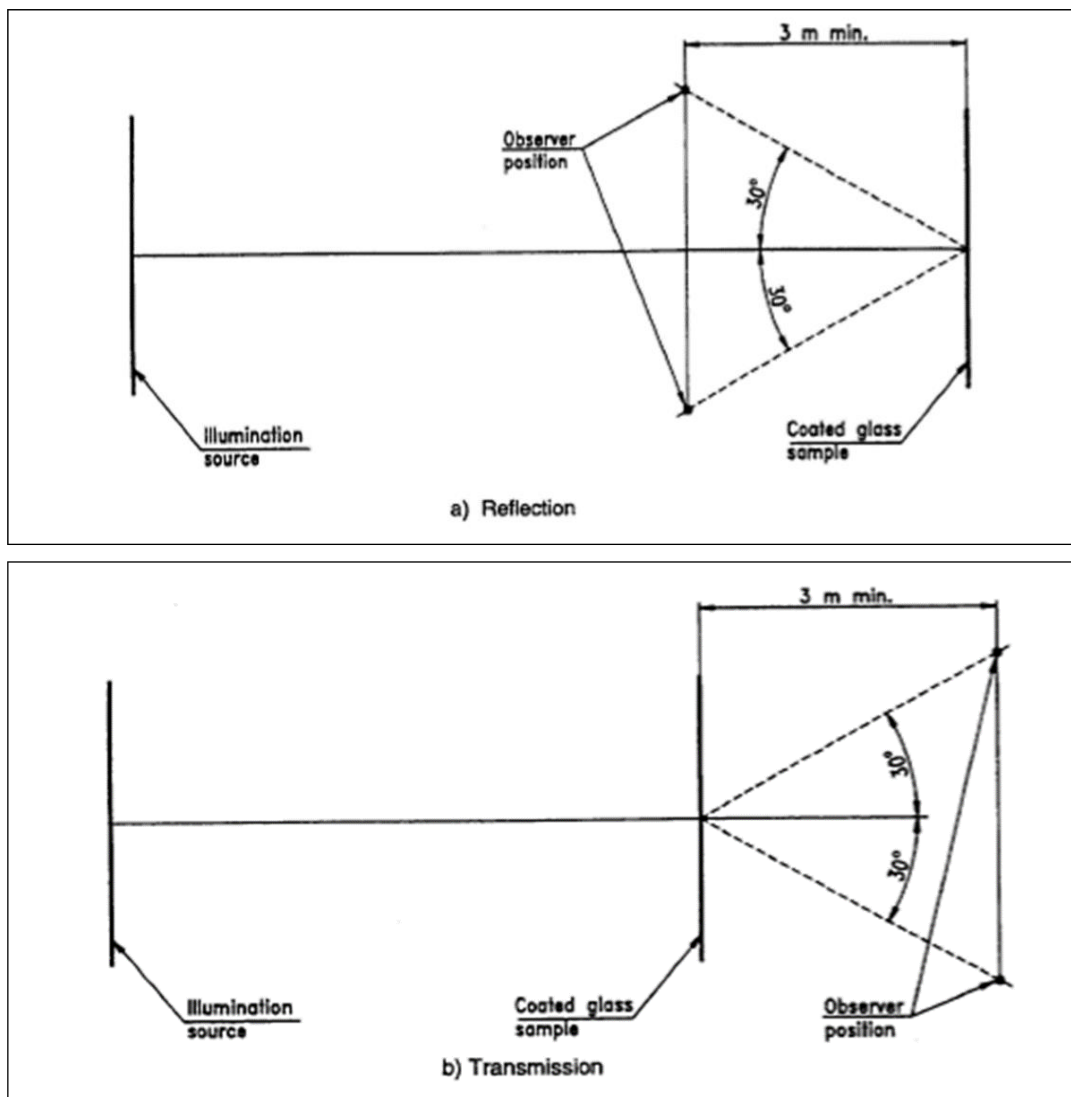
The appearance inspection should be performed under the control of the brightness of daylight or with lighting. If a Sunlux Gold SS is inspected in a daylight environment, for example on a building site, a uniform overcast sky without direct sunlight is required. Or if in a closed area like an inspection booth of producing process, brightness control with emitting diffused light with uniform brightness and a general colouring index Ra higher than 70.

It is obtained by using a light source whose correlated colour temperature is in the range between 4000 K and 6000 K. In front of the arrangement of light sources is a light scattering panel, without spectral selectivity. The illuminance level, on the glass surface, shall be between 400 lx and 20000 lx.

### 8.3.3 CONDITION OF OBSERVATION OF DEFECTS

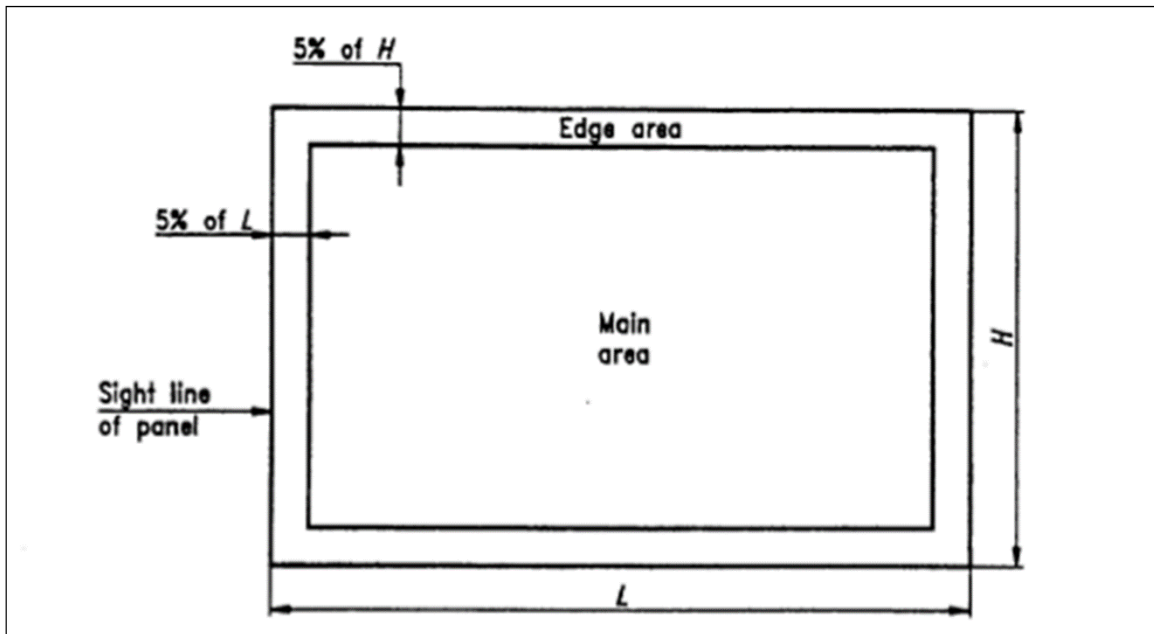
Coated glass may be examined in stock size or in finished sizes ready for installation. The examination may be undertaken in the production factory or at the installation site.

The pane of coated glass being examined is viewed from a minimum distance of 3 m. The examination of the coated glass in reflection is performed by the observer looking at the coated side of the glazing. During the examination, the angle between the normal to the surface of the coated glass and the light beam proceeding to the eyes of the observer after reflection or transmission by the coated glass shall not exceed 30° (see figure).





For panes of coated glass in finished sizes ready to be installed, both the main area and edge area of the pane shall be examined (see figure).



Each examination for detection in the initial by human's eye should take no more than 20 s for each pane. And only the defects detected within 20s per required condition should be controlled.

#### 8.3.4 UNIFORMITY DEFECTS AND STAINS

Under the condition of examination given in 8.3.3, note any coating variations either within on pane or between neighboring panes which are visually disturbing.

#### 8.3.5 PUNCTUAL DEFECTS

Under the conditions of examination given in 8.3.3, note any spots, pinholes and/or scratches that are visually disturbing.

For spots/pinholes, measure the size and note the number relative to the size of the pane. If there are any clusters found, their position relative to the through vision area shall be determined.

For scratches, determine whether or not they are in the main or edge area. Measure the length of any scratches noted. For scratches  $> 75$  mm long, determine the distance between adjacent scratches. For scratches,  $\leq 75$  mm long, note any area where their density produces visual disturbances.

## 8.4 ACCEPTANCE CRITERIA OF COATINGS DEFECTS

The acceptance criteria for the defects of coating glass are given in the table.

Defects types	Acceptance criteria		
	Pane/Pane	Individual pane	
<b>UNIFORMITY/STAIN</b>	Allowed as long not visually disturbing	Allowed as long not visually disturbing	
<b>PUNCTUAL</b> Spot/pinholes > 3 mm  > 2 mm and ≤ 3 mm	Not applicable	Main area	Edge Area
		Not allowed  Max 1 by m <sup>2</sup>	Not allowed  Max 1 by m <sup>2</sup>
Clusters	Not applicable	Not allowed	Allowed as long as not in area of through vision
Scratches > 75 mm  ≤ 75 mm	Not applicable	Not allowed	Allowed as long as they are separated by > 50 mm
		Allowed as long as local density is not visually disturbing	Allowed as long as local density is not visually disturbing

## 8.5 COLOR DIFFERENCE WITHIN ONE PANE AND BETWEEN TWO ADJUSTMENT PANES

### 8.5.1 CONTROLE METHOD

The variation of the colour difference of each pane of each product description is controlled by in-process photometric measurement in a factory. The following symbols “ $\Delta L^*$ ,  $\Delta a^*$ ,  $\Delta b^*$  and  $\Delta E_{ab}^*$ ” in this part is commonly used as a set of the colour index, which is based on ISO 11664-4:2008(CIE S 014-4/E:2007).

### 8.5.2 CRITERIA

The values of  $\Delta L^*$ ,  $\Delta a^*$ ,  $\Delta b^*$  and  $\Delta E_{ab}^*$  determined basically following 8.5.1 shall meet the requirements given in the table. But the area within 100mm from each glass edge can be free from the criteria

$\Delta L^*$	$\leq 5,0$
$\Delta a^*$	$\leq 5,0$
$\Delta b^*$	$\leq 5,0$
$\Delta E_{ab}^*$	$\leq 6,0$

## 9 OTHER RELATED DOCUMENTS

Following documents are also available from [www.agc-glassasia.com](http://www.agc-glassasia.com)

- Processing Guide
- Façade Glazing Cleaning and Maintenance Guide