Technical Terms & Conditions of Delivery: BG-Float Glass Clear.

Intention

Overview of the quality requirements and specifications for etched glass products of Berliner Glas Herbert Kubatz GmbH & Co. KG Syrgenstein.

Determination of the exact criteria for the definition, classification and evaluation of quality characteristics associated with clear float glass products.

Scope

The following technical terms and conditions of delivery apply to products BG-Float glass clear, BG-Float glass clear washed and BG-Float glass etch cleaned.

Definition

Surface Defects

Surface defects are local defects which change the visual quality of the glass. There are point and linear/elongated defects.

Surface defects are for example scratches, chips and chafe marks.

The designation for the number and size of surface defects is specified according to ISO 10110-7.

Glass Defects

Glass defects are defects that result from the manufacturing process of the float glass.

Glass defects are local defects such as bubbles, inclusions and tin spots as well as linear or elongated defects like drawmarks/-scratches and tin lines/-stains on the float side.

The conditions for evaluation of number and size of allowable glass defects are specified within DIN EN 572-2.

Defect Sizes

The definition of defect sizes according to ISO 10110-7 is defect size [mm] = square root (defect length [mm] x defect width [mm]).

Stock Sheets and Customized Sizes

Stock sheets are dimensions which are used for further processing by the customer or at Berliner Glas.

Pre-cut sizes are dimensions that are cut to final size on customers request.

Geometry

Thickness and Maximum Standard Size

Glass thickness [mm]	Max size [mm²]
0.55	1,485 x 1,245
0.7	1,472 x 1,245
1.0/1.1/1.3	1,600 x 620
1.6	1,600 x 640
2.0/3.0/4.0/5.0/6.0	2,000 x 1,200

Further thicknesses and sizes available on request.

Tolerances for Length and Width Dimension

Glass type	Glass thickness [mm]	Edge length [mm]	Tolerance [mm]
Pre-cut	0.55–3.15	≤ 1,000	±0.5
Pre-cut	0.55–3.15	> 1,000	±1.0
Pre-cut	4.0–6.0	all	±1.0
Stock sheet	0.55–6.0	all	±5.0

Further length and width tolerance requirements have to be agreed on in each case.

Tolerances for Glass Thickness

Thickness [mm]	Tolerance [mm]	Thickness [mm]	Tolerance [mm]
0.55	±0.05	2.0	+0.00/-0.20
0.7	±0.05	3.0	+0.00/-0.20
1.0	±0.05	4.0	±0.20
1.1	±0.10	5.0	±0.20
1.3	±0.10	6.0	±0.20
1.6	±0.10		

Angular Tolerance for Pre-Cut Sizes

Maximum angular deviation: ±0.10°

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Measuring Equipment Geometry

Characteristic	Measuring device
Length/witdh	Calliper
Thickness	Micrometer
Angle	Angulometer

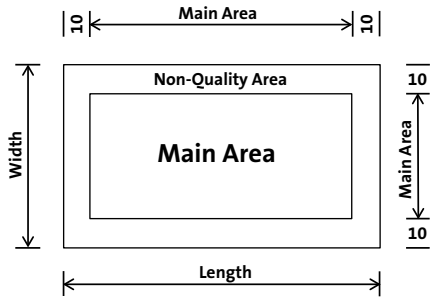
Quality

Optical Inspection

Due to the production process at the float glass line, there is always a deposit layer and a contamination with parting powder on the unwashed float glass. Therefore float glass clear cannot be optically inspected in its original state.

Edge Zone for Stock Sheets

For stock sheets, surface and glass defects (with exception of fracture causing edge defects) as well as deviations of optical properties are unrestricted admissible within a circumferential edge zone of 10 mm (non-quality area).



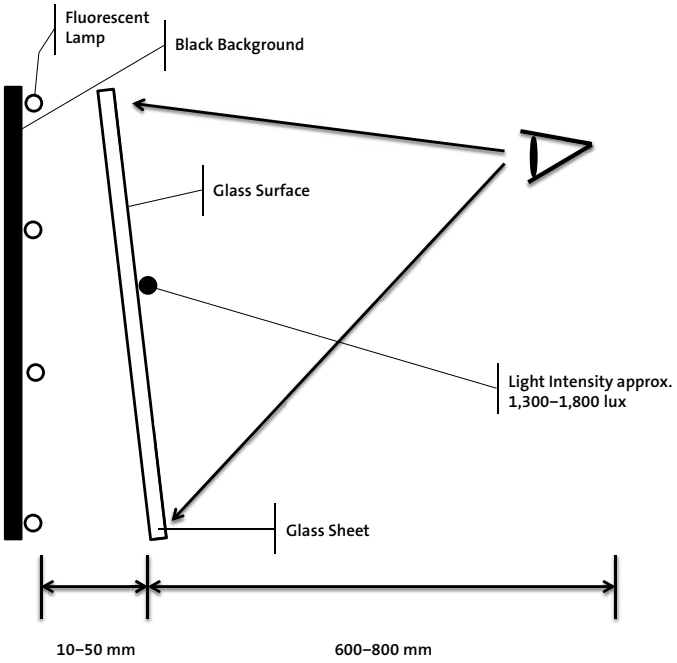
Conditions of Evaluation

For products BG-Float glass clear washed and BG-Float glass etch cleaned the inspection for surface and glass defects is performed under the following conditions:

	Description
Inspection equipment	Naked eye
Inspection in	Transmission
Lighting	Rear illumination with four flourescent lamps with a length of 1,200 mm, arranged one above the other at a distance of 350 mm in front of a black background at the washing machine outlet.
Light intensity	Intensity of illumination 1,300–1,800 lux
Incidence angle of light	85–90° to the evaluating area
Evaluation side	Blank or etched side
Evaluation angle	40–90° to the evaluating surface
Evaluation time	The inspection time for the entire area is about ten seconds.
Evaluation distance	600–800 mm from the glass surface

Basically the following applies: all errors and discrepancies which are not identified according to the given conditions and within the given time will to be ignored.

Schematic Test Assembly



Surface Defects

The following numbers and sizes of surface defects are permitted for pre-cut sizes and for the main area of stock sheets:

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Area up to m²	Permissible point defects max. number x max. defect size [mm]	Permissible scratches max. number x max. scratch width [mm] / cumulated length [mm]
0.04	1 x 0.63	2 x 0.063/5
0.16	2 x 0.63	2 x 0.10/10
0.64	4 x 0.63	4 x 0.10/20
1.00	6 x 0.63	6 x 0.10/30
> 1.00	8 x 0.63	8 x 0.10/40

- Defect sizes ≤ 0.25 mm will not be regarded
- Point defects and scratches are cumulative, i. e. point defects and scratches are allowed together
- No accumulation of surface defects allowed, definition according to ISO 10110-7
- Removable residues (dust, paper marks etc.) will not be considered as a defect

Further demands on surface quality have to be agreed on in each case.

Edge Defects

For pre-cut sizes, edge damages of a maximum length x width x depth of 2 mm x 1 mm x 1/3 glass thickness are permitted.

Fracture causing edge defects are not permitted.

Properties

Optical Characteristics

Beased on the raw materials, glass products have characteristic colors, these become more evident with increasing glas thickness. Therefore different color appearance is possible for same products.

Warranty

In terms of warranty, please pay attention to point 11 of our delivery and payment conditions.

Return of Rejected Goods

For the assessment of complaints, Berliner Glas can request the entire disputed goods from the customer.

The redelivery costs go at the expense of Berliner Glas. The customer has to ensure proper packaging so that the goods may not be damaged on the backhaul. Unauthorized complaints will be returned to the customer and partial transportation and sorting costs will be invoiced.

Storage Conditions

The storage of refined glass products has to be done properly, as is common in the glass industry. This includes in particular the prevention of moisture and temperature changes. Berliner Glas is not liable for damages caused by improper storage.

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