

The neoceram logo features three slanted parallel lines to the left of the word "neoceram" in a bold, blue, sans-serif font.

Printed glass ceramic

Delivery specification for printed glass ceramic panels

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1. Description, field of application

1.1 Description

This specification contains the basics for printed Neoceram N-0 glass ceramic panels for the use in fireplaces.

1.2 Field of application

This delivery specification applies to both cut sizes as well as curved and/or angular bent Neoceram N-0 panels, whose application requires low thermal expansion, e.g. fireplaces and fireplace inserts for solid fuels, oil, electric or gas stoves.

2. Technical details about printing

2.1 Colours

For information regarding the available colours check with Hecker Glaskeramik's sales department.

2.2 Adhesion

The adhesive strength is tested with the TESA test. Stick a strip of TESAFILM® 4104 (approximately 12x45mm) onto the printed surface at room temperature, rub down firmly and then pull it off with a jerk. Evaluate colour residues sticking to the TESAFILM® 4104 strip. Adhesion is insufficient when a number of colour dots with a diameter ≥ 0.8 mm sticks to the strip of TESAFILM® 4104 and respective voids are visible in the printing.

2.3 Temperature load resistance

The temperature/time load capacity of the printing is adjusted to the temperature load of the printed area of the Neoceram N-O glass ceramic panel as it occurs during practical use as thermal window in fireplaces.

2.4 Thermal shock resistance

Resistance of the printing against thermal shock situations when the hot glass is quenched with cold water (room temperature). In this test, the sample is quenched 10 times from $T_{max}=500^{\circ}\text{C}$ (holding time at T_{max} : 15min) by immersing it in cold water ($T_{water}=25^{\circ}\text{C} \pm 5^{\circ}\text{C}$). After this test the "TESA-Test" according to item 2.2 must be fulfilled

3. Material properties, quality checks, dimensional and positional tolerances

3.1 Material properties

The permissible material properties are the same as the ones that apply to cut sizes.

3.2 Basis for quality checks

Inspection is carried out without optical aids at an illumination of approx. 800 lux and from a minimum distance of at least 1m. Inspection time is 5s/dm².

3.3 Characteristics of printing

The printed glass ceramic is considered to be free of defects, as long as no defects were found during the above- mentioned tests.

If process-related, unavoidable defects in the printing area are visible, corresponding limit samples have to be agreed with the customer.

Defects in the edge area ($\leq 4\text{mm}$ circumferential) of the glass ceramic panel, which will be covered by a frame, are not objectionable.

Deviations within 2mm from the edge of a drilled hole remain unconsidered.

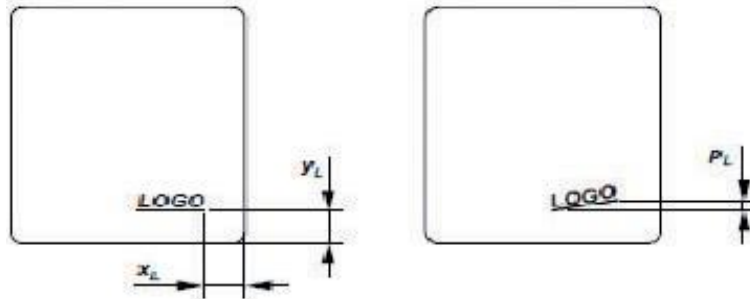
The following limits apply as a basis for printing defects:

Length L of the printing error mm	Size of the printed area A		
	A $\leq 6\text{dm}^2$	$0,6 < \mathbf{A} \leq 14\text{dm}^2$	$14\text{dm}^2 < \mathbf{A}$
L $\leq 0,5$	Not considered	Not considered	Not considered
$0,5 < \mathbf{L} \leq 0,7$	1	2	3
$0,7 < \mathbf{L}$	0	0	0

3.4 Position and tolerances of logo printing

If the printing consists only of a printed logo, the following tolerances apply, both to flat cut sizes and to curved or angular bent glass ceramic panels.

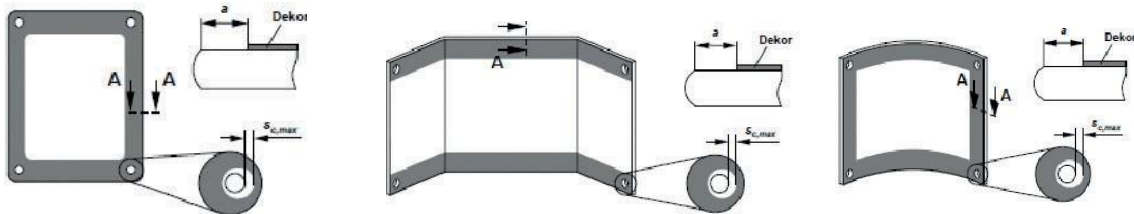
Characteristic	Tolerance
Printing position (X_L ; Y_L)	$\pm 3\text{mm}$
Parallelism of printing to glass edge Maximum permissible deviation measured at the longest edge of the printing P_L	$\pm 1\text{mm}$



3.5 Position and tolerances of surface printing

On account of the production process, printed cut sizes may show a distinct edge area.

Characteristic	Tolerance
Printing position A	$\pm 1,5\text{mm}$ (measured at the respective symmetry axis)
Width of the unprinted area	
Absolute value marginal area $ a_{\min} - a_{\max} $	$1 \pm 1\text{mm}$
Parallellism edge - printing	$\leq 0,5\text{mm}$
max. distance of printing to drilling $\delta_{c,max}$	max. $\leq 2\text{mm}$



The values and data given correspond to our current state of knowledge and are based on empirical values, literature references, measurements or manufacturer data. Not all data have been verified by us or are subject to verification by us. Depending on the test condition, design and installation condition of the glass, the stated values may be exceeded or undershot.

The data listed are for your information only. A legally binding assurance of the suitability of the product for a specific application cannot be derived from this and no liability can be assumed for any damage that may occur.

We reserve the right to make updates and changes without notice.

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