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**Gütegemeinschaft
Flachglas**

Calibration of heat soak ovens

Information on the RAL quality mark TSG-HF No. 2

This Bulletin was prepared
by the Gütegemeinschaft Flachglas

Calibration of heat soak ovens

The RAL quality and inspection regulations for toughened safety glass with heat-soak test (TSG-HF) were published in March 2019. In anticipation of the revised Part 2 of DIN EN 14179-2, they were already aligned to the draft standard DIN EN 14179-2:2017-12. Contrary to expectations at the time, however, as the 2005 version of the standards are still relevant to the building authorities¹, the TSG-HF Quality Committee of the Gütegemeinschaft Flachglas e. V. has determined that the quality assurance is to be carried out in accordance with the currently valid version of DIN EN 14179. Until there is a complete harmonisation of the current prEN 14179-2:2017 through publication of a final version in the Official Journal of the European Union, the higher soak temperature and the old provisions for calibration given in DIN EN 14179-1:2005 continue to apply.

DIN EN 14179-1:2005 describes the criteria for calibrating the heat soaking system in the normative Annex A. The calibration must match the time/temperature regime prescribed there, both at 100 % and 10 % oven load.

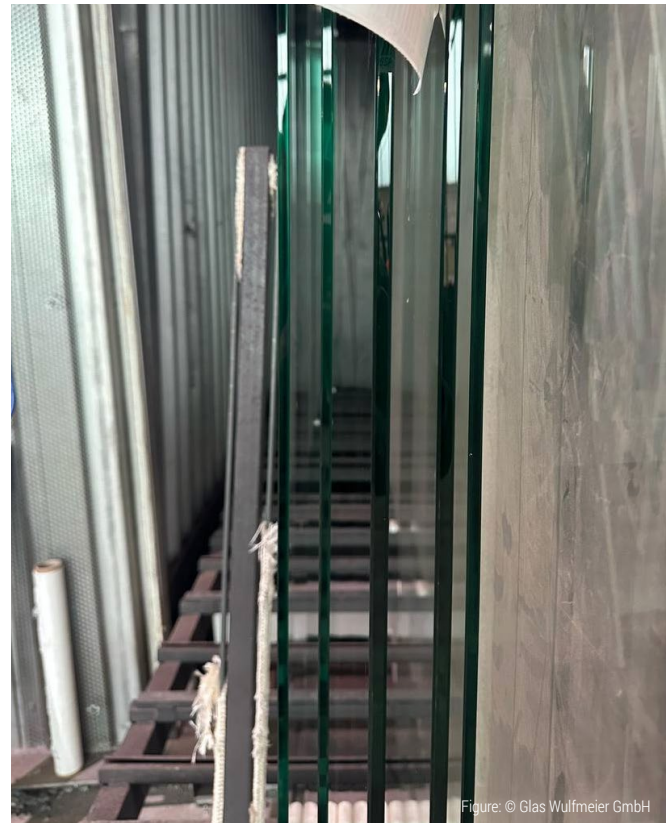
EN 14179-2:2005 specifies in the normative Annex A under A.3.2 on factory production control that calibration must be carried out one year after the initial calibration and every five years thereafter.

As, in accordance with the agreement by the Quality Committee, a recalibration must be carried out in accordance with the currently valid version of DIN EN 14179, this applies equally to quality control according to the relevant version.

In addition, Clause 3.2 of the quality and inspection regulations (Q+I), also specifies that every two years, calibration shall be repeated for each oven under typical production conditions and with a loading condition of at least 50 % of the maximum load on calibration. Under the Q+I regulations this two-yearly testing can be dispensed with if the manufacturer possesses suitable measuring devices and carries out their own measurements which are laid down by the external monitoring body (third party control body) in agreement with the Quality Committee.

The third party control bodies and the Quality Committee have agreed on the specifications for the control measurement between two calibrations and have also agreed the following procedure in the document "Questions of interpretation" to clarify the Q+I regulations:

- Between two calibrations which, in accordance with the current regulations must take place at an interval of 5 years, i.e. approx. 2.5 years after a calibration, the third party testing body will carry out an oven control measurement under typical production conditions with a minimum load level of 50 % of the maximum load.



- Instead of this intermediate test, the manufacturer may carry out their own measurements using suitable measuring devices. The scope of the test must be determined in consultation with the third party control body in agreement with the Quality Committee. Suitable measuring devices must detect a deviation from the process defined in the calibration with sufficient reliability.

When applying for the TSG-HF quality mark, depending on whether the manufacturer

- is starting with the manufacture of TSG with heat-soak test (Table 3) for the first time or
- has been producing TSG with heat-soak test in accordance with EN 14179 for a period, but has not so far been subject to third party control (Table 2) or
- has been manufacturing TSG with heat-soak test (TSG-H) for a period and has been subject to third party control but without the quality mark (Table 1)

the following test plans apply in accordance with the current standard:

¹ See information on the RAL TSG-HF quality mark No. 1

Table 1 – Test plan for oven inspection of companies subject to third party control for many years

Year from start of quality control	Oven inspection	FPC audit
0	10 % + 100 % calibration	Quality control FPC
1	./.	Quality control FPC
2	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
3		Quality control FPC
4	./.	Quality control FPC
5	10 % + 100 % calibration	Quality control FPC
6	./.	Quality control FPC
7	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
8		Quality control FPC
9	./.	Quality control FPC
10	10 % + 100 % calibration	Quality control FPC
...	...	...

Table 2 – Test plan for the oven inspection of companies with existing ovens not yet subject to third party control

Year from start of quality control	Oven inspection	FPC audit
0 – 1st half year	10 % + 100 % calibration	Quality control FPC
0 – 2st half year	./.	Quality control FPC
1 – 1st half year	./.	Quality control FPC
1 – 2st half year	./.	Quality control FPC
2	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
3		Quality control FPC
4	./.	Quality control FPC
5	10 % + 100 % calibration	Quality control FPC
6	./.	Quality control FPC
7	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
8		Quality control FPC
9	./.	Quality control FPC
10	10 % + 100 % calibration	Quality control FPC
...	...	...

Table 3 – Test plan for oven inspection of companies **with recently commissioned ovens** not yet subject to third party control

Year from start of quality control	Oven inspection	FPC audit
0 – 1st half year	10 % + 100 % calibration	Quality control FPC
0 – 2st half year	./.	Quality control FPC
1 – 1st half year	10 % + 100 % calibration (applies only to new ovens!)	Quality control FPC
1 – 2st half year	./.	Quality control FPC
2	./.	Quality control FPC
3	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
4		Quality control FPC
5	./.	Quality control FPC
6	10 % + 100 % calibration	Quality control FPC
7		Quality control FPC
8	Approx. 2.5 years after calibration: Oven control measurement under typical production conditions and with a minimum load level of 50 % of the maximum load by testing body, alternatively own measurement in agreement with testing body	Quality control FPC
9		Quality control FPC
10	./.	Quality control FPC
11	10 % + 100 % calibration	Quality control FPC
...	...	...



Figure: © Glas Wulfmeyer GmbH

The RAL quality mark for TSG with heat-soak test (TSG-HF), RAL-GZ 525

In order to ensure legal compliance both for the manufacturer and user of toughened safety glass with heat-soak test as regards its use with an upper edge above 4 m, the RAL Gütegemeinschaft Flachglas e.V. provides a harmonised solution via the RAL TSG-HF quality mark. Quality control in accordance with the RAL quality and inspection regulations for TSG with heat-soak test (TSG-HF) RAL-GZ 525 fully meets all the requirements set out by building inspection and standardisation bodies.

The quality and inspection regulations for TSG-HF were drawn up in cooperation with the test institutes that had already carried out third party control under the Construction Products List. These test institutes now also carry out the regular quality control for the RAL TSG-HF quality mark, RAL-GZ 525 in the companies.

The RAL TSG-HF quality mark indicates a clearly defined scope of third party control that can be checked by anyone in the quality and inspection regulations. Without the RAL quality mark the precise scope of third party control would only be apparent to a customer from the manufacturer's contract with the relevant institute, and can vary in some points from the quality and inspection regulations.

The RAL quality mark from the Gütegemeinschaft Flachglas e.V. is the visible expression of the joint efforts of the sector to provide a solution to the question of how the product can still be safely used after the end of the Construction Products List.





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