

Procedures for the choice, use, checking and replacement of thermocouples used in the non-combustibility furnace EN ISO 1182

(revision of EGOLF TR1:1997)

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Foreword

This document has been prepared by EGOLF and adopted by all EGOLF member laboratories for the choice, use, checking and replacement of thermocouples used in the non-combustibility furnace EN ISO 1182.

It is recommended to other organisations and laboratories that it should be universally accepted for this purpose; in particular CEN Technical Committee TC127 for inclusion when the standard is revised.

1 Scope

This document details EGOLF procedures to be followed for the choice, use, checking and replacement of thermocouples used for the measurement of furnace temperature, furnace wall temperature and in the thermal sensor used in the EN ISO 1182, non-combustibility test for building products. It is intended to be supplementary to that European Standard.

2 Choice of thermocouples

Both type K (Nickel Chromium/Nickel Aluminium) and type N (Nickel-Chromium-Silicon/Nickel-Silicon) thermocouples are allowed under EN ISO 1182. In both cases, the tolerance specified is class 1 in accordance with EN 60584-2 shown in the table below.

Type	Class	Temp range 375 - 1000°C	Tolerance
K, N	1	375 to 1000°C	±0.4%

EGOLF members shall only use commercially manufactured thermocouples of the size and construction specified in EN ISO 1182 that are made to EN 60584-2, class 1. The thermocouple used in the thermal sensor shall also comply with this specification.

3 Calibration of new thermocouples

There is no procedure for checking or calibrating thermocouples in EN ISO 1182.

EGOLF members shall only use thermocouples that have been demonstrated to meet the requirements of EN 60584-2. This shall be determined either:

- by the laboratory undertaking its own calibration against a reference thermocouple at 750°C
- by only purchasing manufactured thermocouples with an accompanying certificate of conformity to EN 60584-2.

The thermocouple used in the thermal sensor shall also comply with this specification.

4 Checking or calibration of used thermocouples

There is no procedure for checking or calibrating used thermocouples in EN ISO 1182.

Thermocouples can age causing drift and can be damaged in a way that is not immediately obvious. Any increase e.g. in the power requirements of the furnace should be investigated; this may be due to e.g. aging of the furnace thermocouple rather than a fault in the furnace.

EGOLF members shall check the functioning and condition of thermocouples using the following checks:

- Comparison of stabilised electrical power readings at the working temperature against pre-determined standard values. Any drift shall be investigated
- Detailed visual check, after testing 100 specimens, of the condition of all thermocouples for signs of damage or corrosion (especially at the tip). This shall be carried out by removal of the thermocouple from the test apparatus or by using an enlarging mirror inserted into the furnace.

5 Replacement of thermocouples

The lifetime of thermocouples used for testing to EN ISO 1182 is not specified in the standard.

EGOLF members agree that they shall replace thermocouples after testing 2000 specimens. This shall apply to all thermocouples i.e.: furnace thermocouple, specimen centre thermocouple, specimen surface thermocouple and the thermocouple used in the thermal sensor. A log of exposure time for each thermocouple shall be maintained by the laboratory for this purpose.