

related test method

EN 1363-1: 1999 Fire resistance tests – General requirements

subject

Disregarding unexposed thermocouples due to the development of cracks

Problem:

Should a thermocouple be disregarded for the purpose of classification if the thermocouple is positioned near a crack that has developed during the test and if it is suspected that the crack emits hot gases that effect the temperature measurement of the thermocouple.

Taking into consideration § 9.1.2.1 of EN 1363-1:

If unexposed face thermocouples become heated by hot gases passing through the specimen, e.g through a crack that develops during the test, then data from that thermocouple shall be excluded"

Recommendation:

It is EGOLF's opinion that the sentence in § 9.1.2.1 only allows thermocouples to be excluded due to hot gasses passing through the test specimen if the crack develops beneath the surface of the thermocouple (meaning copper disk and pad).

Hot gases coming from openings in joints cannot be used to exclude the thermocouple because:

The effect from the joints and other discontinuities has already been taken into consideration by not allowing any thermocouples to be placed closer than 15 mm from any discontinuity - see EN1363-1:1999 § 9.1.2.3:

When positioning a thermocouple near a discontinuity e.g. between adjacent panels in a wall, the centre of the disc shall not be placed closer than 15 mm to the discontinuity

This should also be seen in relation to the general purpose of fixing maximum thermocouples which is also stated in EN1363-1:1999 § 9.1.2.3:

The purpose of maximum unexposed face temperature measurement is to determine the level of insulation at those locations where higher temperatures are expected to occur

Finally it should be taken into consideration that an opening of a joint is a natural process of the degeneration of a test specimen during a fire test. If a thermocouple that has been positioned in accordance with the standard has to be excluded from the test due to expected behaviour of the test specimen, then the laboratory has no possibility of evaluating the performance of the test specimen.

A thermocouple for the evaluation of the unexposed face temperature shall be disregarded if a crack which has developed during the test is situated within 15 mm (1999 version) or 20 mm (2012 version) of the centre of the disc.

