

related test method	<b>EN 1363-1: 1999 Fire resistance tests - Part 1 General requirements</b>
subject	<b>Use of the cotton pad</b>
reference of original query	TC2 N390 Helpdesk 2005-06, TC2 N396, TC2 N400 Helpdesk 2006-02

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## Problem

Arising from Helpdesk items submitted and discussions in a TC2 TG in April 2006 there is still some confusion / misunderstanding about the use of the cotton pad:

1. in respect of uninsulated test specimens
2. in relation to continuous flaming
3. in relation to unintentional ignition e.g. by radiation from a nearby uninsulated part of the test specimen such as a glazed window in a fire door
4. in relation to the ability of the operator to angle or move the cotton pad around deformed constructions

## Recommendation

### 1 in respect of uninsulated test specimens

EGOLF technical recommendation No.9 is quite clear on this subject:

*"The cotton pad shall always be used in testing separating elements (including a fire doors or shutters), irrespective of the construction or the intended classification, for that is what is mandated under EN 1363-1. Where necessary, the cotton pad shall always be used with caution".*

### 2 in relation to sustained flaming

The definition of sustained flaming from EN 1363-1 is quite clear:

'3.1.18 sustained flaming: Continuous flaming for a period of time greater than 10 seconds'

Continuous means 'without a break', so a specimen that flames for 9 seconds, then goes out for 2 seconds, then flames again for 9 seconds again etc passes under this criterion. To fail under the sustained flaming criterion, the flaming must be for a continuous period of 10 seconds. The intention behind this in drafting the standard was to ignore any small intermittent flashes of flame



that may occasionally appear on the unexposed surface of a test specimen and that don't pose any real threat.

Irrespective of the above, if the laboratory suspects that an integrity failure has occurred, it has the right to use the cotton pad. It does not have to wait until the flaming disappears or becomes continuous for a period of 10 seconds. Flaming is nothing else than passing of hot gases or the ignition of the unexposed face, so if the test operator sees flaming on the unexposed surface, he/she can use the cotton pad.

### **3 in relation to unintentional ignition e.g. by radiation from a nearby uninsulated part of the test specimen such as a glazed window in a fire door**

The use of the cotton pad is mandatory in all areas as stated above. If the cotton pad is ignited by radiation e.g. in the case of an uninsulated roller shutter door, then this is dealt with by the classification standard EN 13501-2. When classifying elements for E (integrity) that have no I (insulation), only the gap gauge and sustained flaming criteria are used. The time to ignition of the cotton pad (if it ignites at all) is ignored.

However, there can be a problem whereby a cotton pad is ignited by radiation from e.g. a glass pane in a timber door. The flaming cotton pad then ignites the timber frame around the glass **when if the pad had not been applied, the timber surround would not have ignited.**

The concern here is that the uninsulated element is now flaming and so will be classified under sustained flaming for a lower time period than if the specimen had not ignited if the cotton pad had not been applied. Consequently, there is some reluctance by some laboratories (also partly due to historical national practices) to use the cotton pad in this situation.

Taking into account all the considerations above, the following is recommended practice for EGOLF laboratories:

*The cotton pad shall be applied, to all surfaces, regardless of whether cracks or gaps are present or whether the specimen is insulated or not.*

*Care should be taken to avoid igniting combustible components on the unexposed face of the specimen adjacent to the cotton pad, due to flaming of the pad. Consequently, the pad shall be positioned to reduce this possibility; e.g. in the testing of an uninsulated glass pane in a timber door, by positioning the pad at a lower part of the glazed panel to reduce the risk of igniting the timber framing at the top of the pane by flames rising from the cotton pad.*

*Irrespective of this, if there are any cracks, gaps, or hot-spots in the higher area of the glazed panel, the pad shall be applied to these areas.*

The pad should be removed immediately once glowing or flaming of the pad occurs.

### **4 in relation to the ability of the operator to angle or move the cotton pad around deformed constructions**

EN 1363-1 states:

"Small adjustments in position [of the cotton pad] may be made so as to achieve the maximum effect from the hot gases."

In drafting the standard, the intention of the phrase above was to allow the test operator to angle or move the cotton pad around constructions e.g. a door frame to achieve maximum effect i.e. to obtain the most onerous result for the test specimen.

However, the cotton pad must always be used in the prescribed cotton pad holder and no modifications to the holder e.g. by changing the shape or bending the wires are allowed in order to make the test more onerous.