



Brussels, 8 November 2016

TM 1010:2016

Determination of the post expansion of an OCF¹ Canister Foam

1. Scope

This method describes how to measure the expansion of a freshly dispensed liquid foam (froth) during the curing phase.

2. Short description of procedure

The foam is dispensed into a linear joint up to a defined level. The foam expands during the curing phase to its final volume. The post expansion is the volume increase expressed as a percentage of the original dispensed froth.

3. Background and purpose

The evaporation of propellants and, in case the of polyurethanes, the generation of CO₂, expands the froth to a larger volume. This expansion can cause waste of foam and other unwanted effects, which are hard to anticipate. By calculating the post expansion factor, the consumer can estimate the necessary filling degree of the froth to avoid overexpansion.

4. Equipment

- 2 moulds (or more depending on the foam – see 5.2 k) made of non-porous material; size 1000 mm x 35 mm x 35 mm (length, height, width). The moulds must not be deformed by the foam during the curing period (recommended thickness 20 mm if no further fixation applied).
- Sharp cutter.
- Caliper, accuracy 1 mm.
- Controlled climate chamber.
- Adhesive tape.
- Paper, length > 1000 mm.

5. Procedure

5.1 Preparation

- a) Test conditions: 23 °C, 50 % r. h. (norm climate).
- b) Bring the test canister to the test temperature for at least 24 h.

¹ **OCF**: Generic term for moisture-curing or physically drying foam as well as self-curing activatable foam extruded as a froth from single pressurised containers.

- c) Prepare two moulds where each consists of two plates and two spacers with a width of 35 mm (Figure 1).
- d) Place the first mould onto the paper.

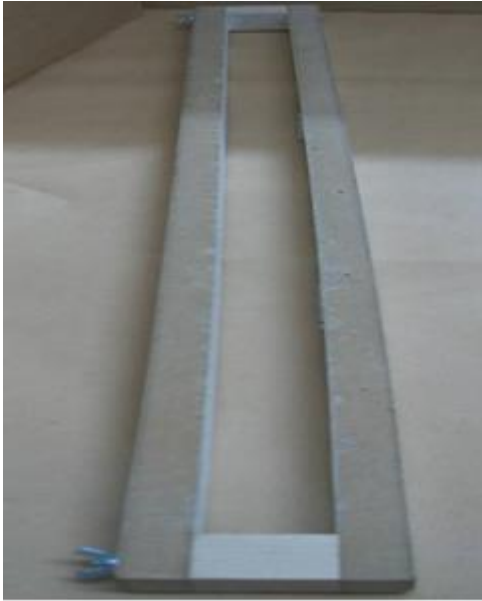


Figure 1: Lower mould before application



Figure 2: Setup with foam after application

5.2 Experimental procedure

- e) Shake the canister vigorously 20 times.
- f) Discard the first 50 g of foam.
- g) Apply the foam exactly up to the top edge of the mould ($h_0 = 35$ mm).
- h) Dispensing the foam should take approximately 15- 20sec with a constant speed.
- i) Placed the second (empty) mould on top of the filled mould (Fig. 2).
- j) In the case of highly expanding foams, more moulds may be necessary in order to avoid expansion over the top of the mould.
- k) Let the foam cure for 24 h.
- l) Remove the upper mould with the help of the knife.
- m) Measure the height of cured foam in seven points by the use of range finder or caliper (h_1). The measuring points should be always in the same position e. g. every 100 mm (Figure 3 and figure 4).

Note: If the boards were bent during the curing phase, the test must be repeated with stronger boards.

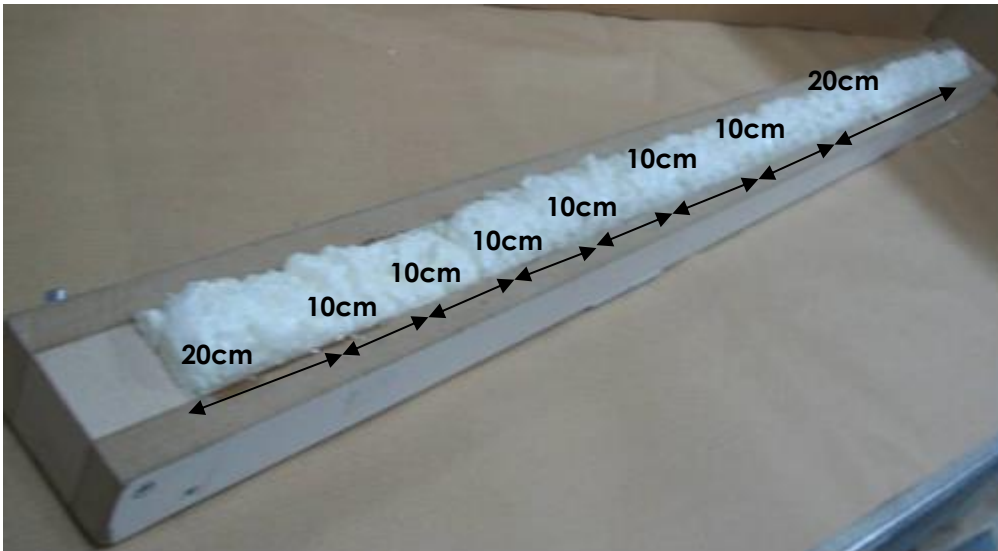


Fig. 3: Foam ready to be measured

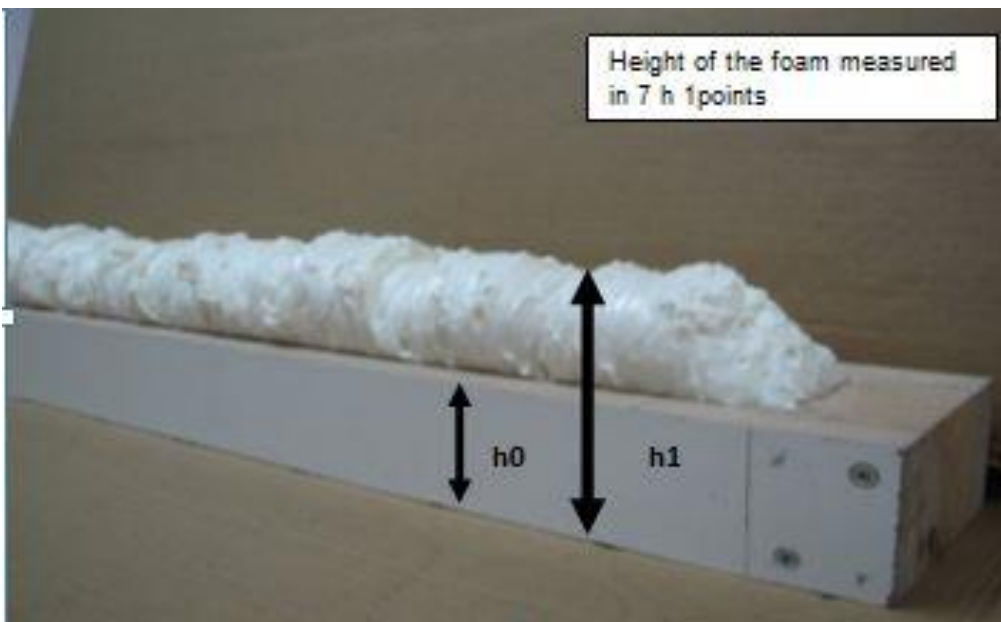


Fig. 4: Foam ready for measurement

5.3 Evaluation

The post expansion is calculated with following formula:

$$PE(\%) = \frac{h1 - h0}{h0} * 100$$

where: PE(%) is the Post Expansion [%]
 h0 is the height of the mould [mm]
 h1 is the mean height (from 5 points) of the foam after curing [mm] where two extremes values from 7 measuring points are eliminated.

6. Revision

Version	Date	Remarks
2	8 November 2016	Revised and checked by FEICA

7. Contact

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