FEICA The European voice of the adhesive and sealant industry

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TM 1009:2013

Determination of the Curing Pressure of a OCF[1] Canister Foam

1. Scope

This method describes how to determine the generation of pressure during the curing process of an OCF

2. Short description of procedure

The liquid foam (froth) is dispensed into the gap between two parallel plates, which are connected to a pressure measuring device. The pressure build up is measured during the whole curing process until the maximum level is reached.

3. Background and purpose

The hardening of polyurethane based OCFs comes along with volume growth and pressure build-up of the dispensed froth. This pressure is intended to assure adhesion to the substrates; however it might deform joints when too high. Basically the pressure can be absorbed by the temporary installation of clamps or spacers. In cases where this is not possible it is important to take OCF with low curing pressure.

4. Equipment

- Non impregnated chipboard panels P3 or P5 (EN 312), size: 200 mm x100 mm
- Spacers, size: 20 mm
- Controlled climate chamber
- Tensile testing machine (e. g. Zwick or Instron)

5. Procedure

5.1 Preparation

a) Test conditions: 23 °C, 50 % r. h. (norm climate to DIN EN ISO 139)
b) Bring the test canister to the test temperature for at least 24 hours
c) Build a horizontal joint with the panels and the spacers (see Fig. 1) and place it in the tensile testing machine.

[1] **OCF**: Generic for moisture curing One Component Foams dispensed from pressurised containers ("aerosol cans") as well as self-curing two component foams dispensed from pressurised containers ("1,5 component foams")

5.2 Experimental procedure

a) For moistening, the chipboard plates are immersed in water for 20 sec, taken out and stored vertically for 2 minutes on a water absorbing tissue
b) Build a horizontal joint and put it between the testing machine plates. The spacers should not move during the process (fixed or heavy) (Figure 1)
c) Adjust the position of the pressure sensors plates so that they touch the chipboard plates and apply pressure of 1 N.
d) Shake the canister vigorously 20 times
e) Discard the first 30 to 50 g of foam
f) Fill the joint with foam so that the foam will not expand more than 2 cm out of the joint (Figures 2 and 3)
g) Measure the curing pressure of the foam at 23 °C, 50 % r. h. Start the measuring program immediately after the joint filling.
h) Register the maximum force and the time required to attain the maximum force.
i) The measurement can be stopped when the pressure starts to decrease
j) Repeat the test for 3 times to get the mean value

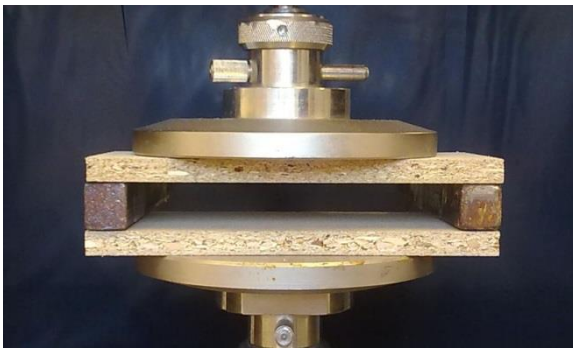

Figure 1. Set up for the measurement

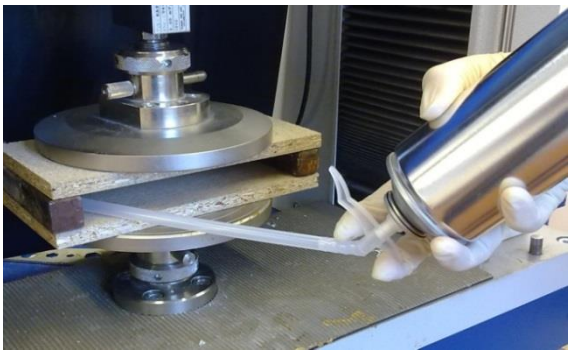

Figure 2. Filling of the joint

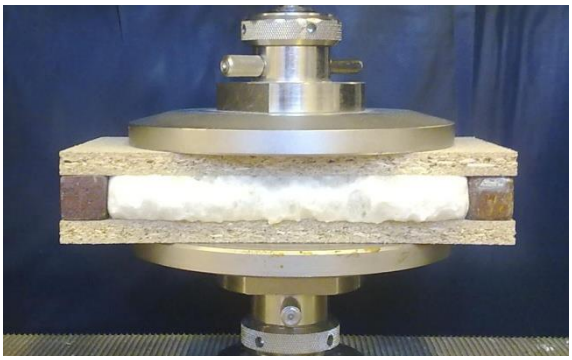

Figure 3: Running measurement

6. Evaluation

$$P = \frac{F}{A}$$

where P is the maximum pressure (Pa)
F is the maximum force (N)
A is the area filled with foam (m²)

7. Revision

Version	Date	Remarks
2	19 February 2013	Released at the OCF TTF meeting on 19 February 2013.

8. Contact

FEICA – Association of the European Adhesive & Sealant Industry
Avenue Edmond van Nieuwenhuyse, 4
B– 1160 Brussels, Belgium
Tel: +32 (0)2 676 73 20 | Fax: +32 (0)2 676 73 99
info@feica.eu | www.feica.eu

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