

**ADHESIVES, MASTICS AND PAINTS
STOVING CONDITIONS IN LABORATORY**

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NO USE RESTRICTION*This is a translation, the French original shall be used in all cases of litigation**Date of translation : 23/10/2003***1. OBJECT AND FIELD OF APPLICATION**

The object of this method is :

- to define the performance of ovens to be used in the laboratory so that stoving conditions for test specimens are representative of production stoving conditions on vehicle,
- the accuracy of the operating conditions to be observed when baking the test specimens.

It applies to adhesives, mastics and paints (primers, intermediate and finishing) deposited on a steel sheet substrate.

2. PRINCIPLE

The baking ovens are characterised by the graphs of rise in temperature of a standard plate placed in the oven previously set to obtain 120°C, 160°C or 200°C.

The baking of test specimens is carried out in ovens passed as satisfactory during the previous test, set to the temperature specified in the documents, observing the same operating precautions as for the calibration of the oven.

3. EQUIPMENT**3.1. THERMOSTATICALLY CONTROLLED OVEN WITH FORCED VENTILATION**

adjustable from 20°C to 250°C to the nearest 2°C, equipped with a removable grid which can be placed at mid-height of the baking oven.

3.2. A STANDARD PLATE

0,95 mm \pm 0,05 mm thick in stainless steel, type 18/8, fitted with a chrome-alum coaxial thermocouple of 0,5 mm diameter (see appendix 1).

3.3. A HIGH SPEED RESPONSE TEMPERATURE RECORDER

(for example, the GRAPHISPOT instrument from the Company SEFRAM or the HONEYWELL instrument are suitable for this use).

3.4. CHRONOMETER

(for stoving operations).

3.5. WATER TANK

(for certain stoving operations).

4. METHOD OF OPERATION

4.1. CALIBRATION OF THE OVEN

- Place the standard plate in the centre of the oven and adjust it until the temperature given by the thermocouple on this plate is 120°C, 160°C or 200°C to the nearest 2°C when stabilised, checked on the temperature recorder.
- Switch off the temperature recorder.
- Remove the oven grid together with the standard plate and leave the two elements to cool at ambient temperature. Meantime, the oven must remain closed and its setting must not be modified.
- Switch on the temperature recorder again.
- Open the oven door for a time less than or equal to 20 seconds and replace the grid in its previous position, the standard plate still in its centre.
- Plot the rise in temperature for 20 minutes.
- The oven cannot be used for the stoving of materials in laboratory by this method unless the graphs of the rise in temperature obtained with the pre-settings 120°C, 160°C, 200°C are recorded within the shaded areas shown in appendix 2.

Note :

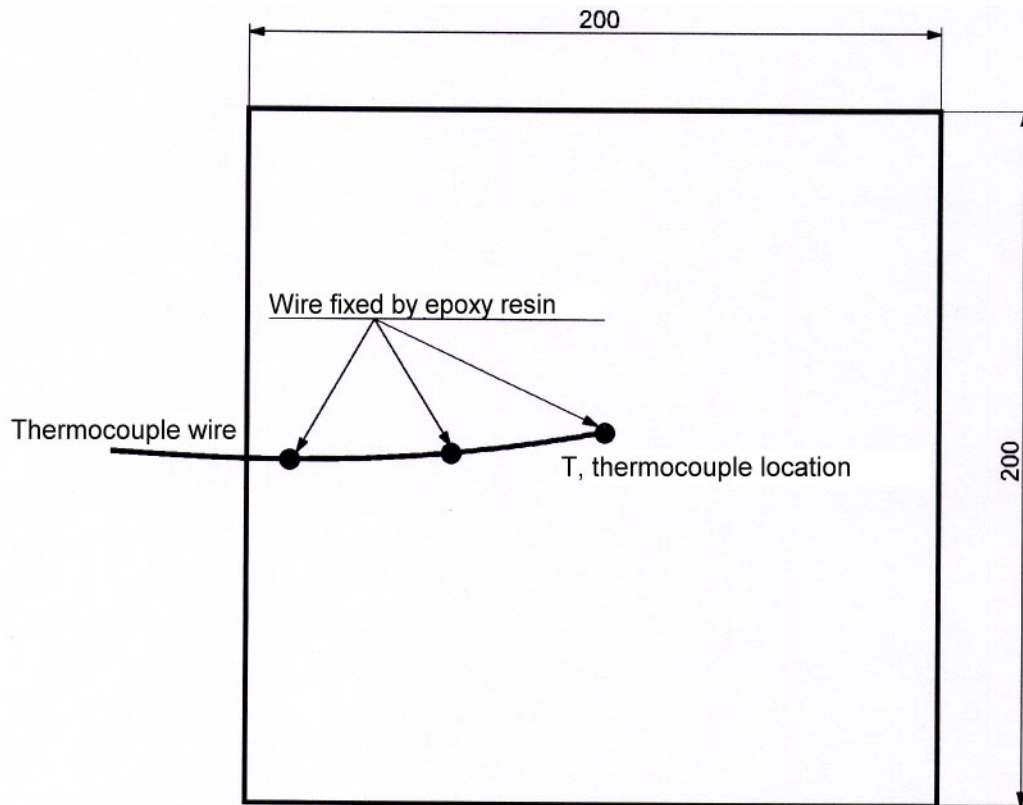
- *It is advisable to calibrate the couple-temperature recorder system by setting to the point 100°C after plunging the standard plate into boiling water.*
- *Some ovens are adapted to the setting of the heat power by modifying either the number of heat resistors or the ventilation. In that case, the setting which enabled the oven to comply with the requirements of this test method must no longer be modified during stoving operations.*

4.2. STOVING OF TEST SPECIMENS

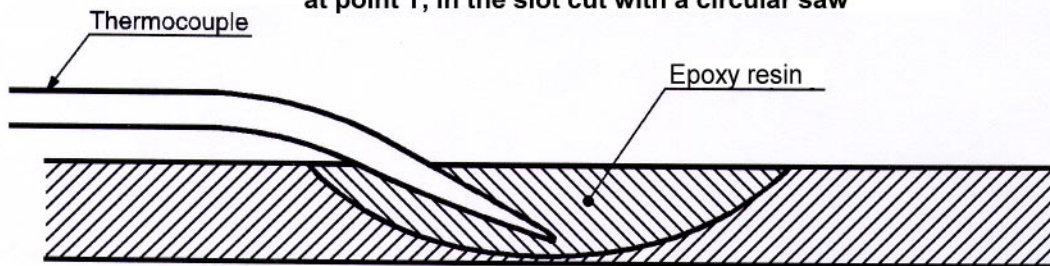
- Place the standard plate on the grid in the centre of the oven and adjust it until the value set in the documents is obtained on the temperature recorder.
- Remove the grid from the oven and arrange on it the test specimens to be submitted to stoving, taking care that no test specimen is placed at less than 10 centimetres from the edges of the grid.
- Open the oven and insert the grid rapidly; the closing of the oven door must take place less than 20 seconds after its opening. Start the chronometer the moment the door is closed.
- When the stoving time, read on the chronometer, has elapsed, open the oven door, remove the grid with the test specimens and close the door.
- Unless expressly stipulated, leave the test specimens to cool slowly in the open air.

Appendix 1

STANDARD PLATE

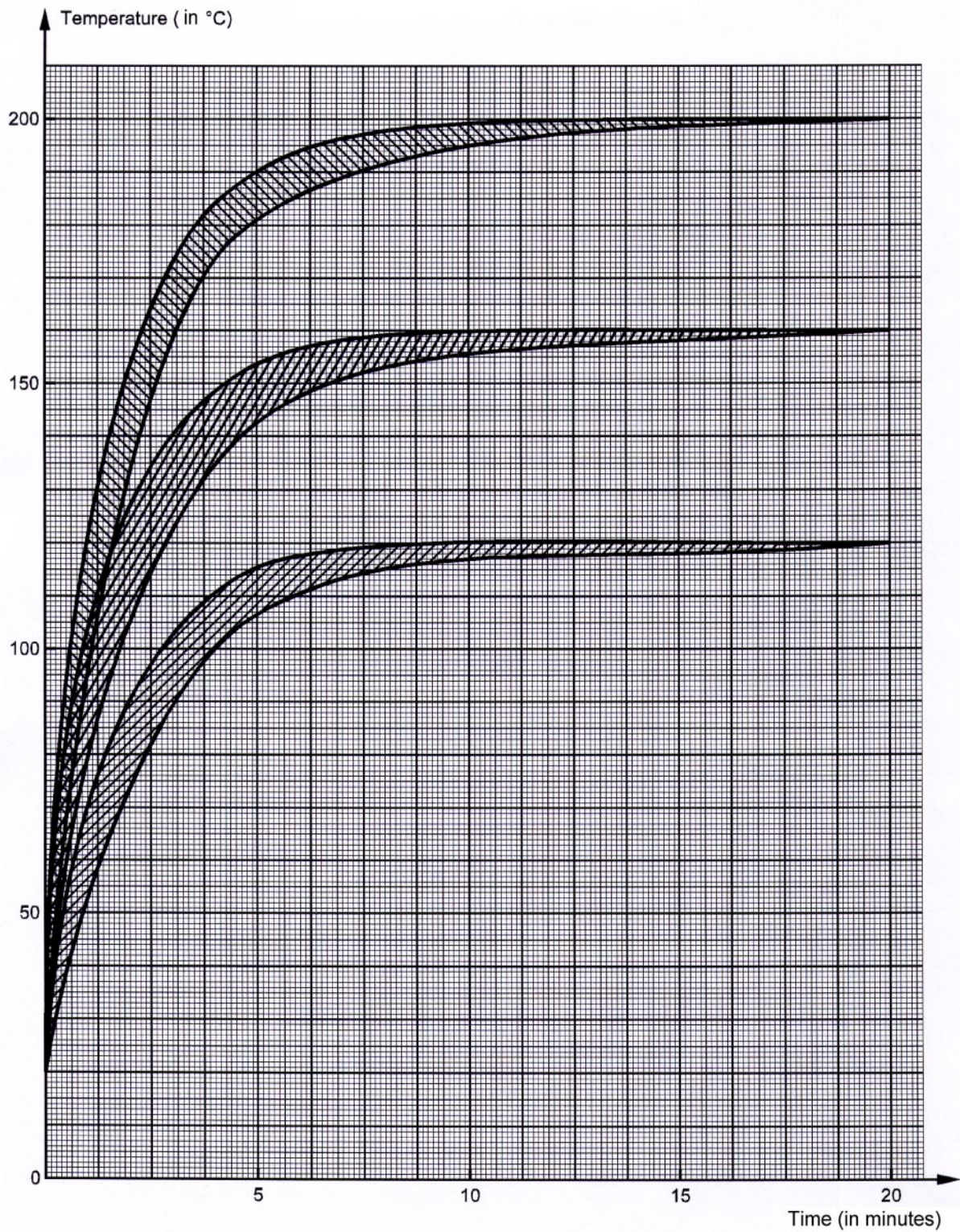


Details showing the position of the thermocouple in the sheet metal
at point T, in the slot cut with a circular saw



Appendix 2

CALIBRATION GRAPH OF OVENS



5. RECORDS AND REFERENCE DOCUMENTS

5.1. RECORDS

5.1.1. CREATION

OR : 01/07/1985 – CREATION OF THE NORME

5.1.2. SUBJECT OF THE MODIFICATION

- A : 21/07/1997 – INTRODUCED INTO IDEM (*French only*).
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5.2. REFERENCE DOCUMENTS

5.2.1. PSA DOCUMENTS

5.2.1.1 Normes

5.2.1.2. Others

5.2.2. EXTERNAL DOCUMENTS

5.3. EQUIVALENT TO :

5.4. CONFORMS TO :

5.5. KEY-WORDS