

## PAINT COATINGS –VARNISHES AND SIMILAR PRODUCTS BENDING OVER A CYLINDRICAL MANDREL

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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 : 13/11/2003*

### FOREWORD

*This document is in technical conformity with the RNUR n° 1297 test method.*

*It must not be modified without the agreement of the RNUR.*

## 1.OBJECT AND FIELD OF APPLICATION

The object of this method is to set the process for assessing resistance of a primer coat, paint, lacquer and similar preparations applied to metal supports, to cracking or peeling during a bending test over a cylindrical mandrel.

## 2.PRINCIPLE

The test consists of bending on a cylindrical mandrel a plate covered with the coat to be examined, and observing the appearance of cracks in this coat or detachment of the latter from its support.

This is to determine:

- Either the conformity of a coat with a particular specification (test carried out on 1 mandrel of a specified diameter)
- Or the minimum diameter of mandrel over which the test specimen may be bent through an angle of 180° without the appearance of cracks or peeling of the coat being noted.

## 3.EQUIPMENT

- rectangular base with minimum width 55, fitted with a locking system for the test specimen for adjusting the clearance.
- A mobile part fitted with a handle and system for adjusting the clearance, linked to the support by hinges and able to carry along with its movement part of the test specimen, without damaging the surface (see appendix)

**Note :** *The assembly must be designed such that the coats surface of the test specimen is not scratched by contact with any part of the equipment.*

- Cylindrical mandrels in hard metal resistant to corrosion, which can turn freely on their axis. When a mandrel is placed in the equipment, its centre line must coincide with the centre line of the hinges. The diameter of these mandrels must be selected from the series 2 - 3 - 4 - 5 - 6 - 8 - 10 - 12 - 14 - 16 - 20 mm.
- A thermometer allowing reading to  $\pm 1$  °C.
- A hygrometer allowing a measure of  $\pm 5$  % humidity.
- A stop-watch.
- A magnifying glass with 10x magnification.
- A conditioned enclosure.

## 4.TEST SPECIMENS

- Test specimen dimensions:
  - Minimum length 100 mm,
  - Minimal width 50 mm,
  - Thickness 0,3 to 1 mm (according to the sphere of use).

When expressing the results, do not take into account defects which are located in an area 1 cm wide bordering the test specimen.

- Preparation of test specimens

The preparation and treatment conditions of the surface, for the application and drying of the coat, must be those corresponding with the technical specifications of the product to be examined, and must be shown in the test report.

In no circumstances must the test specimens be cut out after the application of the paint.

The thickness of the coat must be known and must be quoted in the test report.

- Conditioning the test specimens

Allow test specimens to remain for at least 2 hours in a thermostatically regulated enclosure at a temperature of  $23\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$  and relative humidity de  $50\text{ \%} \pm 5\text{ \%}$ .

## 5.TEST CONDITION

Work with 3 distinct test specimens in the thermostatically regulated enclosure

## 6.METHOD OF OPERATION

Test procedure:

- Firmly attach the equipment to the edge of a work bench in order to be able to operate the handle freely, fit the appropriate mandrel and lower the handle to the vertical position.
- Introduce the test specimen so that the coated side is on the outside after bending.
- Lock the rest specimen on the support, raise the handle steadily, without jerking, thus bending the panel  $180^{\circ}$  over the mandrel, the duration of the movement being 3 to 5 seconds.
- Withdraw the test specimen and immediately examine the coating using the magnifying glass (10x).

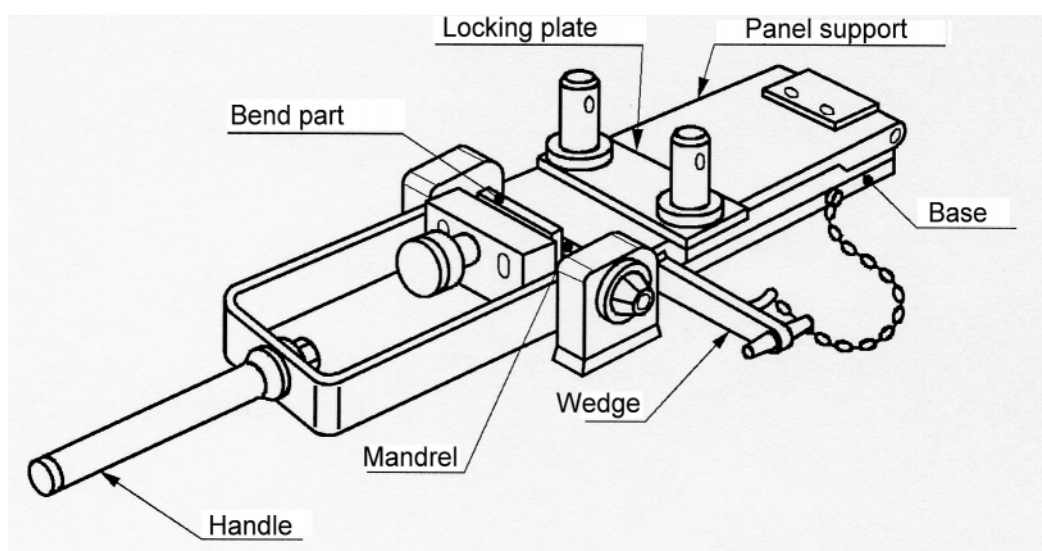
## 7.EXPRESSION OF RESULTS

- Indicate whether the coat is in conformity with the specification required.
- Indicate the minimum diameter of the mandrel which may be used for bending the test specimen without causing cracking or peeling of the support.

## 8.TEST REPORT

The test report must include, as well as the method used and the results, the test conditions: temperature, relative humidity, diameter of mandrel used, type of damage (cracking or peeling), thickness of coating.

The test report must also show operating details not specified in the test method, as well as any incidents likely to have affected these results.

**APPENDIX****BEND TEST EQUIPMENT**

## 9.RECORDS AND REFERENCE DOCUMENTS

### 9.1.RECORDS

#### 9.1.1.CREATION

- OR : 01/05/1981 – CREATION OF THE PSA NORME. REPLACING ASSOCIATION NORME N° 1297.

#### 9.1.2.SUBJECT OF THE MODIFICATION

- A: 10/02/1997 – INTRODUCTION TO IDEM (French only)
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### 9.2.REFERENCE DOCUMENTS

#### 9.2.1.PSA DOCUMENTS

##### 9.2.1.1.Normes

##### 9.2.1.2.Others

#### 9.2.2.EXTERNAL DOCUMENTS

REN1297

### 9.3.EQUIVALENT TO:

### 9.4.CONFORMS TO:

### 9.5.KEY WORDS