

## PAINT COATINGS ON METALLIC SUPPORT HIGHLIGHTING AND GRADING OF IMPACTS REACHING THE SUPPORT

Page 1/3

### NO USE RESTRICTION

This is a translation, the French original shall be used in all cases of litigation

Date of translation : 18/11/2004

## 1.OBJECT AND FIELD OF APPLICATION

The object of this method is to describe a mode of operation for highlighting and grading, after a chipping test, the number of impacts which strip bare the metallic support or cause scratches to the paint coating reaching the metallic support.

## 2.PRINCIPLE

The specimen, after being subjected to chipping, is immersed in a copper sulphate highlighting solution; the ion  $\text{Cu}^{2+}$  is reduced to metallic copper (hence the appearance of a pink deposit) when it is in contact with a metal with an oxidation potential greater than that of copper, which is notably the case for iron and zinc.

## 3.EQUIPMENT AND REAGENTS

### 3.1.MAGNETIC STIRRER

### 3.2.MAGNETIC BAR

### 3.3.CHRONOMETER

### 3.4.BEAKER

1 litre.

### 3.5.MAGNIFYING GLASS

10 x magnification.

### 3.6.COPPER SULPHATE BASED HIGHLIGHTING SOLUTION

Composition for 1 000 grams:

- de-mineralised water: 775 grams,
- concentrated sulphuric acid: 75 grams,
- copper sulphate,  $\text{CuSO}_4, 5\text{H}_2\text{O}$  : 150 grams.

### 3.7.INDUSTRIAL WATER

## 4.TEST SPECIMENS

The specimens must be chipped in conformity with test method D24 1312 (see paragraph 5.2), then graded according to paragraphs 6.1 and 6.2 of test method D24 1312.

## 5.MODE OF OPERATION

- Introduce the bar magnet (3.2) into the beaker (3.4) containing the highlighting solution (3.6).
- Place the beaker on the magnetic stirrer (3.1).
- Immerse the specimen for 3 minutes, in the stirred highlighting solution.
- Rinse the specimen with industrial water (3.7).
- After drying for a few minutes at ambient temperature, immerse the specimen again for 2 minutes, in the stirred highlighting solution.
- Rinse the specimen with industrial water (3.7).
- Count the number of impacts for which a copper metallic deposit (pink in colour) is formed. For very small impacts, use the magnifying glass (3.5).
- If the surface of the specimen exposed to chipping is different to 0,64 dm<sup>2</sup> [area of the chipping equipment window (3.2) of test method D24 1312], calculate the number of impacts N, produced on a surface 0,64 dm<sup>2</sup>, and for which there has been a deposit of metallic copper, according to the following relationship:

$$N = \frac{n \cdot 0,64}{S}$$

in which: n = number of impacts for which there has been a metallic copper deposit,  
S = area of the specimen exposed to chipping expressed in square decimetres.

**Note:** 1000 grams of highlighting solution allows highlighting of impacts on at least one thousand test specimens.

## 6.EXPRESSION OF RESULTS

Grade the number of impacts reaching the metallic support using the table below.

GRADING	n (or N if S ≠ 0,64 dm <sup>2</sup> )
1	0
2	1 to 10
3	11 to 100
4	101 to 200
5	> 200

In the case of a grading of 1, indicate which coat (primer, surfacer or base coat) the impacts have stopped at.

## 7.TEST REPORT

As well as the results, the test report must indicate:

- the reference to this method,
- the nature of the metallic support,
- the detailed range of paints applied to the specimen (product references, name of suppliers, application thickness, baking temperature, ... ),
- the operational details not specified in the method as well as any incidents likely to have affected the results.

## 8.RECORDS AND REFERENCE DOCUMENTS

### 8.1.RECORDS

#### 8.1.1.CREATION

- OR: 01/11/1991 – CREATION OF THE NORME

#### 8.1.2.SUBJECT OF THE MODIFICATION

- A: 11/07/1997 – INTRODUCTION TO IDEM (French only)
- 

### 8.2.REFERENCE DOCUMENTS

#### 8.2.1.PSA DOCUMENTS

##### 8.2.1.1.Normes

D24 1312.

##### 8.2.1.2.Others

#### 8.2.2.EXTERNAL DOCUMENTS

### 8.3.EQUIVALENT TO:

### 8.4.CONFORMS TO:

### 8.5.KEY-WORDS