Coil coated metals – Test methods –
Part 12: Resistance to scratching

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Tôles prélaquées - Méthodes d'essais - Partie 12: Résistance à la rayure
Bandbeschichtete Metalle - Prüfverfahren - Teil 12: Widerstand gegen Ritzen

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Foreword

This document (EN 13523-12:2004) has been prepared by Technical Committee CEN/TC 139 “Paints and varnishes”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2005, and conflicting national standards shall be withdrawn at the latest by May 2005.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.
1 **Scope**

This part of EN 13523 describes the procedure for determining the resistance of an organic coating on a metallic substrate to penetration by scratching with a needle.

It is possible that with some aluminium alloys and thin gauge steel substrate below 0.4 mm, that rather than scratching, the needle will deform the substrate. Under these conditions this test method is not applicable.

Soft coatings such as poly vinyl chloride (PVC) and structured coatings will not give a precise result due to the soft nature of the coating and/or the potential for the needle to snag.

The method is not applicable to conductive coatings.

2 **Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13523-0:2001, *Coil coated metals — Test methods — Part 0: General introduction and list of test methods.*

EN 23270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing (ISO 3270:1984).*


3 **Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 13523-0:2001 apply.

4 **Principle**

The organic coating is tested by mechanical means whereby a test panel is dragged beneath a needle upon which a specified load is placed.
5 Apparatus

5.1 Scratch apparatus (see EN ISO 1518). The apparatus is shown in Figure 1. It consists of a sliding table, which holds the test panel, with an arm on which the load is placed over a chuck, which holds the needle, a constant speed motor to drive the table and a low voltage electrical meter to detect electrical contact.

Other arrangements which give a similar performance may be used.

![Diagram of scratch apparatus]

Key

1 Panel in test panel holder with sloping ramp
2 Needle
3 Rod which allows the needle to lower gently onto the tested surface
4 Counterweight
5 Electrical connection with indicator for detecting scratch penetration to a metallic substrate
6 Drive from constant-speed motor

Figure 1 — Scratch apparatus

5.2 Needle that can be fixed on the apparatus. The tip of the needle is a small sphere (1 ± 0.05) mm in diameter of hardened steel or tungsten carbide, the latter giving a longer serviceable life.

NOTE In the case of a needle with a tip of hardened steel, the needle should be used only once and then disposed of or re-tipped.

6 Sampling

See 13523-0.