
**Paints and varnishes — Determination
of stone-chip resistance of coatings —**

**Part 1:
Multi-impact testing**

*Peintures et vernis — Détermination de la résistance des revêtements
aux impacts de cailloux —*

Partie 1: Essais de chocs multiples

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 20567-1:2005), which has been technically revised with the following main changes:

- a table with the particle size distribution of the grit material has been added;
- a note concerning the use of actual pressure gages has been added to [Figure 2](#);
- the clause on sampling has been deleted;
- the description of suitable methods for removal of loose paint have been transferred to an informative annex as examples and, for the method using adhesive tape, the adhesive strength of the tape is no longer specified;
- this document is revised editorially and the normative references have been updated.

A list of all parts in the ISO 20567 series can be found on the ISO website.

Introduction

In the automobile industry, multi-layer paint coatings are applied to car bodies for protection. Grit, road-metal and other materials can damage these coatings in such a way that individual layers come off or the whole coating delaminates from the substrate.

Stone chipping can be simulated by means of single- and/or multi-impact tests. ISO 20567-1 describes multi-impact testing; ISO 20567-2 and ISO 20567-3 describe single-impact tests.

NOTE A recommended procedure for calibration of the apparatus is given in [Annex B](#). Note that this annex is informative because the method described in it is not the only one suitable for checking whether a uniform impact pattern is produced.

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Paints and varnishes — Determination of stone-chip resistance of coatings —

Part 1: Multi-impact testing

1 Scope

This document specifies three methods for the evaluation of the resistance of automobile finishes and other coatings to chilled-iron grit projected onto the surface under test to simulate the impact of small stones.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 1514, *Paints and varnishes — Standard panels for testing*

ISO 2808, *Paints and varnishes — Determination of film thickness*

ISO 3270, *Paints and varnishes and their raw materials — Temperatures and humidities for conditioning and testing*

ISO 11124-2, *Preparation of steel substrates before application of paints and related products — Specifications for metallic blast-cleaning abrasives — Part 2: Chilled-iron grit*

ISO 11125-2, *Preparation of steel substrates before application of paints and related products — Test methods for metallic blast-cleaning abrasives — Part 2: Determination of particle size distribution*

ISO 21227-2:2006, *Paints and varnishes — Evaluation of defects on coated surfaces using optical imaging — Part 2: Evaluation procedure for multi-impact stone-chipping test*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

4 Principle

The stone-chip resistance of the coating under test is checked by projecting a large number of small sharp-edged bodies onto it in a short period of time. The material used in the test is chilled-iron grit, which is projected onto the coating at a defined angle using compressed air. The extent of the damage