
**Packaging — Complete, filled
transport packages — General rules
for the compilation of performance
test schedules**

*Emballages — Emballages d'expédition complets et pleins —
Règles générales pour l'établissement de programmes d'essais de
performance*

iteh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 4180:2019

<https://standards.iteh.ai/catalog/standards/iso/51fb55eb-b1d6-4c04-a5ff-d3f9526bafd7/iso-4180-2019>



iTeh Standards
(<https://standards.itih.ai>)
Document Preview

ISO 4180:2019

<https://standards.itih.ai/catalog/standards/iso/51fb55eb-b1d6-4c04-a5ff-d3f9526bafd7/iso-4180-2019>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Hazard	2
5 Preparation of the test schedule	3
6 Test method	7
6.1 The laboratory atmosphere	7
6.2 Specimens	7
6.2.1 Content of specimens	7
6.2.2 Number of specimens	7
6.2.3 Degradation of specimen	7
6.2.4 Identification of specimen	7
6.3 Conditioning	7
6.4 Vibration test	8
6.4.1 General	8
6.4.2 Vertical random vibration test in general transportation	8
6.4.3 Sinusoidal vibration test in general transportation	10
6.4.4 Random vibration test in rough road transportation	11
6.4.5 Sinusoidal vibration test in rough road transportation	12
6.4.6 Stacked vibration test	13
6.5 Drop test	13
6.5.1 Testing classification (common for free-fall test and rotational edge drop test)	13
6.5.2 Free-fall test (applies to manual handling)	13
6.5.3 Rotational drop test (applies to mechanical handling)	14
6.5.4 Horizontal impact test	15
6.6 Compression test	16
6.6.1 Test apparatus and test method	16
6.6.2 Compression test using a compression tester	16
6.6.3 Stacking load tests using a static load	19
6.7 Temperature and humidity environmental test	21
6.8 Low-pressure test	22
7 Test report	22
Bibliography	24

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 of the voluntary nature of standards, 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 3, *Performance requirements and tests for means of packaging, packages and unit loads (as required by ISO/TC 122)*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This second edition cancels and replaces the first edition (ISO 4180:2009) which has been technically revised. The main changes compared to the previous edition are as follows:

- the test item in the test schedule can now be selected by agreement of the stakeholders depending on the expected or existing transportation process and hazards;
- in 6.4, the test conditions have been reviewed and revised by the distance and condition of transportation;
- in 6.5, a new Level-4 has been added for well controlled handling;
- in 6.6, the test conditions have been reviewed and revised; they can be changed or selected depending on the storage conditions by the agreement of stakeholders.