
**Plastics — Determination of dynamic
mechanical properties —**

Part 9:
**Tensile vibration — Sonic-pulse
propagation method**

AMENDMENT 1: Precision

Plastiques — Détermination des propriétés mécaniques dynamiques —

*Partie 9: Vibration en traction — Méthode de propagation de signaux
acoustiques*

AMENDEMENT 1: Fiabilité



Reference number
ISO 6721-9:1997/Amd.1:2007(E)

© ISO 2007

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

Amendment 1 to ISO 6721-9:1997 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 2, *Mechanical properties*.

Plastics — Determination of dynamic mechanical properties —

Part 9: Tensile vibration — Sonic-pulse propagation method

AMENDMENT 1: Precision

Page 5, Clause 11

Replace the text of this clause by the following text:

The precision of this test method is not known because interlaboratory data are not available due to the difficulty in finding laboratories with test equipment capable of operating at the same frequency. It should be recognized that the properties of thermoplastics are time-dependent, and the pulse propagation time and hence the dynamic modulus depend closely on the frequency of the sonic pulse used. For information purposes, however, the within-laboratory standard deviation has been determined using data from one laboratory which tested four different materials (see Annex A).

Page 8

Add the following annex:

Annex A (informative)

Precision

A.1 For the reasons outlined in Clause 11, the precision of this method is not known. However, Table A.1 gives repeatability data based on testing performed on identical test pieces in the same laboratory under the same conditions by the same operator using the same equipment within short intervals of time. It can be seen that a coefficient of variation of up to about 3 % can be expected within a particular laboratory.

Table A.1 — Repeatability data for tensile storage modulus E' measured at 10 kHz

Material	Average value of E' GPa	Standard deviation	Coefficient of variation %
PE-UHMW	1,762	0,009 3	0,53
Polypropylene	2,811	0,054 2	1,93
Uniaxially stretched PP	11,10	0,28	2,5
PEEK	4,232	0,032 8	0,77

A.2 When this method is used with certain materials, consideration should be given to various factors that can lead to a decrease in the repeatability of the measured values. Such factors include the following:

- a) poor contact between the specimen and the transducers, which may give rise to a low amplitude of the sonic pulse and associated errors in determining the pulse propagation time;
- b) anisotropy in the properties of the material, caused by molecular orientation, which will give rise to a dependence of the pulse propagation time on direction in the specimen;
- c) the presence of filler or reinforcement in the material such that the distribution or orientation of the filler or reinforcement affects the pulse propagation time.

Note that, since the properties of thermoplastics are time-dependent, the pulse propagation time and hence the dynamic modulus depend closely on the frequency of the sonic pulse used. It is therefore not possible to make accurate comparisons of results obtained using different frequencies.

www.iso.org

ICS 83.080.01

Price based on 2 pages