
**Plastics — Elasticity index —
Determination of elastic property of
melts**

*Plastiques — Indice d'élasticité — Détermination de la propriété
élastique à l'état fondu*



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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus	1
5.1 Measurement apparatus	1
5.2 Temperature-controlled enclosure	2
5.3 Temperature measurement and control	2
5.4 Plate/specimen assembly	2
5.5 Calibration	2
6 Sampling	2
7 Procedure	2
7.1 Test temperature	2
7.2 Zeroing the gap	2
7.3 Introducing the test specimen	2
7.4 Conditioning the test specimen	2
7.5 Test mode (controlled stress or controlled strain)	2
7.6 Determination of thermal stability of sample material	3
7.7 Determination of region of linear-viscoelastic behaviour	3
7.7.1 In the controlled-strain mode	3
7.7.2 In the controlled-stress mode	3
7.7.3 Confirmation of linear-viscoelastic behaviour	3
7.8 Air entrapment	3
8 Expression of results	3
9 Test report	4
Bibliography	5

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).

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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.

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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.

Introduction

Many thermoplastic materials show similar viscosities, but elastic properties can vary significantly, which can lead to inappropriate applications.

The definition of an elasticity index describing the elastic properties of resins in a similar way as the viscosity is indicated by the melt flow rate opens a possibility to designate the elastic properties using a simple characteristic number.

Selecting G' at a particular frequency as elasticity index can no longer describe the complete behaviour of materials with varying frequency. But considering the success MFR/MVR (see ISO 1133-1 and ISO 1133-2) as characteristic numbers of viscosity the elasticity index provides a similar useful characteristic number for the elasticity of materials.

Plastics — Elasticity index — Determination of elastic property of melts

1 Scope

This document specifies a procedure for the determination of an elasticity index based on measurements of the shear storage modulus using oscillatory rheometers, establishes general principles, and gives guidelines for performance of measurements. The elasticity index is applicable to all thermoplastics and viscoelastic materials for which the elastic behaviour is a crucial application property.

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 6721-1, *Plastics — Determination of dynamic mechanical properties — Part 1: General principles*

ISO 6721-10, *Plastics — Determination of dynamic mechanical properties — Part 10: Complex shear viscosity using a parallel-plate oscillatory rheometer*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6721-1, ISO 6721-10 and the following apply.

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 <https://www.iso.org/obp>

3.1

elasticity index

characteristic number describing the elastic properties of plastic melts or viscoelastic materials which is defined as storage modulus G' measured at fixed angular frequency with specific strain, stress, and temperature

Note 1 to entry: It is expressed in pascals.

4 Principle

This shall be in accordance with ISO 6721-10 for parallel plate geometry.

For cone and plate geometry, the same principle applies while the angle between the cone and plate is less than 5°.

5 Apparatus

5.1 Measurement apparatus

This shall be in accordance with ISO 6721-10 with the alternative option of using a cone and plate measurement geometry.