

# INTERNATIONAL STANDARD

**ISO**  
**294-1**

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## **Plastics — Injection moulding of test specimens of thermoplastic materials —**

### **Part 1:**

General principles, and moulding of  
multipurpose and bar test specimens

*Plastiques — Moulage par injection des éprouvettes de matériaux  
thermoplastiques —*

*Partie 1: Principes généraux, et moulage des éprouvettes à usages  
multiples et des barreaux*

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**ISO 294-1:1996(E)****Foreword**

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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.

International Standard ISO 294-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

Together with the other parts, this part of ISO 294 cancels and replaces the second edition of ISO 294 (ISO 294:1995) which has been revised to improve the definition of the injection-moulding parameters and has been restructured to specify four types of ISO mould for the production of the basic specimen types required for the acquisition of comparable test data.

Care has been taken to ensure that the ISO moulds described can all be fitted in existing injection-moulding equipment and have interchangeable cavity plates.

ISO 294 consists of the following parts, under the general title *Plastics — Injection moulding of test specimens of thermoplastic materials*:

- *Part 1: General principles, and moulding of multipurpose and bar test specimens*
- *Part 2: Small tensile bars*
- *Part 3: Small plates*
- *Part 4: Determination of moulding shrinkage*

Annexes A to C of this part of ISO 294 are for information only.

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## Introduction

Many factors in the injection-moulding process may influence the properties of moulded test specimens and hence the measured values obtained when the specimens are used in a test method. The mechanical properties of such specimens are in fact strongly dependent on the conditions of the moulding process used to prepare the specimens. Exact definition of each of the main parameters of the moulding process is a basic requirement for reproducible and comparable operating conditions.

It is important in defining moulding conditions to consider any influence the conditions may have on the properties to be determined. Thermoplastics may show differences in molecular orientation (important mainly with amorphous polymers), in crystallization morphology (for crystalline and semicrystalline polymers), in phase morphology (for heterogeneous thermoplastics) as well as in the orientation of anisotropic fillers such as short fibres. Residual ("frozen-in") stresses in the moulded test specimens and thermal degradation of the polymer during moulding may also influence properties. Each of these phenomena must be controlled to avoid fluctuation of the numerical values of the properties measured.