International Standard ISO 6239

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Plastics — Determination of tensile properties by use of small specimens

Plastiques — Détermination des caractéristiques en traction sur petites éprouvettes

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6239 was prepared by Technical Committee ISO/TC 61, *Plastics*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Plastics — Determination of tensile properties by use of small specimens

0 Introduction

0.1 This International Standard specifies a method for determining tensile properties of plastics in the form of standard small specimens. Results obtained by this method do not necessarily agree with results obtained with standard specimens specified in ISO 527.

The use of small specimens is not normally suitable for use with reinforced plastics.

0.2 This method of test may provide data for research and development, engineering design quality control, acceptance or rejection under specifications and for special purposes.

1 Scope and field of application

This International Standard[1] specifies a method for determining the tensile properties of plastics in the form of standard small specimens if it is not possible to use the standard type A and B test specimens of ISO 527.

2 References

ISO 37, *Rubber, vulcanized — Determination of tensile stress-strain properties.*

ISO 291, *Plastics — Standard atmospheres for conditioning and testing.*

ISO 527, *Plastics — Determination of tensile properties.*[2]

3 Definitions

For the purpose of this International Standard the definitions given in ISO 527 shall apply.

4 Apparatus

Tensile testing machine, extensometer and **micrometer,** shall be as specified in ISO 527. The extensometer chosen shall meet the precision requirements of ISO 527.

5 Test specimens

5.1 The test specimens shall have the same shape as the standard type A and B specimens of ISO 527. The dimensions of the test specimens type B shall be scaled proportionally to those of specimens of ISO 527 in the ratio 1 : 2 or 1 : 5. The dimensions of the test specimens type A shall be the same as for the small test specimens in ISO 37.

5.2 The types of specimens are shown with detailed dimensions and tolerances in figures 1 and 2.

5.3 The type of specimen to be used should be specified in the relevant International Standard for the material.

5.4 The methods of preparation of the test specimens and other requirements for the test specimens are specified in ISO 527.

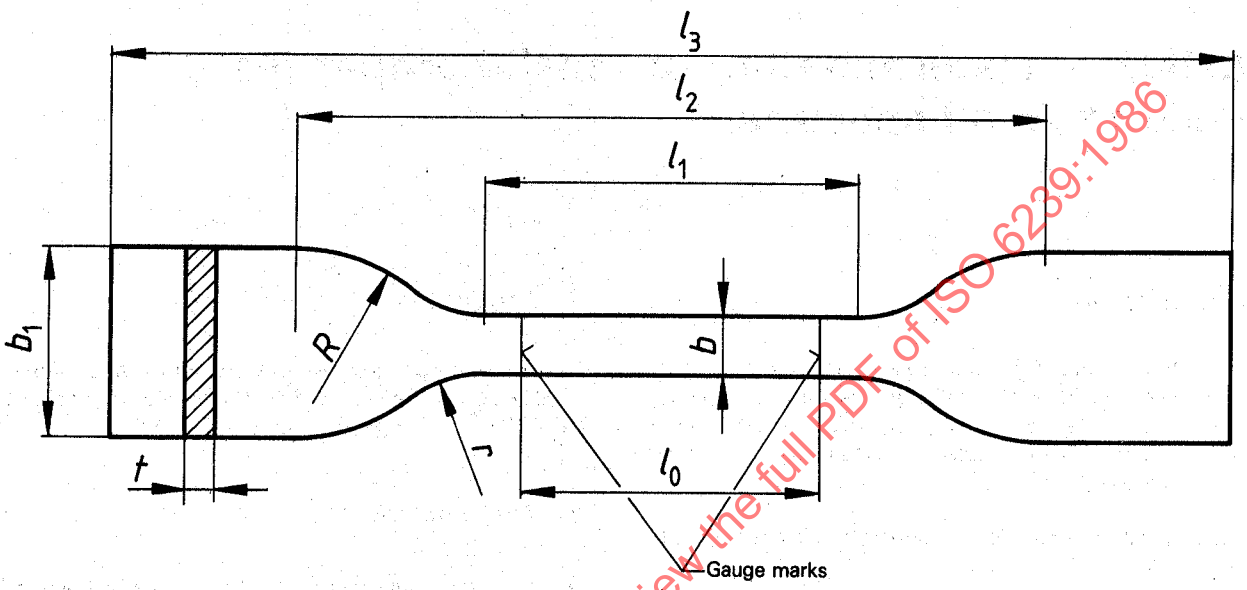
All surfaces of the specimen shall be free from visible flaws, scratches and other imperfections that are likely to influence the results.

6 Number of test specimens

A minimum of five test specimens shall be tested in each of the required directions of testing. The test specimens that do not break within the parallel portion shall be discarded and further specimens shall be tested.

1) This International Standard will be incorporated into ISO 527 when the latter is next revised.

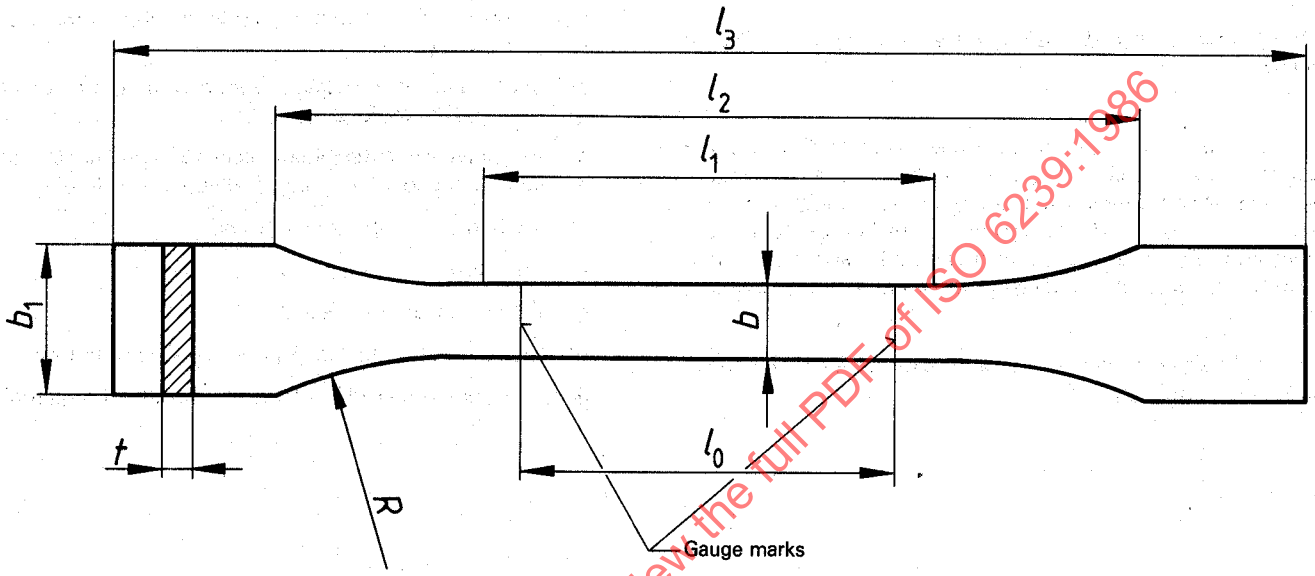
2) At present at the stage of draft. (Revision of ISO/R 527.)



Dimensions in millimetres

Symbol	Description	Test specimens	
		A_1	A_2
l_3	Minimum overall length	75	35
b_1	Width at ends	12,5 ± 1	6 ± 0,5
l_1	Length of narrow parallel portion	25 ± 1	12 ± 0,5
b	Width of narrow parallel portion	4 ± 0,1	2 ± 0,1
r	Small radius	8 ± 0,5	3 ± 0,1
R	Large radius	12,5 ± 1	3 ± 0,1
l_0	Distance between gauge marks	20 ± 0,5	10 ± 0,4
l_2	Initial distance between grips	50 ± 2	20 ± 2
t	Minimum thickness	2	1

Figure 1 — Type A test specimen



Dimensions in millimetres

Symbol	Description	Test specimens	
		B_1 (1 : 2)	B_2 (1 : 5)
l_3	Minimum overall length	75	30
b_1	Width at ends	10 ± 0,5	4 ± 0,2
l_1	Length of narrow parallel portion	30 ± 0,5	12 ± 0,5
b	Width of narrow parallel portion	5 ± 0,2	2 ± 0,2
R	Minimum radius	30	12
l_0	Distance between gauge marks	25 ± 0,5	10 ± 0,2
l_2	Initial distance between grips	58 ± 2	23 ± 2
t	Minimum thickness	2	2

Figure 2 — Type B test specimen

7 Conditioning

The test specimens shall be conditioned before testing in accordance with the requirements of the relevant International Standard for the material or in accordance with ISO 291.

8 Procedure

8.1 The test procedure shall be the same as that specified in ISO 527.

8.2 The speed of testing of small specimens shall be chosen from the values specified in ISO 527, reduced in the same ratio that the small specimen bears to the full size specimen except that in no case shall the speed of testing be less than 1 mm/min. The speed to be used should be specified in the relevant International Standard for the material being tested.

8.3 If the elastic modulus in tension is being determined, use the speed 1 mm/min.

9 Expression of results

The calculation of results shall be as specified in ISO 527.

10 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) complete identification of the material tested, including type, source, manufacturer's code numbers, form and previous history;

c) the type of test specimen used, method of preparation and principal dimensions (l_0, b, t);

d) the standard atmosphere used for conditioning and testing and details of any pre-conditioning treatment;

e) the number of specimens tested;

f) the speed of testing;

g) the individual test results;

h) the mean value of the required tensile properties;

i) the standard deviation of the test results (if required).