BS ISO 9838:2015

BSI Standards Publication

Alpine and touring ski-bindings — Test soles for ski-binding tests

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National foreword

This British Standard is the UK implementation of ISO 9838:2015. It supersedes BS ISO 9838:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee SW/136, Sports, playground and other recreational equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL STANDARD

ISO 9838

Third edition
2015-09-01

Alpine and touring ski-bindings — Test soles for ski-binding tests

Fixations de skis alpins et de randonnée — Semelles d'essai pour les essais de fixations de skis

Reference number
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Foreword

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 83, *Sports and other recreational facilities and equipment*, Subcommittee SC 4, *Snowsports equipment*.

This third edition cancels and replaces the second edition (ISO 9838:2008), of which it constitutes a minor revision.

INTERNATIONAL STANDARD **ISO 9838:2015(E)**

Alpine and touring ski-bindings — Test soles for ski-binding tests

1 Scope

This International Standard defines test soles representing

— an alpine ski-boot (form A) or at least the bottom part of it to be used for testing alpine ski-bindings for alpine skiing in accordance with ISO 9462 and ISO 9465, and

— a touring ski-boot (form T) or at least the bottom part of it to be used for testing touring ski-bindings for touring skiing in accordance with ISO 13992 and ISO 9465.

NOTE Ski-boots have their own International Standards (ISO 5355 and ISO 9523) that allow relatively large tolerances in defining the test sole which are generally believed to be suitable for on-slope use by skiers, but too large for reproducible laboratory measurements.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 5355, *Alpine ski-boots — Requirements and test methods*

ISO 9462, *Alpine ski-bindings — Requirements and test methods*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5355 and the following apply.

3.1
test sole form A
test sole for testing alpine ski-bindings

3.2
test sole form T
test sole for testing touring ski-bindings

3.3
test sole type A
test sole for adults in accordance with ISO 5355, type A, suitable for bindings of type A (adults) and CA (junior) in accordance with ISO 9462

3.4
test sole type C
test sole for children in accordance with ISO 5355, type C, suitable for bindings of type C (children) in accordance with ISO 9462

3.5
basic test sole
one-piece sole of length 305 mm for type A and 255 mm for type C

3.6
variable length soles
sole that is either adjustable, in two parts, or a set of several fixed length soles between 270 mm and 360 mm for type A and between 200 mm and 280 mm for type C

4 Material and manufacture

The sole shall be moulded in polyurethane (TPU) reinforced by a metal insert in order to achieve the mechanical requirements given in Clause 6. It is moulded in a homogeneous material and in a mould with the same roughness on the sole/binding interface to ensure that the friction coefficient is the same all over this interface.

In the shell areas, reinforcement is allowed to support the walls. It should remain outside the flat area.

Form T could be based, for example, on the same construction as form A type A with the addition of a TPU part to allow tooling of the defined profile in Figure 3 and glueing of a thick rubber sole of hardness 68 ± 5 Shore A. The dimensions of test sole form T which are not given in Figure 3 shall be taken from test sole form A type A shown in Figure 1.

5 Dimensions

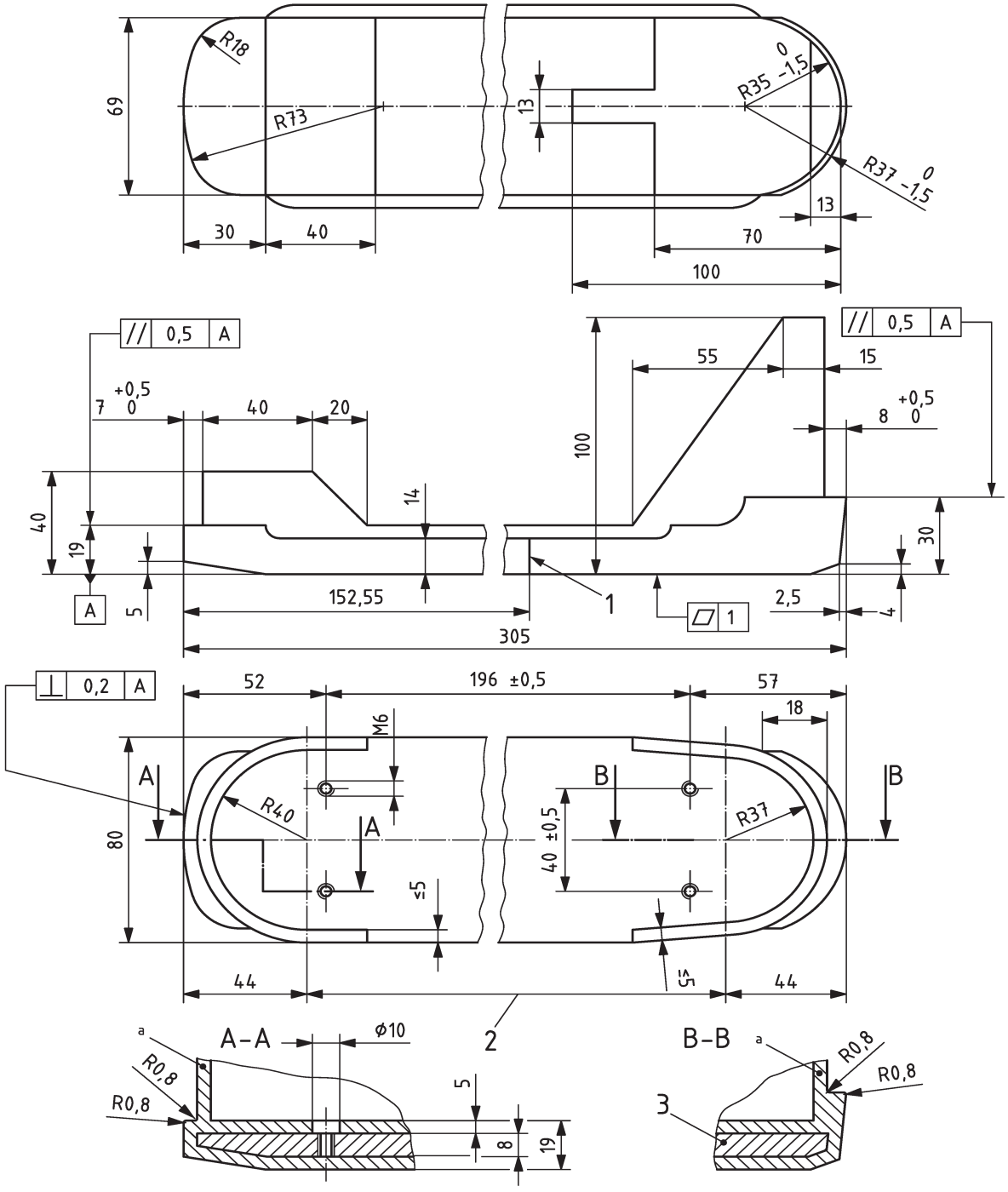
The dimensions of the basic sole shall be as shown in Figures 1 to 3. Except for the overall length, all the dimensions also apply to the variable length soles subject to the tolerance in Table 1.

Table 1 — Tolerance

Dimensions in millimetres

Dimension	Tolerance for nominal dimension of				
	0,5 to 3	>3 to 6	>6 to 30	>30 to 120	>120 to 315
Length dimensions	±0,15	±0,2	±0,5	±0,8	±1,2
Radius and chamfer	±0,2	±0,5	±1	±2	—

Dimensions in millimetres

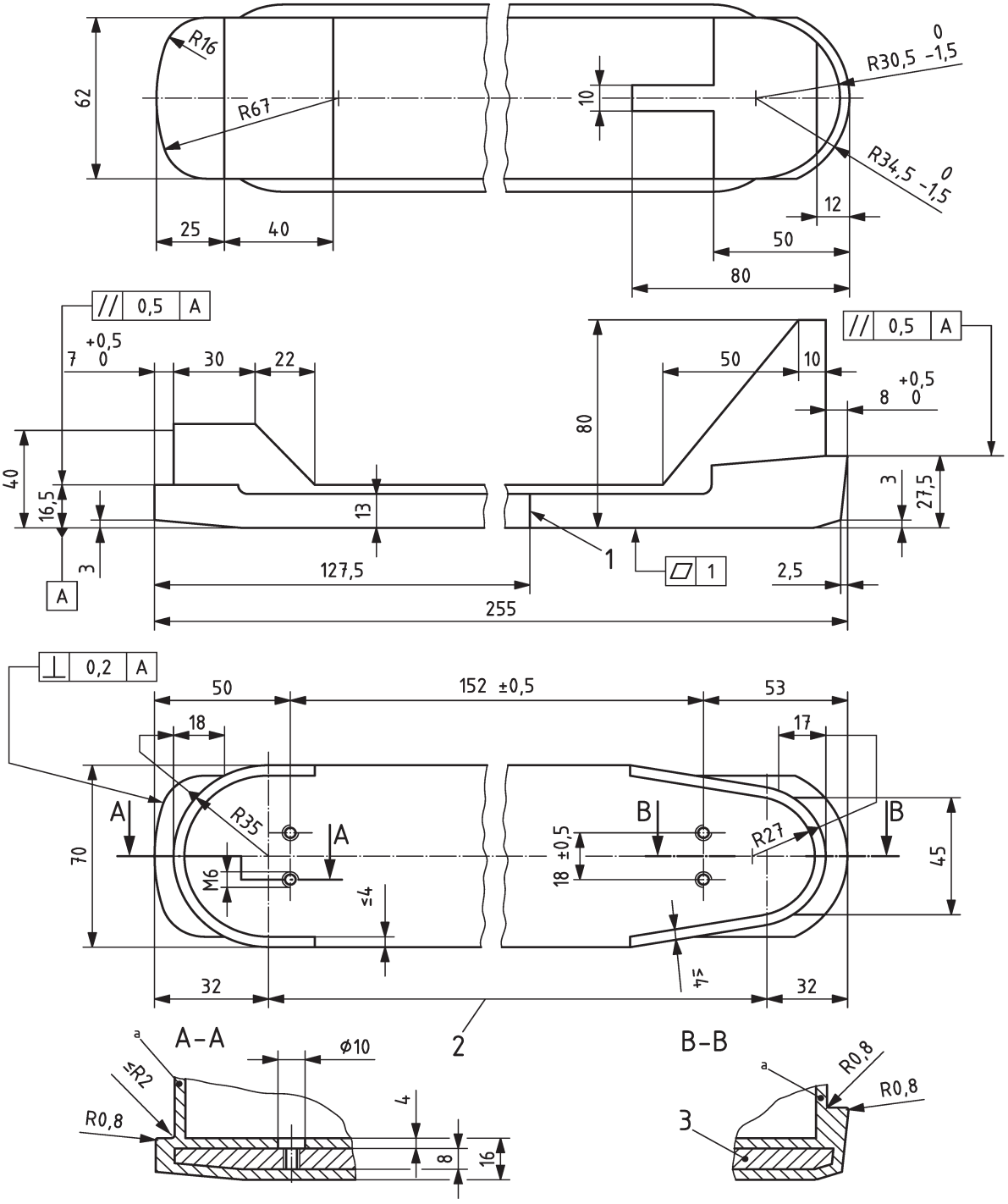


Key

1 central mark
2 flat area
3 reinforcement plate
a See Clause 4.

Figure 1 — Test sole form A type A

Dimensions in millimetres

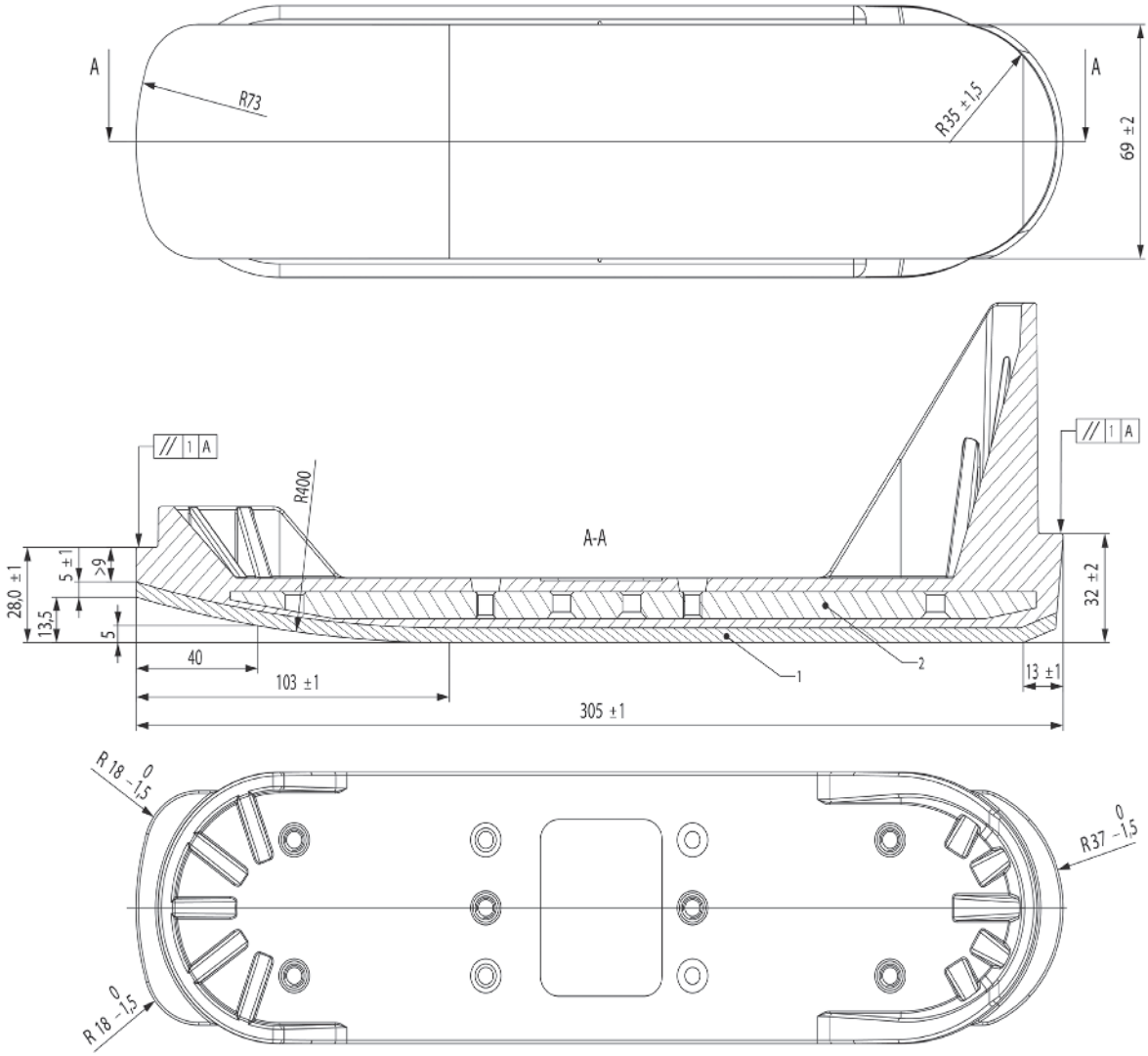


Key

1 central mark
2 flat area
3 reinforcement plate
a See Clause 4.

Figure 2 — Test sole form A type A

Dimensions in millimetres



Key

1 68 ± 5 Shore A rubber layer

2 reinforcement plate

Figure 3 — Test sole form T

6 Mechanical properties

6.1 Flexional stiffness

Place the test sole (basic or variable) on two supports as shown in Figure 4. The radius of the supports shall be 10 mm ± 1 mm and the test sole shall be supported over its whole width. Load the test sole vertically for 10 s at its middle by means of a contact ram with a radius of 10 mm and record the deflection under load. Record the residual deflection 20 s after releasing. Test at 23 °C ± 5 °C. The load, F_1, shall be the following:

— type A: F_1 = 400 N;

— type C: F_1 = 200 N.

Dimensions in millimetres

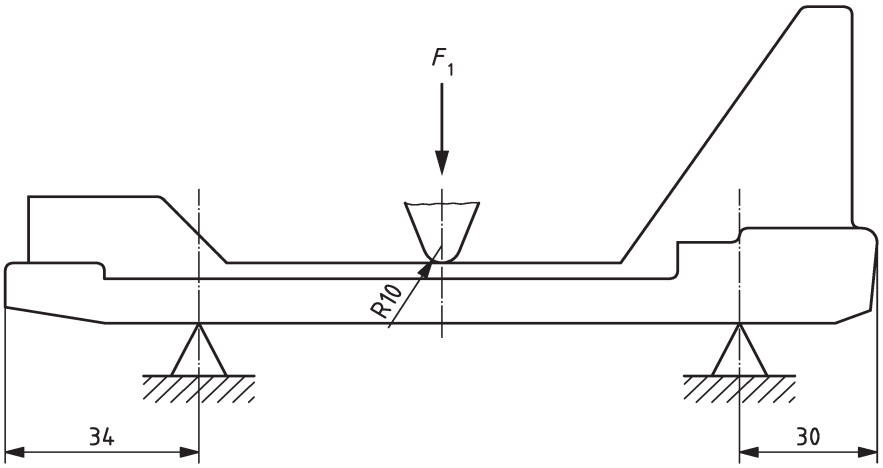


Figure 4 — Test of flexional stiffness

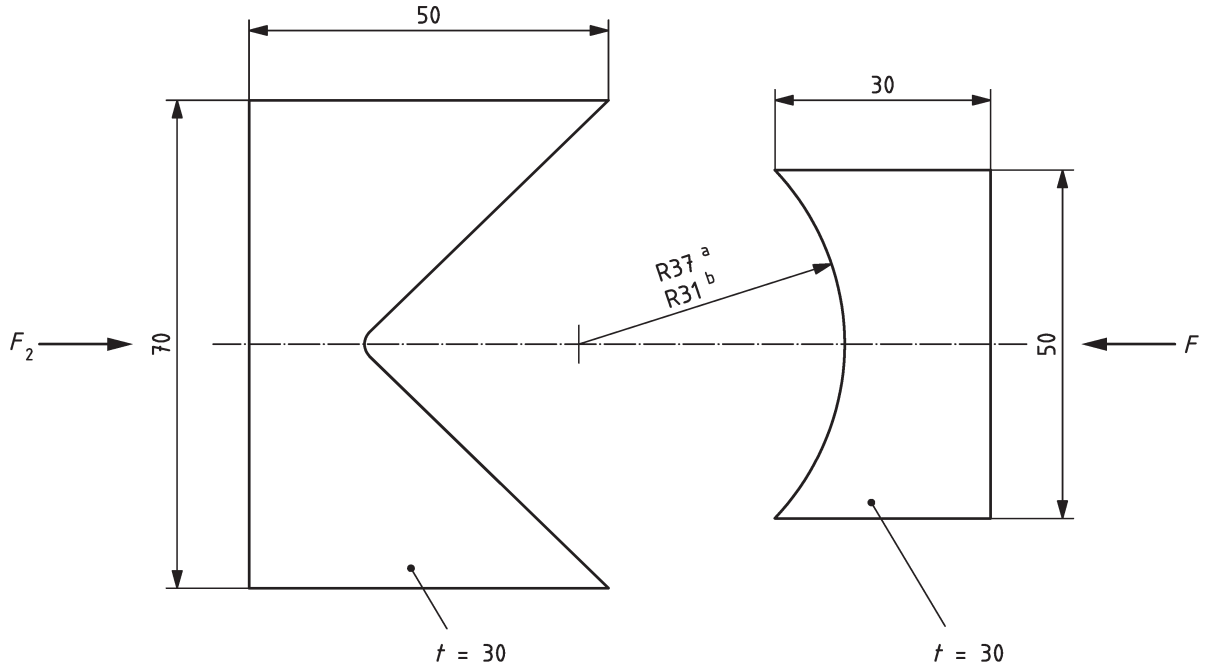
6.2 Compressional stiffness

Place the test sole in a device of aluminium or steel as shown in Figure 5. Compress the test sole for 10 s along its length axis and record the deformation under load. Record the residual deformation 20 s after releasing. Test at 23 °C ± 5 °C. The load, F_2, shall be the following:

— type A: F_2 = 500 N;

— type C: F_2 = 250 N.

Dimensions in millimetres



Key

t thickness

a Type A.

b Type C.

Figure 5 — Device for testing compressional stiffness

6.3 Hardness

6.3.1 Form A types A and C

A measurement of the Shore D hardness shall be carried out on the sole/binding interface in accordance with ISO 868. Test at 23 °C ± 5 °C.

6.3.2 Form T

A measurement of the Shore A hardness shall be carried out on the rubber sole in accordance with ISO 868. Test at 23 °C ± 5 °C.

6.4 Coefficient of friction

6.4.1 Form A types A and C

A measurement of the coefficient of friction shall be carried out in accordance with ISO 5355 as indicated in Table 2.

6.4.2 Form T

A measurement of the coefficient of friction shall be carried out in accordance with ISO 5355.

6.5 Coefficient of thermal expansion

The difference in length of the test sole at temperatures of 23 °C and −20 °C shall be measured.

6.6 Requirements

The requirements for the properties given in 6.1 to 6.5 shall be as indicated in Table 2.

Table 2 — Requirements

Dimensions in millimetres

Deflection		**Deformation under compression**		**Shore D hardness of TPU**	**Coefficient of friction**		**Coefficient of dilation**
mm		mm			form A types A and C	form T	K^{-1}
loaded	residual	loaded	residual				
≤2,5	≤0,5	≤0,5	≤0,2	50 + 5/0	0,065 ± 0,010	0,2 ± 0,03	$\leq 10^{-4}$

7 Long-term use

A test sole can be used for tests in accordance with ISO 9462 as long as it meets the requirements of this International Standard. Compliance shall be rechecked regularly, particularly with respect to

— dimensions (wear of the contact area with bindings), and

— friction (presence of binding lubricants, scratches, etc.).

Bibliography

[1] ISO 9465, *Alpine ski-bindings — Lateral release under impact loading — Test method*

[2] ISO 9523, *Touring ski-boots for adults — Interface with touring ski-bindings — Requirements and test methods*

[3] ISO 13992, *Alpine touring ski-bindings — Requirements and test methods*

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Price based on 9 pages

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