

INTERNATIONAL  
STANDARD

**ISO**  
**3861**

Second edition  
1995-08-01

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**Rubber hoses for sand and grit blasting —  
Specification**

*Tuyaux en caoutchouc pour sablage et grenailage — Spécifications*



Reference number  
ISO 3861:1995(E)

## 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.

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 3861 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This second edition cancels and replaces the first edition (ISO 3861:1977), which has been technically revised. The major changes compared with the 1977 edition are as follows:

- a) the title and scope have been expanded to include sand-blasting as well as grit-blasting;
- b) additional bore sizes have been added and changes made to the tolerance of the 20 mm and 40 mm bore sizes;
- c) the thickness of the cover has been specified as an additional requirement;
- d) the value for the elongation at break of the lining has been reduced from 500 % to 400 %, the tensile strength of the cover has been reduced from 12 MPa to 10 MPa, and an abrasion resistance test for the lining has been added;
- e) testing of physical properties is carried out on test sheets;
- f) an ozone resistance requirement has been added;

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International Organization for Standardization  
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

- g) the test for electrical properties is now in accordance with ISO 8031 and an alternative method for the dissipation of static electricity is included;
- h) a marking clause has been added.

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# Rubber hoses for sand and grit blasting — Specification

## 1 Scope

This International Standard specifies the requirements for rubber hoses for wet and dry sand and grit blasting, suitable for use up to a maximum working pressure of 0,63 MPa.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties.*

ISO 188:1982, *Rubber, vulcanized — Accelerated ageing or heat-resistance tests.*

ISO 1307:1992, *Rubber and plastics hoses for general-purpose industrial applications — Bore diameters and tolerances, and tolerances on length.*

ISO 1402:1994, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing.*

ISO 1746:1983, *Rubber or plastics hoses and tubing — Bending tests.*

ISO 4649:1985, *Rubber — Determination of abrasion resistance using a rotating cylindrical drum device.*

ISO 4671:1984, *Rubber and plastics hose and hose assemblies — Methods of measurement of dimensions.*

ISO 7326:1991, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions.*

ISO 8031:1993, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance.*

ISO 8033:1991, *Rubber and plastics hose — Determination of adhesion between components.*

## 3 Dimensions

### 3.1 Bore

Bore diameters shall be in accordance with the nominal dimensions given in table 1. The tolerances shall be in accordance with ISO 1307.

**Table 1 — Bore diameters**

Nominal bore mm
12,5
16
19
20
25
31,5
38
40
45
50
51

### 3.2 Cut lengths

The tolerances on cut lengths of hose shall be as specified in ISO 1307.

### 3.3 Thickness of rubber lining and cover

When measured in accordance with ISO 4671, the minimum thickness of the rubber lining shall be 5,0 mm and that of the rubber cover 1,0 mm.

## 4 Physical properties of lining and cover

### 4.1 Testing

Tests shall be carried out on test sheets of the appropriate rubber compound vulcanized to the same state of cure as the hose.

### 4.2 Tensile strength and elongation at break

When tested in accordance with ISO 37, the rubber used for the lining and cover shall have a tensile strength and elongation at break of not less than the values given in table 2.

**Table 2 — Minimum values of tensile strength and elongation at break**

Component	Tensile strength MPa	Elongation at break %
Lining	14	400
Cover	10	300

### 4.3 Accelerated ageing

After ageing as specified in ISO 188 for 3 days at a temperature of  $70\text{ °C} \pm 1\text{ °C}$ , the tensile strength and elongation at break of the rubber used for the lining and cover, as determined by ISO 37, shall not vary from the initial values by more than the values given in table 3.

**Table 3 — Maximum variation in tensile strength and elongation at break after ageing**

Property	Maximum % variation from initial values
Tensile strength	$\pm 25$
Elongation at break	+ 10 to - 30

### 4.4 Abrasion resistance (lining only)

When determined in accordance with method A of ISO 4649, the volume loss shall not exceed  $140\text{ mm}^3$ .

## 5 Performance requirements for finished hose

### 5.1 Testing

Tests shall be carried out on test pieces cut from full manufactured lengths of hose.

### 5.2 Hydrostatic-pressure requirements

When tested in accordance with ISO 1402, the hose shall comply with the requirements of table 4. The hose test piece used for the burst pressure test shall be discarded after the test.

**Table 4 — Hydrostatic-pressure requirements**

Property	Requirement
Proof pressure	1,25 MPa
Change in diameter at proof pressure	$\pm 10\%$
Change in length at proof pressure	$\pm 8\%$
Twist at proof pressure (max.)	$60^\circ/\text{m}$
Burst pressure (min.)	2,5 MPa

### 5.3 Flexibility

When determined in accordance with method A of ISO 1746:1983, using a minimum diameter of curvature  $C$  of ten times the nominal bore (see table 1), the ratio  $T/D$  of the external diameter  $T$  of the hose, when bent, to the external diameter  $D$  of the unbent hose shall not be less than 0,8.

### 5.4 Ozone resistance

When tested in accordance with ISO 7326, the hose cover shall show no signs of cracking.

### 5.5 Adhesion

When determined in accordance with ISO 8033, the adhesion between the lining and reinforcement, between layers of reinforcement and between re-