INTERNATIONAL STANDARD

ISO
4782

Second edition
1987-11-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Metal wire for industrial wire screens and woven wire cloth

Fils métalliques pour tamis et tissus métalliques industriels

Reference number
ISO 4782 : 1987 (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.

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 4782 was prepared by Technical Committee ISO/TC 24, *Sieves, sieving and other sizing methods.*

This second edition cancels and replaces the first edition (ISO 4782 : 1981); in addition to the specifications laid down in ISO 4782 : 1981, this second edition also specifies tolerances on the nominal diameters of wires, requirements and testing.

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.

Descriptors : sieves, sizing screens, wire cloth, wire, specifications, dimensions, tests, marking.

Metal wire for industrial wire screens and woven wire cloth

1 Scope and field of application

This International Standard specifies the diameters of and the requirements for metal wire to be used for the manufacturing of wire screens and woven wire cloth for industrial purposes. It applies to metal wire with circular cross-section from 25 to 0,02 mm in diameter.

2 References

ISO 3, *Preferred numbers — Series of preferred numbers.*

ISO 3611, *Micrometer callipers for external measurement.*

3 Diameters

The nominal diameters of wire according to the R 10 and R 20 series of preferred numbers specified in ISO 3, with the addition of the 0,03 mm value from the R 40 series, are listed in column 1 in table 1; values in the R 10 series (printed in bold type) should be given preference.

4 Requirements

4.1 General appearance

The surface of the wire shall be smooth and shall not display any burrs or any other roughness, corrosion or cleansing stains. The wire in one coil or drum or on one spool shall be in one length without any knots or any welded or soldered spots with reduced tensile strength.

The wire in one delivery shall be of uniform colour.

4.2 Tolerance on diameter

The measured diameter of the wire shall not deviate from the nominal diameter by more than the tolerance given in columns 2 or 3 in table 1.

Two measurements of diameter made at right angles on any cross-section of the wire shall not differ by more than half of the tolerance specified in table 1.

5 Testing

5.1 Sampling

The method of sampling and the number of delivery units to be tested shall be agreed between supplier and purchaser.

5.2 General appearance

The general appearance of the wire shall be examined visually with the aid of a low-magnification lens.

5.3 Diameter

The diameter of the wire shall be measured with a micrometer calliper, preferably in accordance with ISO 3611. For diameters below 0,1 mm, the calliper shall be equipped with optical magnification of the reading scale.

5.4 Test report

The test report shall make reference to this International Standard and shall comprise the following information :

a) the nominal diameter of the wire;

b) the wire material;

c) the quantity of delivery units tested;

d) any deviations from the general appearance specified in 4.1;

e) the maximum and minimum values, and the arithmetic mean of the wire diameter measured for each delivery unit tested.

Table 1 — Nominal diameters, tolerances and linear densities

1	2	3	4
Nominal diameter of wire d	Tolerance on nominal diameter, Δd, for wires of		Linear density of steel wire ϱ_l
	steel	stainless steel or non-ferrous metals	
mm	mm	mm	kg/km
25	± 0,12	± 0,08	3 853
22,4			3 094
20			2 466
18			1 998
16	± 0,1	± 0,07	1 578
14			1 208
12,5			963
11,2			773
10	± 0,08	± 0,06	617
9			499
8			395
7,1			311
6,3	± 0,07	± 0,05	245
5,6			193
5			154
4,5			125
4	± 0,06	± 0,04	98,6
3,55			77,7
3,15			61,2
2,8			48,3
2,5	± 0,05	± 0,03	38,5
2,24			30,9
2			24,7
1,8			20
1,6	± 0,04	± 0,02	15,8
1,4			12,1
1,25			9,6
1,12			7,7
1	± 0,03	± 0,015	6,2
0,9			5
0,8			3,9
0,71			3,1
0,63	± 0,02	± 0,01	2,4
0,56			1,9
0,5			1,5
0,45			1,2
0,4	± 0,015	± 0,008	1
0,355			0,78
0,315			0,61
0,28			0,48

Table 1 (*concluded*)

1	2	3	4
Nominal diameter of wire d	**Tolerance on nominal diameter,** Δd**, for wires of**		**Linear density of steel wire** ϱ_l
	steel	**stainless steel or non-ferrous metals**	
mm	mm	mm	kg/km
0,25	± 0,01	± 0,006	0,39
0,224			0,31
0,2			0,25
0,18			0,2
0,16	± 0,008	± 0,004	0,16
0,14			0,12
0,125			0,096
0,112			0,077
0,1	± 0,006	± 0,003	0,062
0,09			0,05
0,08			0,039
0,071			0,031
0,063	—	± 0,002	0,024
0,056			0,019
0,05			0,015
0,045			0,012
0,04	—	+ 0,001 5	0,01
0,036			0,008
0,032			0,006
0,03			0,006
0,028			0,005
0,025			0,004
0,022			0,003
0,02			0,002

NOTE — Nominal diameters of wire printed in bold type have been taken from the R 10 series of preferred numbers.

6 Linear density and running length

The linear density of the wires, ϱ_l, in kilograms per kilometre, as given in table 1, is calculated using the following formula :

$$\varrho_l = \frac{\pi d^2 \varrho}{4\,000} \quad \ldots (1)$$

If desired, the running length of wire, L, in metres per kilogram, may be calculated using the following formula :

$$L = \frac{4 \times 10^6}{\pi d^2 \varrho} \quad \ldots (2)$$

In equations (1) and (2)

d is the diameter, in millimetres;

ϱ is the density of the material, in kilograms per cubic metre. Values for ϱ for use in equations (1) and (2) may be taken from table 2.

7 Delivery and marking of wire

Metal wires for the manufacturing of wire screens and woven wire cloth shall be delivered in coils, in drums or on spools, which shall be marked with the following information :

a) the number of this International Standard;

b) the manufacturer's name;

c) the wire material;

d) the nominal diameter of the wire;

e) the tensile strength and elongation, if agreed on;

f) the chemical analysis of the wire material, if agreed on;

g) the date of manufacture.

Table 2 — Material densities

Material	Density, ϱ kg/m^3
Steel	7 850
Stainless steel (17 to 19 % Cr, 8 to 10 % Ni)	7 900
Aluminium (AlMg5)	2 700
Copper	8 900
Brass (CuZn37)	8 450
Brass (CuZn20)	8 650
Brass (CuZn10)	8 800
Nickel	8 900
Nickel-copper (NiCu30Fe)	8 830
Copper-tin (CuSn6) (phosphor-bronze)	8 800