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Copper and copper alloys — Simple torsion testing of wire

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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.

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It has been approved by the Member Bodies of the following countries :

Austria	India	Sweden
Belgium	Japan	Switzerland
Canada	Netherlands	Thailand
Czechoslovakia	New Zealand	Turkey
Chile	Norway	United Kingdom
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France	Romania	U.S.S.R.
Germany	South Africa, Rep. of	
Hungary	Spain	

No Member Body expressed disapproval of the document.

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Copper and copper alloys — Simple torsion testing of wire

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the simple torsion testing of copper and copper alloy wire of nominal sizes of 0,5 mm (0.02 in) and greater.

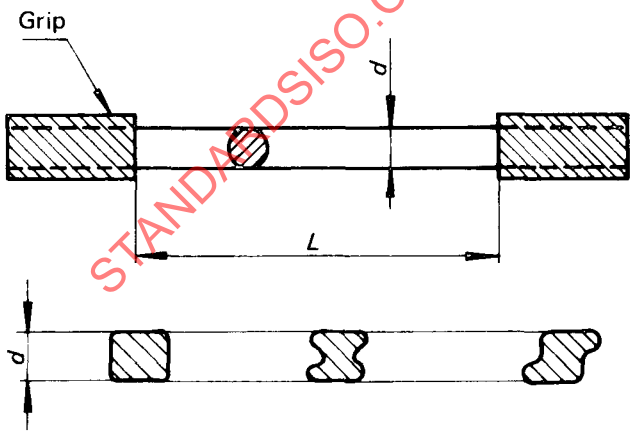
2 PRINCIPLE

The test consists of twisting a specified length of a test piece around its own axis until the test piece breaks or until a specified number of twists has been made. The twisting is in one direction only during the test.

The test is carried out at ambient temperature unless otherwise specified.

3 SYMBOLS AND DESIGNATIONS

Symbol	Designation
d	Nominal size of wire
L	Free length between grips
N_t	Number of turns



4 TESTING MACHINE

4.1 The grips of the testing machine shall be arranged in such a way that, during testing, they remain on the same axis and do not apply any bending to the test piece.

4.2 The machine shall be so constructed that the change of length between the grips during the test is not prevented.

4.3 One of the grips shall be capable of being rotated around the axis of the test piece while the other shall not be subject to any angular deflection, except for such deflection as may be necessary to measure the torque.

5 TEST PIECES

The test piece, consisting of a piece of wire, shall preferably be straight before testing. If straightening is necessary, it shall, unless otherwise specified, be done by hand, or if this is not possible, a wooden hammer shall be used. The free length between the grips of the machine shall be as follows:

Nominal size, d				Free length between grips L
equal to and over		up to but not including		
mm	in	mm	in	
0,5	0.02	1	0.04	200 d
1	0.04	5	0.2	100 d [1]
5	0.2	10	0.40	50 d [2]
10	0.40	–	–	25 d [3]

1) 50 d by special arrangement when the machine will not permit the use of a length equal to 100 d.

2) 30 d by special arrangement when the machine will not permit the use of a length equal to 50 d.

3) 250 mm, by special arrangement.

6 PROCEDURE

6.1 The test piece shall be placed in the machine in such a way that its longitudinal axis coincides with the axis of the grips and so that it remains straight during the test. Unless otherwise specified, this may be ensured by applying to the test piece a constant tensile stress just sufficient to straighten it, but not exceeding 5 % of the nominal tensile strength of the wire.

6.2 After placing the test piece in the machine, one grip shall be rotated at a reasonably constant speed until the test piece breaks or until the specified number of turns is reached. The number of complete turns imparted to the wire by the rotating grip shall be counted.