
**Textile machinery and accessories —
Machine parts in contact with textile
processing oils —**

Part 1:

Determination of anticorrosive effect upon
steel

*Matériel pour l'industrie textile — Pièces de machines en contact avec
des huiles textiles —*

*Partie 1: Détermination du pouvoir d'inhibition à la corrosion par rapport à
l'acier*



Foreword

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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 11659-1 was prepared by Technical Committee ISO/TC 72, *Textile machinery and allied machinery and accessories*, Subcommittee SC 2, *Winding and preparatory machinery for fabric manufacture*.

ISO 11659 consists of the following parts, under the general title *Textile machinery and accessories — Machine parts in contact with textile processing oils*:

- Part 1: *Determination of anticorrosive effect upon steel*

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Textile machinery and accessories — Machine parts in contact with textile processing oils —

Part 1:

Determination of anticorrosive effect upon steel

WARNING — The use of this part of ISO 11659 may involve hazardous materials, operations and equipment. This part of ISO 11659 does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this part of ISO 11659 to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This part of ISO 11659 specifies a method for the determination of the anticorrosive effect of textile processing oils upon steel.

NOTE 1 Textile processing oils, containing water-insoluble lubricants with small amounts of emulsifiers, are used in various treatments of fibres, yarns and fabrics.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 11659. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 11659 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 139:1973, *Textiles — Standard atmospheres for conditioning and testing*.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*.

ISO 8119-1:1989, *Textile machinery and accessories — Needles for knitting machines — Terminology — Part 1: Latch-type needles*.

3 Principle

Specified grades of steel in the form of strips or double-hooked needles are coated with the processing oil under evaluation and exposed to a specified temperature and humidity for 48 h. At the end of this period, the strips or needles are evaluated for corrosion.

NOTE 2 The test conditions are intended to simulate those that exist in textile processing machinery as a result of the formation of condensate when the machine is at standstill in damp conditions.

4 Reagents

4.1 Degreasing solvent, freshly redistilled.

NOTE 3 Dichloromethane, xylene or acetone has been found to be suitable.

4.2 Base oil, technical white oil (liquid paraffin).

4.3 Water, deionized or distilled, conforming to the requirements of grade 3 of ISO 3696.

5 Apparatus

5.1 Petri dishes, of diameter 90 mm.

5.2 Filter paper, low-ash [0,01 % (*m/m*) max. (i.e. mass fraction $w = 0,01$ % max.)], analytical grade, of surface density approximately 80 g/m² and 55 mm in diameter.

5.3 Pipette, of 1 ml capacity, graduated at intervals of 0,1 ml.

5.4 Pipette, calibrated for 10 ml capacity.

5.5 Steel specimens, for use as test substrate, unused and corrosion-free, as described in either 5.5.1 or 5.5.2.

5.5.1 Strips or bars, of the desired steel grade or type, maximum length 45 mm, width approximately 5 mm, and thickness 0,5 mm to 5 mm.

5.5.2 Needles, double-hooked, in accordance with ISO 8119-1, with a maximum length of 45 mm, of steel of reference grade C 80 W1 (material No. 1.1325).

5.6 Forceps, stainless steel, spade-ended.

5.7 Test tube, with stopper, of sufficient capacity to accept the test specimens.

6 Procedure

6.1 Clean six steel specimens (5.5.1 or 5.5.2) by placing them individually into a test tube (5.7) at room temperature and covering them with degreasing sol-

vent (4.1). Place a stopper in each test tube and shake for 2 min. Remove the specimens with forceps (5.6) and place each on filter paper (5.2) for 5 min to dry.

Place a fresh filter-paper disc in the centre of each of two Petri dishes (5.1) and moisten each disc with 0,6 ml of water (4.3) using the 1-ml pipette (5.3). Place three cleaned steel specimens 5 mm apart in the centre of each filter paper. From these, prepare three test specimens and three control specimens as follows.

Moisten three test specimens in one Petri dish with 10 ml of the processing oil to be tested, and three control specimens in the other Petri dish with 10 ml of the base oil (4.2), using the 10-ml pipette (5.4).

Place the dishes in controlled storage at 20 °C and 65 % relative humidity in accordance with ISO 139.

6.2 After 48 h, remove the dishes from the controlled storage and place all the specimens in test tubes containing degreasing solvent. After a minimum of 1 min, remove the specimens with forceps (5.6), and dry by manual pressure with filter paper.

7 Evaluation

Lay the six specimens on white paper with the more highly corroded side, if any, facing upwards. The anti-corrosive effect of the textile processing oil on the test specimens is assessed visually by at least two persons using the rating scale given in table 1, where as references unused steel specimens (5.5.1 or 5.5.2) correspond to rating 5 (no corrosion visible) and the specimens coated with the base oil correspond to rating 1 (high corrosion visible).

Table 1 — Test specimen rating

Rating	Evaluation	Surface appearance
5	Total anticorrosive effect	No corrosion (equivalent to an unused specimen that is not yet corroded)
4	Marked anticorrosive effect	Occasional spots of corrosion
3	Moderate anticorrosive effect	Relatively small patches of corrosion
2	Slight anticorrosive effect	Large areas of corrosion
1	No anticorrosive effect	Very large areas of corrosion (equivalent to the control specimen)

If, in the assessment of the test specimens, the values of the rating attributed differ by 2 or more, the test shall be repeated.

In all other cases, the lower numerical rating is valid.

8 Test report

The test report shall contain at least the following information:

- a) a reference to this part of ISO 11659;
- b) sufficient details for complete identification of the processing oil tested;
- c) type of steel specimen (see 5.5);
- d) rating of the processing oil, obtained from the test;

- e) any deviation, by agreement or otherwise, from the procedures specified;
- f) the date of the test;
- g) the testing authority.

9 Designation

Designate the textile processing oil under test in terms of its anticorrosive effect on the steel substrate specified as follows:

- the term "processing oil";
- the number of this part of ISO 11659 (i.e. ISO 11659-1);
- the rating in accordance with clause 7.

EXAMPLE

Processing oil ISO 11659-1 - Rating 4

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