

INTERNATIONAL
STANDARD

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10306

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**Textiles — Cotton fibres — Evaluation of
maturity by the air flow method**

*Textiles — Fibres de coton — Évaluation de la maturité par la méthode
à courant d'air*



Reference number
ISO 10306:1993(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 10306 was prepared by Technical Committee ISO/TC 38, *Textiles*, Sub-Committee SC 6, *Fibre testing*.

Annexes A and B form an integral part of this International Standard.

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Introduction

The term "cotton fibre maturity" is commonly used to signify the relative degree of fibre wall development. The measurement of the relative degree of wall thickening is too laborious for most practical purposes, therefore the determination of the maturity of cotton fibres is done by indirect methods. A microscopic method is described in ISO 4912:1981. This method has been used as a reference method for the industrial evaluation of the maturity of cotton fibres using air flow instruments, which is the object of this standard.

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Textiles — Cotton fibres — Evaluation of maturity by the air flow method

1 Scope

This International Standard specifies a method for the evaluation of the maturity of loose randomized cotton fibres by measuring the resistance to air flow of a plug of cotton fibres under two prescribed conditions. The method is applicable to cotton taken at random from bales. Laps and slivers or other sources of lint cotton may be tested, however results may differ if fibres are taken from bales.

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 139:1973, *Textiles — Standard atmospheres for conditioning and testing.*

ISO 1130:1975, *Textile fibres — Some methods of sampling for testing.*

ISO 2403:1972, *Textiles — Cotton fibres — Determination of micronaire value.*

ISO 4912:1981, *Textiles — Cotton fibres — Evaluation of maturity — Microscopic method.*

3 Definitions

For the purposes of this International Standard, the definitions in ISO 4912:1981 and ISO 2403:1972 apply. The following definitions are repeated here for the convenience of the user.

3.1 immature fibre: Fibre which, upon swelling, either assumes a spiral form or lies flat, thinly outlined and almost transparent.

It has a wall thickness of less than one-fourth of the maximum fibre width. [ISO 4912:1981]

3.2 mature fibres: Fibres, the cell walls of which have developed sufficiently so that, upon swelling, they become unconvoluted and almost rod-like in shape.

Such fibres have a wall thickness equal to or greater than one-fourth of the maximum fibre width. [ISO 4912:1981]

3.3 maturity ratio, M : Ratio of the degree of wall thickening to a standard degree of thickening selected arbitrarily to equal 0,577. [ISO 4912:1981]

3.4 percent maturity, P_m : Average percentage of mature fibres in a sample, based on the total number of fibres. [ISO 4912:1981]

3.5 micronaire value: Measure of the air permeability of a mass of cotton under specified conditions, expressed in terms of an arbitrary scale, the so-called micronaire scale.

The micronaire scale is based on a range of cottons to which micronaire values have been assigned by international agreement. [ISO 2403:1972]

4 Principle

Air is passed through a test specimen consisting of a plug of well-opened randomized cotton fibres. For the same mass of fibres the permeability is measured by two different compressions of the plug. For each compression, air is passed through the plug at a specified rate and the pressure drop across the plug is indicated on a pressure gauge and expressed as the height, in millimetres, of a water column. The pressure drop obtained at low compression of the plug is designated PL and the other, at high compression, is