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**INTERNATIONAL STANDARD**



**1144**

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

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**Textiles — Universal system for designating linear density  
(Tex System)**

First edition — 1973-12-15

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UDC 677.017.272.2

Ref. No. ISO 1144-1973 (E)

**Descriptors :** textiles, yarns, fibres, linear density, units of measurement, symbols, metric system, conversion of units.

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1144 replaces ISO Recommendation R 1144/1969 drawn up by Technical Committee ISO/TC 38, *Textiles*.

The Member Bodies of the following countries approved the Recommendation :

Australia	Iran	South Africa, Rep. of
Belgium	Ireland	Spain
Canada	Israel	Sweden
Cuba	Italy	Switzerland
Czechoslovakia	Japan	Thailand
Denmark	Netherlands	Turkey
Egypt, Arab Rep. of	New Zealand	United Kingdom
France	Norway	U.S.A.
Germany	Poland	U.S.S.R.
Hungary	Portugal	
India	Romania	

The Member Body of the following country expressed disapproval of the Recommendation on technical grounds :

Brazil

# Textiles – Universal system for designating linear density (Tex System)

## 0 INTRODUCTION

It has long been customary to designate the coarseness or the fineness of textile yarns by numbering or counting systems. Many branches of the textile industry employ systems of their own for this purpose, and those in current use may be classified in two groups :

- a) direct systems, in which the coarseness or the fineness of the yarn is expressed in terms of the mass of yarn per unit length (linear density, often called yarn number or yarn *titre*).
- b) indirect systems, in which the coarseness or the fineness of the yarn is expressed in terms of the length of yarn per unit mass (usually called yarn *count*).

With the growing use of yarns containing more than one kind of fibre, and of fabrics containing these yarns, it became increasingly evident that the general adoption of a single system of numbering or counting would avoid confusion and save time.

In 1956, after detailed studies, it was agreed that the Tex System be recommended for international adoption in place of the various traditional methods of numbering or counting. That system is direct and based on metric units : originally grams per kilometre (tex), milligrams per kilometre (millitex), and kilograms per kilometre (kilotex), with the addition of decigrams per kilometre (decitex) agreed in 1967.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard gives the principles and recommended units of the Tex System for the expression of linear density and includes conversion tables for calculating the tex values of numbers or counts in other systems together with a statement of the procedure for the implementation of the Tex System in trade and industry.

The Tex System is applicable to all kinds of textile fibres, intermediate products (for example tops, slivers and rovings), yarns and similar structures.

## 2 REFERENCE

ISO 1139, *Textiles – Designation of yarns*.

## 3 CHARACTERISTICS OF THE SYSTEM

**3.1** This system, called the Tex System, is a *direct system*. It expresses the linear density, that is to say the mass of a certain length of the textile material.

**3.2** The system is decimal and employs metric units.

**3.3** The basic unit is the "tex". The linear density in "tex" expresses the mass, in grams, of one kilometre of yarn<sup>1)</sup>.

NOTE – It is realized that, at present, usage of the term *linear density* is limited to scientific and laboratory applications but every effort should be made to ensure greater currency of it.

1) The term "yarn", which is used here for simplicity, is as defined in ISO 1139. It does not exclude the other textile applications mentioned in section 1.