भारतीय मानक
Indian Standard

IS 10598 : 2023

वस्त्रादि —रंगाई तथा परिसज्जा मशीनरी के लिए नियामक रोलर —विशिष्टि

(दूसरा पुनरीक्षण)

Textiles — Guide Rollers for Dyeing and Finishing Machinery — Specification

(Second Revision)

ICS 59.120.50

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April 2023 **Price Group 5**

Textile Machinery and Accessories Sectional Committee, TXD 14

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Textile Machinery and Accessories Sectional Committee had been approved by the Textiles Division Council.

Guide roller is a rotating cylindrical member, operating separately or as part of a guide assembly. It is designed to provide continuous engagement between the platform and the building guides or guide ways. It assist in guidance as well as tension in the different places or stages in the Dyeing and Finishing machine to the fabric.

This standard was originally published in 1983 and subsequently revised in 1997. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been modified;
b) Marking and sampling clauses have been modified;
c) Packing clause has been incorporated; and
d) Reference to Indian standard has been updated.

In formulation of this standard, technical assistance has been derived from ISO 5249: 1988 ‘Textile machinery and accessories - Guide rollers for dyeing and finishing machinery - Main dimensions’ issued by the International Organization for Standardization.

The composition of the committee responsible for the formulation of this standard is listed in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounding off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — GUIDE ROLLERS FOR DYEING AND FINISHING MACHINERY — SPECIFICATION

(Second Revision)

1 SCOPE

This standard prescribes the requirements of guide rollers used with dyeing and finishing machinery.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below.

IS No.	*Title*
IS 2102 (Part 1) : 1993	General tolerances: Part 1 Tolerances for linear and angular without individual tolerance indications (*third revision*)
IS 4905 : 2015	Random sampling and randomization procedures (*first revision*)

3 TYPES OF ROLLER

The guide rollers are generally of the following two types:

a) *Type A* — Revolving spindle; solid or tube roller (*see* Fig. l); and
b) *Type B* — Fixed spindle; tube roller (*see* Fig. 2).

4 MATERIAL

4.1 Solid Roller

Solid roller shall be manufactured from the material as agreed to between the buyer and the manufacturer.

4.2 Tube Roller

The tube roller shall be fabricated from black steel tubes or stainless steel tubes as agreed to between the buyer and the manufacturer.

4.3 Spindle

The spindle shall be made of mild steel or stainless steel as specified by the buyer.

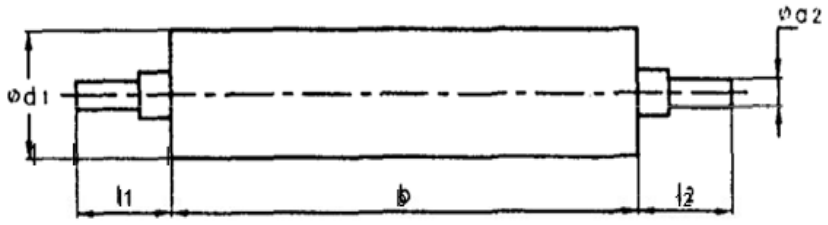

FIG 1 TYPE A REVOLVING SPINDLE

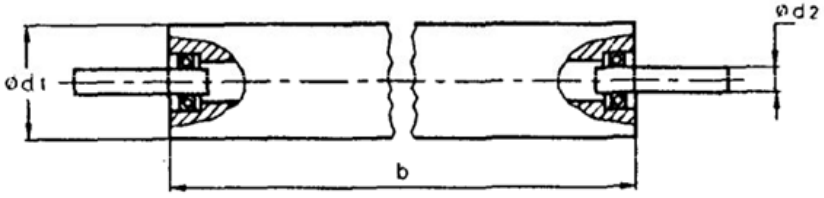

FIG 2 TYPE B FIXED SPINDLE

5 DIMENSIONS

5.1 External Diameter of Roller

External diameter of the roller (d_l) shall be as agreed to between the buyer and the manufacturer. Generally, rollers of the following diameters are used: 60 mm, 80 mm, 85 mm, 100 mm, 110 mm, 120 mm, 135 mm, 160 mm, 165 mm, 200 mm and 215 mm.

5.2 Diameter of Spindle

The value for spindle diameter (d_2) shall be chosen with regard to the forces to be applied to the roller, and shall be in a range of values which are multiples of 5, the minimum value being 15 mm.

d_2 = 15, 20, 25, 30, 35…….. mm

5.3 Length of Spindle

The length of spindle (l_1 or l_2) shall be as specified by the buyer.

5.4 Nominal Width of Roller

The nominal width (b) of roller shall be as specified by the buyer subject to a tolerance of + 3 mm.

5.5 Overall Width of Roller

The overall width of the roller (b + l_1+ l_2) shall be subject to coarse class deviations specified in IS 2102 (Part l).

6 REQUIREMENTS

Requirements for rollers shall be as according to Table 1.

6.1 Admissible Bending

Admissible bending in terms of millimetres per metre roller width shall be as agreed to between the buyer and the manufacturer depending upon its application.

NOTE — Generally, four quality grades are fixed for designation of bending, namely 2, 1, 0.5 and 0.25 corresponding to admissible bending in millimetres per metre nominal width of the roller on the basis of an equally distributed line load of 250 N/m. For the guidance of manufacturers and users. Limiting values of nominal roller widths and the standardized diameters of rollers for these quality grades taking into consideration commonly used wall thickness of 2 mm, 4 mm and 6 mm are given in Table 1.

6.2 Admissible Run-Out

The admissible run-out of the roller shall not exceed 0.5 mm per metre roller width.

6.3 Admissible Residual Imbalance

The admissible residual imbalance of the rollers shall not exceed balance quality grade G40.

NOTE — The value of the permissible residual imbalance 'U_{per}' is related to the roter mass *'m'* in terms of permissible residual specific imbalance value 'e_{per}' as given by the following formula:

$$e_{per} = \frac{U_{per}}{m}$$

In general, for roters of same type the permissible residual specific Imbalance value e_{per} varies inversely as speed of roter for a given balance quality grade; this relationship is given by the following formula:

$$e_{per} X \omega = \text{constant}$$

where

ω is angular velocity of the roter at maximum service speed and is = $2\pi_n/60 \approx n/10$, if n is measured in revolutions per minute and w in radians per second. The balance quality grades are based on this relationship. In balance quality grade G40, product of the relationship ($e_{per} X \omega$) = 40 mm/s.

Table 1 Limiting Values for Nominal Roller Widths
(*Clauses* 6 and 6.1)

All dimensions in millimetres

Sl No.	Quality Grade	Roller Wall Thickness (S)	Roller Diameter (d_1) (*see* Note)										
			60	80	85	100	110	120	135	160	165	200	215
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
			Roller Width (b)										
(i)	2	2	2 600	3 400	3 600	4 000	4 400	4 800	5 200	6 400	6 800	7 600	8 800
		4	3 000	4 000	4 000	4 800	5 200	6 000	6 400	7 600	8 000	8 800	10 000
		6	3 200	4 400	4 400	5 200	5 600	6 400	6 800	8 000	8 400	9 600	10 400
(ii)	1	2	2 000	2 700	2 900	3 400	3 400	4 000	4 000	5 200	5 200	6 000	6 800
		4	2 400	3 200	3 400	4 000	4 000	4 400	4 800	6 000	6 000	7 200	8 000
		6	2 600	3 400	3 600	4 000	4 400	4 800	5 200	6 400	6 800	7 600	8 400
(iii)	0.5	2	1 600	2 100	2 300	2 700	2 800	3 200	3 400	4 000	4 000	4 800	5 200
		4	1 900	2 500	2 700	3 100	3 300	3 600	4 000	4 800	4 800	5 600	6 000
		6	2 000	2 700	2 900	3 400	3 600	4 000	4 000	5 200	5 200	6 000	6 400
(iv)	0.25	2	1 300	1 700	1 800	2 100	2 200	2 500	2 700	3 300	3 400	3 800	4 400
		4	1 500	2 000	2 100	2 500	2 600	3 000	3 200	3 800	4 000	4 400	4 800
		6	1 600	2 200	2 300	2 700	2 800	3 200	3 400	4 000	4 000	4 800	5 200

NOTE — Roller diameters can be achieved by machining the nearest possible size of the tube, wherever required.

7 DESIGNATION

A guide roller shall be designated by the following information in the order given:

a) guide roller;
b) reference to this Indian Standard;
c) type;
d) external diameter (d_1);
e) spindle diameter (d_2);
f) nominal width (b); and
g) quality grade.

This can be completed by any useful complimentary information.

Example:

A guide roller with a fixed spindle (Type B), with external diameter (d_1) = 100 mm, spindle diameter (d_2) = 30 mm, nominal width (b) = 1 800 mm and quality grade 0.5 shall be designated as follows:

Guide roller IS 10598 - B × 100 × 30 × 1 800 × 0.5

8 MARKING

8.1 Each roller shall be marked with manufacturer's initials or trade-mark, if any.

8.2 Each case/carton of rollers shall also bear the following information:

a) Dimension of roller;
b) Material of roller;
c) Number of roller;
d) Gross and net mass;
e) Lot/batch number;
f) Country of origin; and
g) Any other information required by the law in force and/or by the buyer.

8.3 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

9 PACKING

A guide roller shall be packed in cases/cartons strong enough to withstand normal hazards of storage and transport. Details of the packing shall be as agreed to between the buyer and the seller. Packaging of the product shall be such as to maintain the integrity of the product throughout its shelf life.

10 SAMPLING

10.1 Lot

All the rollers of same designation delivered to a buyer against one despatch note shall constitute a lot.

10.2 Unless otherwise agreed to between the buyer and the seller, the number of rollers selected for inspection shall be as given in Table 2.

10.2.1 To ensure randomness of selection, the methods given in IS 4905 shall be followed.

10.3 The rollers selected above shall be inspected for dimensions, bending, run-out and residual imbalance. The lot shall be considered conforming to the requirements of this standard if the number of rollers found defective, is less than or equal to the corresponding acceptance number given in col (3) of Table 2.

Table 2 Sampling and Criteria for Conformity
(*Clause* 10.2 and 10.3)

Sl No.	Lot Size	Sample Size	Acceptance No.
(1)	(2)	(3)	(4)
i)	up to 90	13	0
ii)	91 - 150	20	0
iii)	151 - 280	32	1
iv)	281 - 500	50	1
v)	501 and above	80	2

ANNEX A
(*Foreword*)

COMMITTEE COMPOSITION

Textile Machinery and Accessories Sectional Committee, TXD 14

Organization	*Representative(s)*
Central Manufacturing Technology Institute, Bengaluru	DR NAGAHANUMAIAN **(*Chairperson*)**
ATE Enterprises Private Limited, New Delhi	SHRI ABHIJIT KULKARNI SHRI ANIL KUMAR SHARMA (*Alternate*)
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Office of the Textile Commissioner, Mumbai	SHRI C. R. KALESAN SHRI JAGRAM MEENA (*Alternate*)

Organization	*Representative(s)*
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Member Secretary
SHRI SWAPNIL
SCIENTIST 'B'/ASSISTANT DIRECTOR
(TEXTILES), BIS

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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