

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

धातु काटने के बैंड आरी ब्लेड

भाग 2 अभिलक्षण एवं आयाम

(तीसरा पुनरीक्षण)

Draft Indian Standard

**METAL CUTTING BANDSAW BLADE
PART 2 CHARACTERISTICS AND DIMENSIONS**

(Third Revision)

ICS 25.100.20

Cutting Tools Sectional Committee, PGD 32

NATIONAL FOREWORD

(Formal clause will be added later)

This standard was first published in 1969 and subsequently revised in 1982 & 2016. The first and second revision was completed to bring the standard in line with ISO. The third revision has been brought out to keep pace with the latest technological developments and Indian industrial practices.

The main changes in this revision are as follows:

- a) References have been updated.
- b) Terms and definitions in Clause 3 have been modified.
- c) Tables 1 to 6 have been modified.

- d) Table 7 on tolerance in length has been added.
- e) General requirements have been added.
- f) Clauses on sampling plan, designation and packing have been added.

This standard is published in two parts. Other part in this series is:

Part 1 Metal - cutting band saw blades: Part 1 vocabulary (*second revision*).

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 rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

**METAL CUTTING BANDSAW BLADE
PART 2 CHARACTERISTICS AND DIMENSIONS SHANK
(Third Revision)**

1 SCOPE

This standard specifies the characteristics and dimensions of the various types of metal-cutting band saw blades.

2 REFERENCES

The following standards contain provisions, which, through reference in this text, constitute provision 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 edition of the standard indicated below:

<i>IS No</i>	<i>Title</i>
IS 1501 (Part 1) : 2020 ISO 6507-1 : 2018	Metallic materials — Vickers hardness test: Part 1 Test method (fifth revision)
IS 1586 (Part 1) : 2018 ISO 6508-1 : 2016	Metallic materials — Rockwell hardness test: Part 1 Test method (fifth revision)
IS 4905 : 2015 ISO 24153 : 2009	Random sampling and randomization procedures (first revision)
IS 5030 (Part 1) : 2017 ISO 4875-1 : 2006	Metal - cutting band saw blades: Part 1 vocabulary (second revision)
IS 7226 : 1974	Specification for cold- rolled medium, high carbon and low alloy steel strip for general engineering purposes
IS 7291 : 1981	Specification of High-Speed Tool Steels
IS 7778 (Part 8) : 2003	Small tools sampling inspection procedures: Part 8 saws (first revision)

3 TERMS AND DEFINITIONS

For the purpose of this standard, the terms and definitions given in IS 5030 (Part 1) and the following shall apply.

3.1 Carbon Steel Bandsaw Blades

The blade shall be made of low alloyed steel of designation 120Cr35 or 110Cr35W2 according to IS 7226.

3.2 Bimetal Bandsaw Blades

The blade whose teeth shall be made of high-speed tool steel of designation XT110Mo10Co8Cr4W2 or XT125WCo10CrMo4V3 according to IS 7291.

3.3 Friction Cutting Bandsaw Blades

The blades made of fatigue-resistant steel for cutting by heat resulting from the friction.

3.4 Composite Steel (Bimetal) Bandsaw Blades

The blades with a cutting edge of a material different from that of the body, the cutting edge being generally in carbide and the body in low alloyed steel of designation 120Cr35 or 110Cr35W2 according to IS 7226.

4 BASIC DIMENSIONS

4.1 The usual section is determined by the width and the thickness of the bandsaw blade.

4.1.1 Carbon Steel Bandsaw Blades

The width and thickness of the carbon steel bandsaw blades shall be as given in Table 1.

Table 1 Usual Section of Carbon Steel Bandsaw Blades
(Clause 4.1.1)

Sl. No	Particular	Tolerance mm	Nominal Width and Thickness mm								
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(i)	Width	± 0.5	3.0	5.0	6.0	8.0	10.0	13.0	16.0	19.0	25.0
(ii)	Thickness	± 0.05	0.65	0.65	0.65	0.65	0.65	0.58	0.80	0.80	0.90

4.1.2 Bimetal Bandsaw Blades

The width and thickness of the Bimetal bandsaw blades shall be as given in Table 2.

Table 2 Usual Section of Bimetal Bandsaw Blades
(Clause 4.1.2)

Sl. No	Particular	Tolerance mm	Nominal Width and Thickness mm											
			(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
(i)	Width	± 0.5	6.0	10.0	13.0	19.0	27.5	34.5	41.5	54.5	67.5	80.0		
(ii)	Thickness	± 0.05	0.90	0.90	0.65	0.90	0.90	0.90	1.10	1.30	1.30	1.60	1.60	1.60

4.1.3 Friction Cutting Bandsaw Blades

The width and thickness of the friction cutting bandsaw blades shall be as given in Table 3.

Table 3 Usual Section of Friction Cutting Bandsaw Blades
(Clause 4.1.3)

Sl. No	Particular	Tolerance mm	Nominal Width and Thickness mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(i)	Width	± 0.5	16.0	20.0	25.0	32.0
(ii)	Thickness	± 0.05	0.80	0.80	0.90	1.10

4.1.4 Composite Steel Bandsaw Blades

The width and thickness of the Composite Steel Bandsaw blades shall be as given in Table 4.

Table 4 Usual Section of Composite Steel Bandsaw Blades
(Clause 4.1.4)

Sl. No	Particular	Tolerance mm	Nominal Width and Thickness mm						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(i)	Width	± 0.5	19.5	27.5	34.5	41.5	54.5	67.5	80.0
(ii)	Thickness	± 0.05	0.80	0.90	1.10	1.30	1.60	1.60	1.60

4.2 Pitch

4.2.1 Fixed Pitch

The fixed pitch and teeth per 25.4 mm length shall be as given in Table 5.

Table 5 Fixed Pitch
(Clause 4.2.1)

Pitch, mm	1	1.15	1.40	1.80	2.50	3.15	4.00	6.30	8.00	12.50	20.30	33.90
Teeth per 25.4mm length	24	22	18	14	10	8	6	4	3	2	1.25	0.75

4.2.2 Variable Pitch

The variable pitch and teeth per 25.4 mm length shall be as given in Table 6.

Table 6 Variable Pitch
(Clause 4.2.2)

Pitch, mm	34-17	18-11	12-7	8-6	6-4	6-3	6-2	5-2	3-1
Teeth per 25.4mm length	0.75-1.25	1.4-2	2-3	3-4	4-6	5-8	6-10	8-12	10-14

NOTES

1. Tolerance for teeth per inch – 0.50

Example: 3-4 Teeth per 25.4mm length – Measured by 3+4 = 7 teeth per 50.8mm length.

2. Bandsaw blade's TPI may corrected within the tolerance limit as per customer specific requirement or in special case.

4.3 Length

The length of a metal-cutting bandsaw blade is determined according to the type of machine used. The tolerance in length shall be as given in Table 7.

Table 7 – Tolerance in length
(Clause 4.3)

Pitch Range	Tolerance	
mm	mm	
1 - 12.50	-12.50	+5.00
12.50 - 35	-25.40	+10.00

4.4 Tooth Set

The overall set is left to the manufacturer's discretion. The set at each side of the blade shall be equal and shall be given within the limits of 0.05 mm.

4.5 Flatness

The maximum value shall be $2\mu\text{m}/\text{mm}$. The permissible departure from flatness is shown in Figure 1.

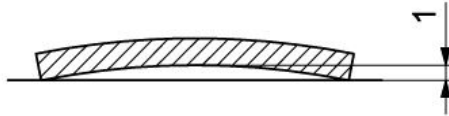


Figure 1

Key

1. Departure from Flatness

5 REQUIREMENTS

5.1 General Quality and finish

5.1.1 General Quality

The blades which are supplied ready for use shall be soundly joined by brazing or welding with weld alignment maximum in the range of 0.30 mm.

5.1.2 Visual Inspection

Bandsaw blades shall be of uniform thickness, free from burrs, rust, scale and other defect. Sharp corners of the back-edge shall be removed.

5.2 Protective Coating

Each bandsaw blade shall be covered by suitable rust proofing material or painted to avoid rusting and then wrapped in non-absorbent paper.

5.3 Hardness

5.3.1 Carbon steel Bandsaw Blades

The Minimum Hardness, measured according to IS 1586(Part 1), at the tooth point shall be 62 HRC (720 HV10); the minimum hardness, measured according to IS 1501(Part 1) of body shall be 280 HV (27 HRC).

5.3.2 Bimetal Bandsaw Blades

The high-speed steel teeth shall have a minimum hardness, measured according to IS 1586(Part 1), at the tooth point of 64.5 HRC (850 HV10); the steel low alloyed body shall have a minimum hardness, measured according to IS 1501(Part 1), after heat treatment of 45 HRC (450 HV10).

5.3.3 Friction Bandsaw Blades

The primary functions of the teeth are to generate the heat needed, and to scoop in the air needed to support combustion. Friction saws are usually run at speeds in excess of 40m/s on machines with adequate guarding.

6 SAMPLING

6.1 The sampling and criteria of acceptance shall be in accordance with IS 7778 (Part 8).

6.2 Unless otherwise agreed to between the manufacturer and the purchaser, the sampling plan as given in Annexure A shall be followed.

7 MARKING

7.1 Bandsaw blades shall be marked with the following information suitably

- a) Name of the manufacturer or trademark
- b) Type of bandsaw and material with width, thickness, length, teeth per inch,
- c) Width, thickness, length, teeth per 25.4mm length.
- d) Identification in code or otherwise, to enable to trace back the date of manufacture, batch number to factory records.

7.2 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 product(s) may be marked with the Standard Mark.

8 PACKAGING

A number of bandsaw blades of same type shall be packed as rolls / loop / coil in carton bearing the size, number, designation and the manufacturer's name and or trademark.

ANNEX A

(Clause 6)

A-1 LOT

In any consignment, the bandsaw blades of the same type and size manufactured under similar conditions shall constitute a lot.

A-1.1 For ascertaining the conformity of the lot to the requirements of this specification, samples shall be examined from each lot separately. The number of bandsaw blades to be selected from a lot shall be in accordance with col. 1 and col. 2 of table 1. To ensure the randomness of selection, IS 4905 shall be used.

A-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 The blade selected according to A-1.1 shall be examined for Hardness, dimensions and tolerances, workmanship and finish and general requirements. Any bandsaw blade failing to meet the requirements for one or more of the characteristics shall be declared defective.

A-2.2 The lot shall be considered conforming to the requirements of above characteristics, if the number of blades found defective is less than or equal to the corresponding number given in Col. 3 of Table 1 for Class A non-conformity and in Col. 4 of Table 8 for Class B non-conformity as given in IS 7778 (part8).

Table 8 Sample Size and Permissible Number of Defectives

(Clause A-1.1)

SI No.	Lot Size	Sample Size	Permissible Number for Class A Non-Conformity	Rejection for Class B Non-Conformity
(1)	(2)	(3)	(4)	(5)
i)	Up to 100	5	0	0
ii)	101 to 150	8	0	0
iii)	151 to 300	13	0	1
iv)	301 to 500	20	1	2
v)	501 to 1000	32	1	3
vi)	1001 and above	50	2	5

