IS : 1173 - 1978
(Reaffirmed 1988)
(Reaffirmed 1995)

Indian Standard

SPECIFICATION FOR HOT ROLLED AND SLIT STEEL TEE BARS

(Second Revision)

Second Reprint DECEMBER 1995

UDC 669.14-423.4-122.4

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 2 *October* 1978

IS : 1173 - 1978
(Reaffirmed 1988)

Indian Standard

SPECIFICATION FOR HOT ROLLED AND SLIT STEEL TEE BARS

(Second Revision)

Structural Sections Sectional Committee, SMDC 6

Chairman	*Representing*
SHRI M. DHAR	Kamani Engineering Corporation Ltd, Bombay
Members	
SHRI S. BANERJEE	Steel Re-Rolling Mills Association of India, Calcutta
SHRI N. BHATTACHARYA	Garden Reach Workshops Ltd, Calcutta
SHRI N. S. CHATTREE	Hindustan Steel Ltd, Bhilai
SHRI V. MUKUNDAN (*Alternate*)	
SHRI B. B. CHAKRAVERTI	Superintendence Co of India (Pvt) Ltd, Calcutta
SHRI A. K. SHOME (*Alternate*)	
CHIEF ENGINEER	Central Design Organization, Central Public Works Department, New Delhi
EXECUTIVE ENGINEER (*Alternate*)	
SHRI D. S. DESAI	M. N. Dastur & Co Private Ltd, Calcutta
SHRI D. GADH	Tata Iron and Steel Co Ltd, Jamshedpur
SHRI G. R. NAYAR (*Alternate*)	
SHRI M. GANGULY	Hindustan Steel Ltd, Durgapur
SHRI J. PAULRAJ (*Alternate*)	
SHRI A. K. GUHA	Inspection Wing, Directorate General of Supplies and Disposals, New Delhi
SHRI P. C. MUSTAFI (*Alternate*)	
SHRI M. P. JASUJA	Research and Development Organization, Hindustan Steel Ltd, Ranchi
JOINT DIRECTOR STANDARDS (WAGON), RDSO	Ministry of Railways
JOINT DIRECTOR STANDARDS (B & S), RDSO (*Alternate*)	
SHRI OM KHOSLA	EMC Projects Pvt Ltd, Calcutta
SHRI S. N. SINGH (*Alternate*)	
SHRI P. LAXMINARAYANA	Hindustan Shipyard Ltd, Visakhapatnam
SHRI V. S. NARAYANARAO (*Alternate*)	

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI P. R. MERH	Indian Iron and Steel Co Ltd, Burnpur
SHRI S. K. MITRA (*Alternate*)	
SHRI P. K. MUKHERJEE	The Braithwaite and Co Ltd, Calcutta
SHRI D. B. NAIK	Engineer-in-Chief's Branch, Army Headquarters, New Delhi
SHRI D. D. RAMA RAO (*Alternate*)	
SHRI P. V. NAIK	Richardson and Cruddas Ltd, Bombay
SHRI V. Y. PATHAK	Hindustan Steel Ltd, Rourkela
SHRI P. S. RANGAVITTALAN	Iron & Steel Control, Calcutta
SHRI S. K. SADHU	Jessop and Co Ltd, Calcutta
SHRI S. C. CHAKRABARTI (*Alternate*)	
SHRI N. S. SAMBASIVAM	Tube Investment of India Ltd, Madras
SHRI A. S. SHETTY (*Alternate*)	
SHRI M. C. SARANGDHAR	Stup (India) Ltd, Bombay
SHRI M. K. CHATTERJEE (*Alternate*)	
SHRI P. K. SOM	Institution of Engineers (India), Calcutta
SHRI D. SRINIVASAN	Joint Plant Committee, Calcutta
SHRI B. P. GHOSH (*Alternate*)	
SHRI K. S. SRINIVASAN	National Buildings Organization, New Delhi
SHRI H. K. JAGWANI (*Alternate*)	
SHRI K. SURYANARAYANAN	Indian Aluminium Co Ltd, Calcutta
SHRI R. K. MEHTA (*Alternate*)	
SHRI C. R. RAMA RAO, Director (Struc & Met)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI M. S. NAGARAJ
Deputy Director (Struc & Met), BIS

Indian Standard

SPECIFICATION FOR HOT ROLLED AND SLIT STEEL TEE BARS

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 10 April 1978, after the draft finalized by the Structural Sections Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard was first published in 1957 covering a wide range of hot rolled and slit tee bars and was revised in 1967, which covered slit tee bars to be produced by slitting some of the Indian Standard light weight, medium weight and H-beam sections conforming to IS : 808-1964*.

0.2.1 In this revision Indian Standard provisional slit medium weight tee bars have been deleted since the Indian Standard provisional medium weight beam sections have been regularized as Indian Standard medium weight sections with slight modifications in their dimensions and have now been covered in IS : 808 (Part I)-1973†. The dimensions of Indian Standard slit medium weight tee bars have been modified to bring them in line with IS : 808 (Part I)-1973†. The geometrical properties have been expressed in SI units.

0.3 In the preparation of this standard, the Sectional Committee has kept in view the manufacturing and trade practices followed in the country in this field.

0.4 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 : 2-1960‡. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Specification for rolled steel beam, channel and angle sections (*revised*).
†Dimensions for hot rolled steel beams: Part I MB series (*second revision*).
‡Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard lays down the nominal dimensions, weight and basic sectional properties of hot rolled and slit steel tee bars.

2. DEFINITIONS

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 ***Y-Y* Axis** — A line passing through the centre of gravity of the profile of the section, parallel to the axis of the web of the section.

2.2 ***X-X* Axis** — A line passing through the centre of gravity of the profile of the section and at right angles to the *Y-Y* axis.

3. SYMBOLS

3.1 Letter symbols used in this standard have been indicated in Fig. 1, Fig. 2 and Table 1. Other letter symbols used in the standard have the meaning indicated against each as given below:

a = Sectional area in sq cm

w = Calculated weight in kg/m = (0·785 a)

C_{xx} = Distance of centre of gravity from top of flange

I_{xx} = Moment of inertia about the *X-X* axis

I_{yy} = Moment of inertia about the *Y-Y* axis

e_{xx} = Distance of extreme fibre from the *X-X* axis

e_{yy} = Distance of extreme fibre from *Y-Y* axis

$Z_{xx} = \frac{I_{xx}}{e_{xx}}$ = Modulus of section about the *X-X* axis

$Z_{yy} = \frac{I_{yy}}{e_{yy}}$ = Modulus section about the *Y-Y* axis

$r_{xx} = \sqrt{\frac{I_{xx}}{a}}$ = Radius of gyration about the *X-X* axis

$r_{yy} = \sqrt{\frac{I_{yy}}{a}}$ = Radius of gyration about the *Y-Y* axis

D = The angle between the web and flange of the section, in degrees.

4. CLASSIFICATION

4.1 Indian Standard Hot-rolled Steel Tee Bars may be classified as follows:

a) Indian Standard Rolled Normal Tee Bars (ISNT),

b) Indian Standard Rolled Deep Legged Tee Bars (ISDT),

c) Indian Standard Slit Light Weight Tee Bars (ISLT),
d) Indian Standard Slit Medium Weight Tee Bars (ISMT), and
e) Indian Standard Slit Tee Bars from H-Sections (ISHT).

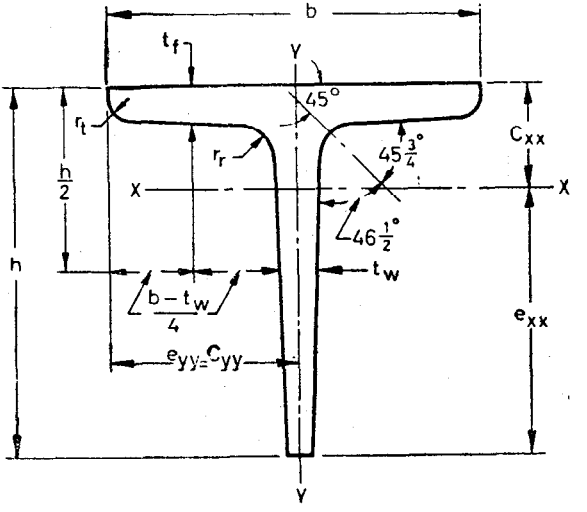

FIG. 1 ROLLED NORMAL TEE BAR (ISNT)

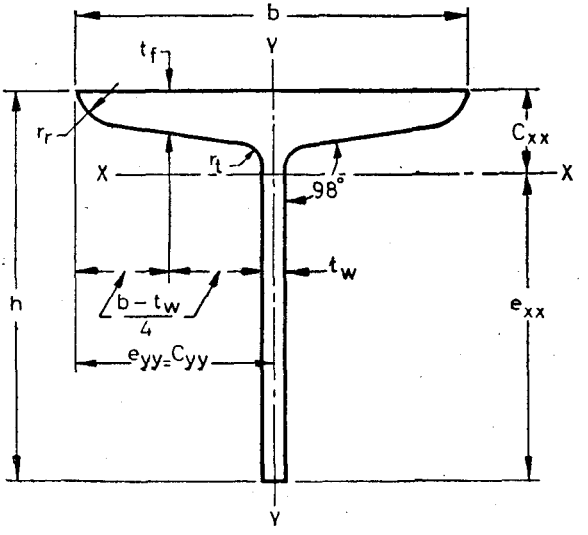

FIG. 2 SLIT TEE BAR AND DEEP LEGGED TEE BAR

4.2 For shop marking and drawing office purposes, the following abbreviated reference symbols may also be permitted provided specific understanding exists between the fabricator, the producer and the drawing office that members designated by these symbols refer only to Indian Standard Sections:

Classification	*Abbreviated Reference Symbols*
ISNT	NT
ISDT	DT
ISLT	LT
ISMT	MT
ISHT	HT

5. DIMENSIONS AND PROPERTIES

5.1 Nominal dimensions and weight of Indian Standard Tee Bars shall be as given in Table 1.

5.2 The tolerances on the dimensions shall be as specified in IS : 1852-1973*.

*Rolling and cutting tolerances for hot-rolled steel products (*second revision*).

TABLE 1 NOMINAL DIMENSIONS, WEIGHT AND GEOMETRICAL PROPERTIES OF INDIAN STANDARD TEE BARS

(*Clauses* 3.1 *and* 5.1)

Designation	Weight (w)	Sectional Area (a)	Size (Nominal) ($h \times b$)	Thickness of Web (t_w)	Thickness of Flange (t_f)	Radius at Root (r_r)	Radius at Toe (r_t)	Slope of Flange ($D°$)	Centre of Gravity Position (C_{xx})	Moments of Inertia		Radii of Gyration		Moduli of Section	
										I_{xx}	I_{yy}	r_{xx}	r_{yy}	Z_{xx}	Z_{yy}
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	kg/m	mm²	mm×mm	mm	mm	mm	mm		mm	10^6mm⁴	10^6mm⁴	mm	mm	10^3mm³	10^3mm³
Indian Standard Normal Tee Bars															
ISNT 20	1·1	145	20×20	4·0	4·0	4·0	3·0		6·0	0·005	0·002	5·8	4·1	0·3	0·2
ISNT 30	1·8	226	30×30	4·0	4·0	5·0	3·5		8·2	0·018	0·008	8·9	5·9	0·8	0·5
ISNT 40	3·5	445	40×40	6·0	6·0	5·5	4·0		11·4	0·061	0·029	11·8	8·1	2·1	1·5
ISNT 50	4·4	566	50×50	6·0	6·0	6·0	4·0		13·5	0·123	0·057	14·7	10·1	3·4	2·3
ISNT 60	5·4	685	60×60	6·0	6·0	6·5	4·5	(*See* Fig. 1)	15·6	0·214	0·097	17·7	11·9	4·8	3·2
ISNT 75	10·0	1 270	75×75	9·0	9·0	8·0	5·5		20·4	0·620	0·292	22·1	15·2	11·4	7·8
ISNT 100	14·9	1 900	100×100	10·0	10·0	9·0	6·0		26·2	1·64	0·768	29·4	20·1	22·2	15·4
ISNT 150	22·7	2 890	150×150	10·0	10·0	10·0	7·0		36·1	5·41	2·50	43·3	29·4	47·5	33·4
Indian Standard Deep Legged Tee Bars															
ISDT 100	8·1	1 040	100×50	5·8	10·0	8·0	4·0	98°	30·3	0·990	0 096	30·9	9·6	14·2	3·8
ISDT 150	15·7	2 000	150×75	8·0	11·6	9·0	4·5	98°	47·5	4·50	0·370	47·5	13·6	43·9	9·9
Indian Standard Slit Light Weight Tee Bars*															
ISLT 200	28·4	3 620	200×165	8·0	12·5	16·0	8·0	98°	47·8	12·7	3·58	59·2	31·5	83·3	43·4
ISLT 250	37·5	4 780	250×180	9·2	14·1	17·0	8·5	98°	64·0	27·7	5·32	76·2	33·4	149·2	59·1
Indian Standard Slit Medium Weight Tee Bars†															
ISMT 50	5·8	735	50×70	4·5	7·5	9·0	4 5	98°	10·4	0·108	0·177	12·1	15·5	2·7	5·05
ISMT 62·5	6·7	850	62·5×70	5·0	8·0	9·0	4·5	98°	13·9	0·218	0·192	16·5	15·1	4·4	5·50
ISMT 75	7·5	955	75×75	5·0	8·0	9·0	4·5	98°	17·3	0·412	0·234	20·8	15·7	7·1	6·25
ISMT 87·5	9·8	1 240	87·5×85	5·8	9·0	10·0	5·0	98°	20·6	0·756	0·384	24·7	17·6	11·3	9·00
ISMT 100	12·7	1 620	100×100	5·7	10·8	11·0	5·5	98°	21·3	1·16	0·750	26·8	21·5	14·7	15·0
Indian Standard Slit Tee Bars from H-Section‡															
ISHT 75	15·3	1 950	75×150	8·4	9·0	8·0	4·0	94°	16·2	0·962	2·30	22·2	34·4	16·4	30·1
ISHT 100	20·0	2 550	100×200	7·8	9·0	9·0	4·5	94°	19·1	1·94	4·97	27·6	44·2	24·0	49·3
ISHT 125	27·4	3 480	125×250	8·8	9·7	10·0	5·0	94°	23·7	4·15	10·0	34·5	53·7	41·0	79·9
ISHT 150	29·4	3 740	150×250	7·6	10·6	11·0	5·5	94°	26·6	5·74	11·0	39·2	54·1	46·5	87·7

*Slit from ISLB 200 and ISLB 500.
†Slit from MB 100, 125, 150, 175 and 200.
‡Slit from ISHB 150, 200, 250 and 300.

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI-110002

Telelphones : 331 01 31
331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:	*Telephone*
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	331 01 31 331 13 75
*Eastern : 1/14 CIT Scheme VII M, V.I.P. Road, Maniktola, CALCUTTA 700054	37 86 62
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43
Southern : C.I.T. Campus, IV Cross Road, MADRAS 600113	235 23 15
†Western : Manakalaya, E9 MIDC, Marol, Andheri (East), BOMBAY 400093	832 92 95

Branch Offices:	
'Pushpak', Nurmohamed Shaikh Marg, Khanpur, AHMADABAD 380001	30 13 48
‡Peenya Industrial Area, 1st Stage, Bangalore-Tumkur Road,, BANGALORE 560058	39 49 55
Gangotri Complex, 5th Floor, Bhadbhada Road, T.T. Nagar, BHOPAL 462003	55 40 21
Plot No. 21 Satyanagar, BHUBANESHWAR 751007	40 36 27
Kalaikathir Building, 6/48 Avanashi Road, COIMBATORE 641037	21 01 41
Plot No. 43, Sector 16 A, Mathura Road, FARIDABAD 121001	8-28 88 01
Savitri Complex, 116 G.T. Road, GHAZIABAD 201001	8-71 19 96
53/5 Ward No. 29, R.G. Barua Road, 5th By-lane, GUWAHATI 781003	54 11 37
5-8-56C L.N. Gupta Marg, Nampally Station Road, HYDERABAD 500001	20 10 83
R 14 Yudhister Marg, C Scheme, JAIPUR 302005	38 13 74
117/418 B Sarvodaya Nagar, KANPUR 208005	21 68 76
Seth Bhawan, 2nd Floor, Behind Leela Cinema, Naval Kishore Road, LUCKNOW 226001	23 89 23
Patliputra Industrial Estate, PATNA 800013	26 23 05
C/o Smt. Sunita Mirakhur,, 66 D/C Annexe, Gandhi Nagar, JAMMU TAWI 180004	—
T.C. No. 14/1421, University P.O., Palayam, THIRUVANANTHAPURAM 695034	6 21 17

Inspection Offices (With Sale Point):	
Pushpanjali, Ist floor, 205-A, West High Court Road, Shankar Nagar Square, NAGPUR 440010	525171
Institution of Engineers (India) Building 1332 Shivaji Nagar, PUNE 411005	32 36 35

---

* Sales Office is at 5 Chowringhee Approach, P.O. Princep Street, CALCUTTA 700072	27 99 65
†Sales Office is at Novelty Chambers, Grant Road, BOMBAY 400007	309 65 28
‡Sales Office is at 'F' Block, Unity Building, Narasimharaja Square, BANGALORE 560002	22 39 71

Printed at Printograph, Karol Bagh, New Delhi.