

Annexure

TABLE - I

Thickness tolerances for hot/cold rolled steel sheet (including descaled sheet), coils and cut lengths

Speci- fic width (mm)	Thickness tolerances over and under, for specified thickness (values in millimetres)									
	< 2.0	>2.0 2.5	>2.5 3.0	>3.0 4.0	>4.0 5.0	>5.0 6.0	>6.0 8.0	>8.0 10.0	>10 12	
>600 -	0.13	0.14	0.15	0.17	0.19	0.21	0.23	0.26	0.28	
≤1200										
>1200 -	0.14	0.15	0.17	0.18	0.21	0.22	0.24	0.25	0.29	
≤1500										
>1500 -	0.14	0.17	0.19	0.21	0.22	0.23	0.25	0.27	0.30	
≤1800										
>1800		0.20	0.21	0.22	0.23	0.25	0.28	0.32	0.30	

The values specified do not apply to the uncropped ends for length of a mill edge coil. The length would be calculated using the following formula

$$\text{Length in metres} = \frac{90}{\text{Thickness in mm}}$$

provided that the result was not greater than 20 m, inclusive of both ends.

Thickness is measured at any point on the sheet not less than 40 mm from a side edge. Measurement on an untrimmed edge sheet nearer to an edge than 40 mm.

**TABLE - II**

Hot rolled coils/sheets with mill edge, and cut lengths width tolerances

Specified width (mm)	Tolerance over specified width (No tolerance under) (mm)
Upto and including 1200	20
Over 1200 upto and including 1500	20
Over 1500	25

The values specified do not apply to the uncropped ends for a length of a mill edge coil. Length would be calculated using the following formula:

$$\text{Length in metres} = \frac{90}{\text{Thickness in mm}}$$

Provided that the result was not greater than 20 m, inclusive of both ends.

**TABLE - III**

Hot rolled coils/sheet (including descaled sheet), sheared edge, not resquared, coils and cut lengths. Width tolerances.

Specified width (mm)	Tolerance over specified width (No tolerance under) (mm)
Upto and including 1200	3 ✓
Over 1200 upto and including 1500	5
Over 1500	6

Tolerances for sheared edges apply to products with nominal thickness < 10. mm For nominal thickness > 10 mm the upper tolerances shall be agreed at the time of enquiry and order.

TABLE - IV

Hot rolled sheet (including descaled sheet), not required. Length tolerances.

Specified width (mm)	Tolerance over specified width (No tolerance under) (mm)
Upto and including 2000	10
Over 2000 upto and including 8000	0.5% x length
Over 8000	40

TABLE - V

Hot rolled steel sheet (including descaled sheet), not required. Camber tolerances.

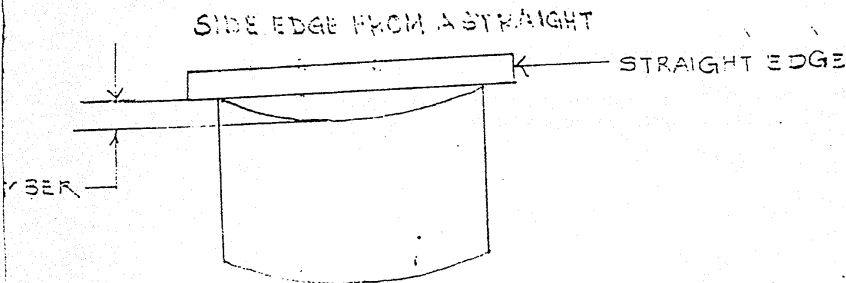
Form	Maximum tolerance (mm)
Coils	$\sqrt{25}$ in any 5000 length
Cut lengths	0.5 % x length

See figure 1

The values do not apply to the uncropped ends of mill edge within 7 m inclusive of both ends.

FIGURE I Measurement of camber

Camber is the greatest deviation of a side edge from a straight line, the measurement being taken on the concave side with a straight edge.



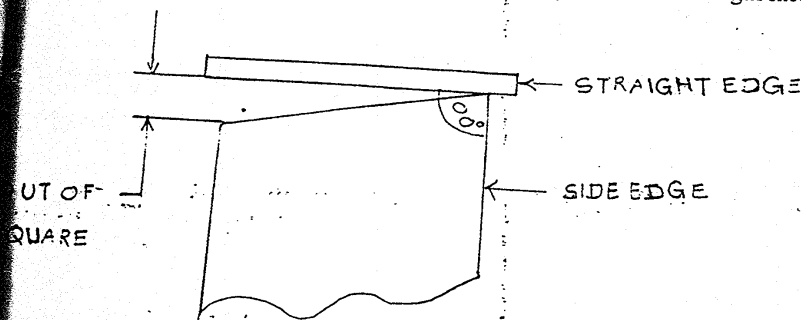
**TABLE - VI**

Hot rolled / cold rolled plate / sheet in cut length (including descaled sheet), not required. Out of-square tolerances.

Dimensions	Out-of-square tolerance
All thickness and all sizes	1 % x width

**FIGURE 2** Measurement of out-of-square

Out-of-square is the greatest deviation of an end edge from a straight line at right angles to a side and touching one corner, the measurement being taken as shown in Figure 2. It can also be measured as one-half the difference between the diagonals of the cut length sheet.



**TABLE - VII**

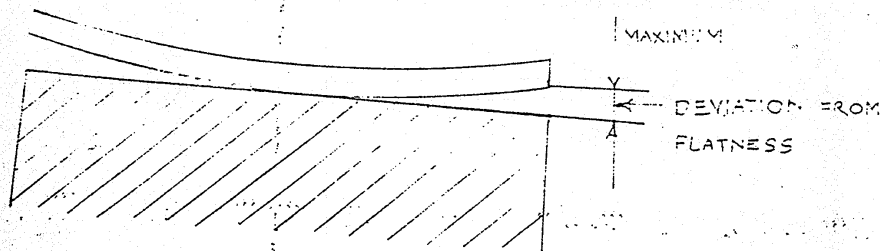
Standard flatness tolerances, cut length

Thickness (mm)	Width (mm)	Flatness tolerances (mm)sq.
Upto and including 2	Upto and including 1200	21
	Over 1200 upto and including 1500	25
	Over 1500	30
Over 2 upto 5 mm	Upto and including 1200	18
	Over 1200 upto and including 1500	23
	Over 1500	28

These tolerances are only applicable to sheet up to and including 5000 mm length. Tolerances for sheet having a length exceeding 5000 mm are subject to agreement. This table also applies to sheet cut to length from coil by the customer when adequate flattening procedures are performed.

Maximum deviation from a flat horizontal surface. With the sheet lying under its own mass on a flat surface, the maximum distance between the lower surface of the sheet and the flat horizontal surface is the maximum deviation from flatness (See Figure 3).

FIGURE 3 Measurement of flatness



91-0522-458690  
'रेलमानक' लखनऊ  
'RAILMANAK', Lucknow  
451200 (PBX)  
450567 (DID)



भारत सरकार - रेल मंत्रालय  
अनुसंधान अभिकल्प और मानक संगठन  
लखनऊ - 226011  
Government of India-Ministry of Railways  
Research Designs & Standards Organisation  
Lucknow - 226011



Ref. No. MC/STL-78

Dated 17.9.2001

The General Manager (Mech.) / The General Manager (Stores)

1. Central Railway, Mumbai CST-400 001.
2. Eastern Railway, Fairlie Place, Calcutta-700 001
3. Western Railway, Churchgate, Mumbai-400 020.
4. Northern Railway, Baroda House, New Delhi-110 001.
5. Southern Railway, Park Town, Madras-600 003.
6. South Central Railway, Secunderabad-500 371.
7. South Eastern Railway, Garden Reach, Calcutta-700 043.
8. North Eastern Railway, Gorakhpur-273 012.
9. Northeast Frontier Railway, Maligaon, Guwahati-781 011.
10. Rail Coach Factory, Kapurthala-144602.
11. Rail Coach Factory, Chennai-600038.
12. M/s B.F. Bangalore Complex, New Thippasandra, P.B No 7501, Bangalore-560 075.

Sub-Amendment to specification IRS M-41/97 for corrosion resistant structural steel required for rolling stock.

It has been observed that in the absence of proper marking on sheets and plates of corten steel produced either by hot or cold rolling processes, difficulties are being faced for identification of these sheets and plates when they are mixed up with sheets and plates of other grades of steel. Production Units have also reported difficulties for removing the coating of the corrosion preventive oil used by the manufacturer particularly cold rolled sheets during surface preparation prior to painting of the coaches. This results in poor adhesion of the paint film with the parent material and results in premature flaking of paint film during service of coaches. To overcome the above problems, specification IRS M-41/97 has been amended accordingly. A copy of the amendment slip No.1 of September, 2001 to specification IRS M-41/97 is enclosed for information and future action for procurement of steel sheets and plates conforming to this specification.

DA: As above.

(M.P. Aggarwal)

for Director General/Carriage

Copy for information and necessary action to:

1. Director / Iron & Steel, 3, Koilaghat Street, Kolkata
2. Executive Director (RS), Railway Board, Rail Bhavan, New Delhi
3. Sr. EDS/Wagon, RDSO, LKO
4. ED/I&L, RDSO, LKO

It is requested that the amendment to specification IRS M-41/97 as per amendment slip No.1 (copy attached) be implemented for future tendering

This has reference to Wagon Dte.'s note No. MW/STL dated 01.8.2001.

It is requested that the amendment to specification IRS M-41/97 as per amendment slip No.1 be circulated to all zonal offices for implementation with immediate effect.

① Copy to be kept along with spec. (MAY)  
② SSE/MS to write the UL description & advise RDSO/PLS.

5/10/2001

Librarian  
N. P. Aggarwal  
5-10-2001

5. EDME(Coaching), Railway Board, Rail Bhavan, New Delhi.

6. Addl.ED(M&C),RDSO,LKO

DA: As above

(M.P.Aggarwal)  
for Director General/Carriage

**Copy for information and implementation with immediate effect:**

1. M/s Essar Steel Ltd., 27<sup>th</sup> KM Surat Hazira Road, Hazira – 394270, Distt. Surat.
2. M/s Loyds Steel Industries (Steel Division), Wardha-422001 (Maharashtra)
3. M/s Ispat Industries Ltd., Geetpuram, Dolvi Taluka – Pen, Distt. Raigarh-402107 (Maharashtra)
4. M/s Tata Iron & Steel Company Ltd., Jamshedpur- 831001 (Jharkhand)
5. M/s Steel Authority of India, Bokaro Steel Plant, Bokaro (Jharkhand)

DA: As above

(M.P.Aggarwal)  
for Director General/Carriage

**Amendment slip no.1 of September 2001 to Specn. IRS-M-41/97 for corrosion resistant structure steel for rolling stock.**

*Lib*  
*Pl. Enclose*  
*to Specn*  
*IRS-M-41/97*  
*Update*  
*5/10/01*

Clause No.	Existing Clause	To be read as
<b>(1) MARKING PARTICULARS</b>		
13.1	Each product shall be stamped/painted with material specification, code of surface finish, the cast number and the manufacture's name or trade mark. In case of sheets, the bundle shall carry a metal tag bearing the above. Alternatively, the top sheet shall be legibly marked material specification cast number and manufacturer's name or trade mark	Each product i.e. sheet or plate of corrosion resistant structural steel (corten steel) to IRS-M-41/97 being produced for Indian Railways will bear distinct mark made by inkjet printing with indelible ink. The marking must include the following particulars:  i) Product identification i.e. IRS M-41 or CORTEN ii) Heat Number iii) Manufacturer's name or logo having name of manufacturer.
13.2 (New Clause)	Nil	The markings will be made staggered in two rows at a distance of 50cm from each edge along the length. Max. distance between two markings i.e. from the end of one marking to the start of the next should be 75 cms.
13.3(New Clause)	Nil	In case of bundles made out of sheet or plate, each bundle apart from marking particulars on each sheet or plate shall have a metal tag bearing marking particulars as per para 13.1.
13.4(New Clause)	Nil	For easy identification, the top sheet of each bundle shall also be marked legibly indicating marking particulars as per para 13.1
13.5(New Clause)	Nil	In case of sheets supplied in the form of coils, each end of the coil shall bear the marking particulars as per para 13.1 made by inkjet printing with indelible ink. Apart from these marking each coil shall also carry a metal tag bearing the marking particulars mentioned above.

*W. K. S. S.*