



FOR NOW. FOR YEARS.



Tata Pipes

Idler Tubes as per IS:9295





Profile

Located at Jamshedpur, Tata Steel Ltd. was established in 1907 and was the first Integrated Steel Plant in India. It commenced its operations in 1911, with a capacity of 1,00,000 tonnes per annum of ingots and expanded to a million tonnes per annum of saleable steel by the mid fifties.

Presently it has an annual capacity of 6 million tonnes at its Jamshedpur Plant. The Plant, equipped with the latest steel making facilities such as Basic Oxygen Furnaces, Vacuum Degassing and Continuous Casting Units, presents the very epitome of technological advancement. A whole range of steels addressing the needs of the Construction / Engineering and Automotive sector, testify to Tata Steel's capability. These products have found acceptance not only in the domestic market but all over the world.

Tata Steel - Tubes Division

The Tubes Division of Tata Steel came into being in 1985, after the merger of the erstwhile Indian Tube Company with Tata Steel. The Division manufactures commercial and precision tubes at its two plants, namely, the Standard Tubes Plant and the Precision Tubes Plant. The Tubes Strategic Business Unit of Tata Steel today is the largest manufacturer of a variety of steel tubes in India with an annual production capacity of around 4,00,000 tonnes and major expansion plans on the anvil to manufacture higher sizes. The SBU has its plants situated in Jamshedpur and has a network of sales offices across the country with the marketing headquarters in Kolkata to provide better customer service.

The Manufacturing Process

Tata Pipes – Idler Tubes production process begins with the slitting of wide Steel Hot Rolled Coils to the width required for the production of customer specific section dimensions. This slit coil is then fed through the mill and is shaped into a round tube by a series of forming rolls. The converging strip edges of this round tube are squeezed together and welded using high frequency induction welding. Immediately after this, the external excess weld bead is removed. The tube then passes through a set of shaping rolls where it is shaped in to its final form and is exactly sized to the required dimensions. Cutting to the required length and bundling are the final steps in this fully automatic manufacturing process.

Quality Control

The quality of our product is controlled during the manufacturing process. It starts with slitting the strip edges, continues with speed and temperature control during the high frequency induction welding process and is followed by non destructive eddy current testing directly after welding. Off-line drift and flattening tests are conducted. This is all within our ISO 9000:2002 quality management system.

Idlers for Belt Conveyors

Steel tubes are extensively used as idlers for belt conveyors. The tubes are made from the steel manufactured by Open Hearth basic oxygen, Electric Furnace or combination of these processes. These tubes are manufactured by one of the processes - Seamless or ERW (Including HFIW). The height of the internal fin of the ERW pipes should not exceed 1.7mm. The maximum Phosphorus and Sulphur contents are limited to 0.005%.

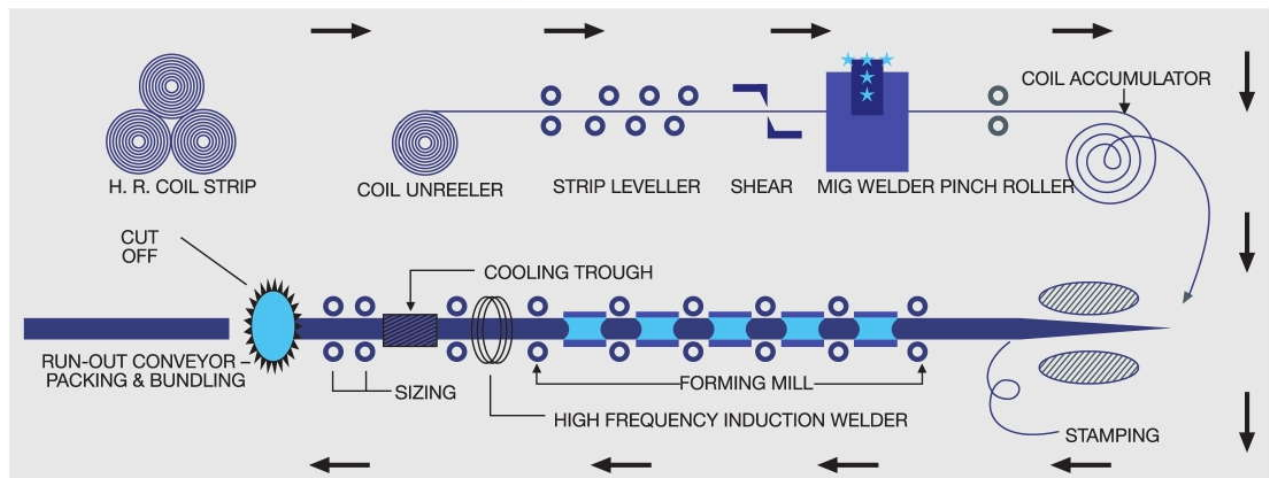
All our tubes for Idlers are strictly adhering to the following specifications of IS: 9295 –

General Technical Specifications and Tolerances IS:9295

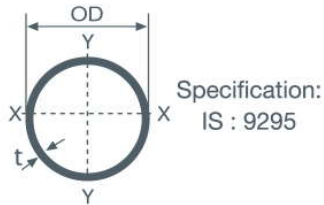
Section Type	Grade	Mechanical Properties			Outside dimension	Thickness	Dimensional Tolerance		Weight	
		YST	UTS	% of Elongation			Ovality	Eccentricity	Weight	
		Mpa	Mpa						Individual lengths	On lot of 10 MT
ERW IS: 9295	210	210	330	20	+/- 0.8%	+/- 10%	<168.30D-0.5mm ≥168.30D-1.0mm	Not more than 5%	L +10%, -8%	L +/- 5%
	240	240	410	18					M & H +/-10%	M & H +/-7.5%
	310	310	450	15						

Length	6.0 m ± 0.05 m Customized length ranging from 6 m to 11 m may be supplied.
Straightness	Minimum 1 : 1000th of any length measured along the centre line (mill straightened condition) unless otherwise specifically arranged.
End Finish	Plain ended - Mechanically sheared, mill - cut finish without further machining.
Surface Finish	Black without any surface treatment of oiling or varnishing.
Raw Material	Sulphur content : 0.05% max, phosphorus content : 0.05% max, equivalent carbon percentage well within specified weldability limits with matching physical properties.
Weldability	Tata Pipes Idler Tubes are weldable with standard M. S. Electrodes without any pre-heating.
Packing	Bundled by sealing metal strap, and each bundle is labelled for size, measurement, Lot no. etc. Approximate weight of each bundle is 1.5 Mt (+/- 500 kg).
Identification	Marking of "TATA PIPES" emblem on surface punched/stenciled/sticker pasted on all Idler Tubes. Standard BIS mark is also put on the sections.
NOTE	Tata Pipes Idler Tubes in customized size, grade, length, surface finish and end finish may be delivered as per agreed supply conditions.

The Process Flow Diagram



Nominal Mass and Properties

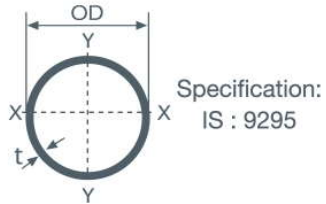


Tata Pipes (Idler Tubes)

YST 310 Grade


Outside Diameter	Thickness	Weight	Area of Cross	Outer Surface Section	Moment of Inertia Area/m	Section Modulus	Radius of Gyration
mm	mm	kg/mtr	cm ²	cm ²	cm ⁴	cm ³	cm
63.5	3.65	5.39	6.87	19957	30.86	9.72	2.12
	4.50	6.55	8.34		36.52	11.50	2.09
76.1	3.65	6.52	8.31	23917	54.67	14.37	2.56
	4.50	7.95	10.13		65.15	17.12	2.54
88.9	4.05	8.48	10.80	27940	97.42	21.92	3.00
	4.85	10.06	12.81		113.51	25.54	2.98
101.6	6.30	12.84	16.35	31931	140.29	31.56	2.93
	4.05	9.75	12.42		147.95	29.12	3.45
108.0	4.85	11.58	14.75	33943	172.99	34.05	3.42
	6.30	14.81	18.87		215.15	42.35	3.38
114.3	4.05	10.39	13.23	35923	178.99	33.15	3.68
	4.85	12.34	15.72		209.58	38.81	3.65
120.0	6.30	15.81	20.14	37714	261.34	48.40	3.60
	4.50	12.19	15.53		234.41	41.02	3.89
127.0	5.40	14.51	18.48	39914	274.65	48.06	3.85
	6.30	16.79	21.38		312.84	54.74	3.82
133.0	4.50	12.82	16.34	39914	272.80	45.47	4.09
	5.40	15.27	19.45		320.00	53.33	4.06
139.7	6.30	17.67	22.51	43906	364.91	60.82	4.03
	4.50	13.60	17.33		325.45	51.25	4.33
152.4	4.85	14.62	18.62	47897	347.81	54.77	4.32
	5.40	16.20	20.64		382.19	60.19	4.30
159.0	6.30	18.76	23.90	49971	436.39	68.72	4.27
	4.50	13.60	17.33		325.42	51.25	4.33
165.1	4.85	14.62	18.62	51889	347.81	54.77	4.32
	5.40	16.20	20.64		382.16	60.19	4.30
168.3	6.30	19.69	25.09	52894	504.64	75.88	4.49
	4.50	15.01	19.12		437.38	62.62	4.78
193.7	4.85	16.14	20.55	60877	467.83	66.98	4.77
	5.40	17.89	22.79		514.70	73.69	4.75
219.1	6.30	20.73	26.41	68860	588.86	84.30	4.72
	4.50	16.42	20.92		572.47	75.13	5.23
193.7	4.85	17.66	22.49	60877	612.72	80.41	5.22
	5.40	19.58	24.95		674.79	88.55	5.20
193.7	6.30	22.71	28.93	60877	773.27	101.48	5.17
	4.50	17.15	21.85		652.53	82.08	5.46
193.7	4.85	18.45	23.50	60877	698.61	87.88	5.45
	5.40	20.46	26.07		769.73	96.82	5.43
193.7	6.30	23.73	30.23	60877	882.74	111.04	5.40
	4.50	17.83	22.71		732.87	88.78	5.68
193.7	4.85	19.17	24.43	60877	784.82	95.07	5.67
	5.40	21.28	27.10		865.05	104.79	5.65
193.7	6.30	24.68	31.44	60877	992.68	120.35	5.62
	4.50	18.19	23.17		777.53	92.40	5.79
193.7	4.85	19.56	24.91	60877	832.75	98.96	5.78
	5.40	21.70	27.65		918.05	107.10	5.76
193.7	6.30	25.18	32.08	60877	1053.84	125.23	5.73
	5.40	25.09	31.96		1417.54	146.36	6.66
193.7	6.30	29.13	37.11	60877	1630.70	168.37	6.63
	7.10	32.69	41.64		1814.91	187.39	6.60
193.7	5.40	28.47	36.27	60877	2071.66	189.11	7.56
	6.30	33.08	42.13		2387.10	217.90	7.53
193.7	7.10	37.14	47.31	60877	2660.65	242.87	7.50

Product Range Availability



Product Range: Tata Pipes (Idler Tubes) as per IS:9295

	3.65	4.05	4.50	4.85	5.40	6.30	7.10
63.5	Existing product range		Existing product range				
76.1	Existing product range		Existing product range				
88.9		Existing product range		Existing product range		Product range under development	
101.6		Existing product range		Existing product range		Product range under development	
108.0		Product range under development		Product range under development		Product range under development	
114.3			Existing product range		Existing product range	Product range under development	
120.0			Product range under development		Product range under development	Product range under development	
127.0			Product range under development	Product range under development	Product range under development	Product range under development	
133.0			Product range under development	Product range under development	Product range under development	Product range under development	
139.7			Existing product range	Existing product range	Existing product range	Product range under development	
152.4			Existing product range	Existing product range	Existing product range	Product range under development	
159.0			Existing product range	Existing product range	Existing product range	Product range under development	
165.1			Product range under development	Product range under development	Product range under development	Product range under development	
168.3			Product range under development	Product range under development	Product range under development	Product range under development	
193.7					Product range under development	Product range under development	Product range under development
219.1					Product range under development	Product range under development	Product range under development

 - Existing product range

 - Product range under development

Glossary of conveyor terms and definition

(As per IS: 4240-1984)

Troughing Angle (h)	Angle of the axis of side idlers from the horizontal.
Idler Vertical Clearance (m)	The vertical gap between the periphery of idler and the top of the Idler transom or any other structural part, nearest to the idler.
Idler Diameters (dI)	The diameters, dI in millimetres, of carrying and return idlers shall be selected from the following



Carrying and Return Idlers													Carrying Idlers Only
63.5	76.1	88.9	101.6	108	114.3	127	133	139.7	152.4	159	168.3	193.7	219.1

The diagram illustrates the mounting dimensions for idlers. It shows a cross-section of a belt on a troughing idler. Key dimensions include:

- m : The distance from the top surface of the idler to the top surface of the belt.
- B : The belt width.
- l_1 : The length of the idler frame.
- l_2 : The length of the idler rollers.
- e_1 : The distance from the center of the roller to the edge of the frame.
- e_2 : The distance from the center of the roller to the edge of the frame for a different shape.

TABLE 2 MOUNTING DIMENSIONS FOR IDLERS
(Clauses 3.3 and 3.3.2)
All dimensions in millimeters.

This diagram shows a top-down view of the idler mounting. It highlights the 'SOLTS SL FOR BOLT φD' which are used to secure the idler to the frame. The distance between the center of the roller and the edge of the frame is labeled as 'e'.

Belt Width B	l_1	l_2	e_1	e_2		D
				Shape M	Shape N	
400	690	755	200	65	100	M12
500	790	855	200	65	100	M12
650	940	1000	200	65	100	M12
800	1090	1150	200	65	100	M12
1000	1290	1350	200	65	100	M12
1200	1490	1560	200	65	100	M16
1400	1690	1750	200	65	100	M16
1600	1900	1950	200	65	100	M16
1800	2100	2150	200	65	100	M20
2000	2300	2350	200	65	100	M20

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www.tatatubes.com

Care has been taken to ensure that this information is accurate but Tata Steel does not accept responsibility or liability for errors or information which is found to be misleading.

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