



#### Comparison Between HR Strip & Patra

TOPIC	PATRA	HR Coil
Manufacturing process	Patra rolled by ORDINARY mill.	HR Strip Rolled by Tandem Mill 'HSM'. In HSM there are additional facilities available for Improving Quality of HR strip, microstructure etc.
Raw Material 'Quality'	Manufacturing from Ingot or Commercial Grade MATERIALS.	Manufacturing from Slabs, Blooms & Billets which are manufactured by Iron Ore.
Chemical Composition	There is no control on the chemical composition due to mixing of variety of low grade materials.	Homogeneous Chemical Composition.
Surface Finish	Rough Surface which lowers the finished product quality.	Enhanced surface finish ensuring high quality.
Thickness Consistency & width variation	Lot of variation due to manual setting.	No variation due to HAGC system, and better HSM Technology.
Length	No provision for colling of strip & therefore Patra is rolled with length of approximately 30 meter.	Due to superior technology of HSM, Maximum length can be derived.
Physical Properties	Physical Properties are not matched with the above due to mixing of non-homogeneous nature of chemical compositions & poor manufacturing process.	Because of high technological steel making route, complete range of applications are covered.

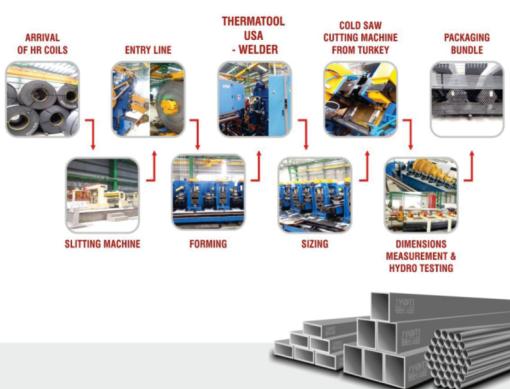
#### Behind the scenes - Our Competent team

- Backed by seasoned experts in the field of Production, Research, Quality and Marketing, Jyoti HRC 100 is constantly infused with new quotient of performance.
- Serving the customer for the best outcome and cementing relationships form the foundation of our Team.

#### Delivering expectations since 2001 and still towering higher

Madhav KRG Group began its journey in 2001 and since then we have not looked back. Working in harmony and tandem for widening the scope of our progress, our brand JYOTI has grown in a multi dimensional manner. With each passing year, we learned more and fulfilled more dreams. Today we are still at a juncture where the cross roads lead to better ways of garnering knowledge and performance. The future is amongst us and we just have to realise the same.

#### Process Flow Chart for Pipes & Tubes



## Madhav KRG Limited

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**JYOTI**  
BHAROSE KI TAAKAT  
**HRC 100**  
**PIPES & TUBES**

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AI 03 1001: SHAHE 1000: 1000 COMPANY  
IS 103 2014  
IS 103 2006



Manufacturing Quality,  
Fulfilling Dreams,  
Nurturing Accomplishments





#### From the Director's Desk

Madhav KRG Group has an in depth insight into delivering and executing top of the line Quality. Our core ideologies and principles are nested on a thought process of providing exceptional product standards. Be it technology, be it network or be it customer orientation, our brand **JYOTI** has proven itself in all aspects. After touching new pinnacles of success in TMT Steel with **JYOTI Tempcore Rebars**, recently we have forayed into the arena of **ERW PIPES & TUBES**, christening our brand in this segment as **JYOTI HRC 100**. Certainly when it comes to adopting global standards and creating world class products, Madhav KRG Group always go a step further. This has been acclaimed by our 20 years old legacy of eminence.

#### Vision

Enabling Infrastructure, accelerating Growth.

#### Our Moto

Spreading the Joy of Giving.

#### Quality Policy

Continuously striving to exceed customer expectations through technological Upgradations by involving competent people and effective Quality Management System.

#### Mission

Innovation & Technology: By setting new benchmarks in current Status quo of Industry in respective category.

#### Customer Delight:

By delivering substantial value for money in terms of Products and Services with cheerfulness.

#### Employees Augmentation:

By nurturing abilities and enriching capabilities through compassion, Mentoring and Belongness.

#### Preserving Relations:

By valuing 'Win-Win' relationships with Stake Holders and Business Associates for longer term.

#### Sustainable Future:

By giving back more than what we took from Society, Environment and Country at large.

#### Core Values

##### Integrity:

Steering business fairly with honesty and transparency.

##### Excellence:

Consistently strive to achieve the optimum potential and productivity in all over operations.

##### Patriotism:

Generate economic value for the nation and ensure compliance with law of the land.

##### Empowerment:

Empowering by making our individuals responsible.

##### Humility:

Respect and value people to sustain human dignity.

##### Unity:

Building Cohesive & Strong relations by encouraging open and transparent communication within the company.

**JYOTI**  
BHAROSE KI TAAKAT  
**HRC 100**  
PIPES & TUBES

*Fully Geared for Tomorrow's Challenges*

**The Brand, The Promise – JYOTI**

Over the years our Brand **JYOTI** has witnessed tremendous exponential Changes. Each change with just one objective, to further better the Quality. We are a Quality enabled organisation and thereby focus has always been on further enhancement of the Quality. Delivering the promises to the customers & Channel Partners has always been our tradition. Today our flagship Brand **JYOTI** stands tall only because of the reason that our Trust is visible and we fully deliver what is expected from us. This is certainly a matter of pride for us.



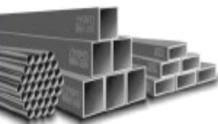
#### JYOTI HRC 100 ERW Pipes & Tubes - The Product

**JYOTI HRC 100 ERW Pipes & Tubes** are manufactured by using **ONLY HOT ROLLED COILS**. This gives a leading edge to our product over ordinary Patra Pipes available extensively.

- ✓ Certified duly by Bureau of Indian Standards (ISI)
- World class Infrastructure exists in our state of the art plant, which boasts of a massive 2 Lac Tonnes annual production capacity with 100% PRODUCTION BY HOT ROLLED COILLS.
- Pipes manufacturing Technology has been enabled by world acclaimed **SEUTHE, Germany**.
- First in the Industry to implement Electric Welding Technology at our Plant, which comes from **THERMATOOL USA**.
- Cutting perfection achieved by **Saw Cutting Machine from ERW Tech, Turkey**.
- ✓ With a large production capacity, meeting and delivering demand & supply expectations is done with ease.
- ✓ Presence of an In-house Research & Testing facility ensures each **JYOTI HRC 100** Product confers to stringent Quality norms.



# FRONT



## STEEL TUBES, TUBULARS AND OTHER WROUGHT STEEL FITTINGS

Conforming to IS:1239(Part-1) 2004

Nominal Bore (N.B.)		Outside Diameter Minimum		Class		Wall Thickness		Nominal Weight Kg/Meter		Meters/Ton	
mm	Inch	mm	mm	(L, M & H)	mm	SWG	P.E.	S & S	P.E.	S & S	
15	(1/2")	21.0	21.4	L	2.00	14	0.947	0.956	1056	1046	
		21.0	21.8	M	2.60	12	1.21	1.22	826	820	
		21.0	21.8	H	3.20	10	1.44	1.45	694	690	
20	(3/4")	26.4	26.9	L	2.30	13	1.38	1.39	725	719	
		26.5	27.3	M	2.60	12	1.56	1.57	641	637	
		26.5	27.3	H	3.20	10	1.87	1.88	535	532	
25	(1")	33.2	33.8	L	2.60	12	1.98	2.00	505	500	
		33.3	34.2	M	3.20	10	2.41	2.43	415	412	
		33.3	34.2	H	4.00	8	2.93	2.95	341	339	
32	(1 1/4")	41.9	42.5	L	2.60	12	2.54	2.57	394	389	
		42.0	42.9	M	3.20	10	3.10	3.13	323	319	
		42.0	42.9	H	4.00	8	3.79	3.82	264	262	
40	(1 1/2")	47.8	48.4	L	2.90	11	3.23	3.27	310	306	
		47.9	48.8	M	3.20	10	3.56	3.60	281	278	
		47.9	48.8	H	4.00	8	4.37	4.41	229	227	
50	(2")	59.6	60.2	L	2.90	11	4.08	4.15	245	241	
		59.7	60.8	M	3.60	9	5.03	5.10	199	196	
		59.7	60.8	H	4.50	7	6.19	6.26	162	160	
65	(2 1/2")	75.2	76.0	L	3.20	10	5.71	5.83	175	172	
		75.3	76.6	M	3.60	9	6.42	6.54	156	153	
		75.3	76.6	H	4.50	7	7.93	8.05	126	124	
80	(3")	87.9	88.7	L	3.20	10	6.72	6.89	149	145	
		88.0	89.5	M	4.00	8	8.36	8.53	120	117	
		88.0	89.5	H	4.80	6	9.90	10.10	101	99	
100	(4")	113.0	113.9	L	3.60	9	9.75	10.00	103	100	
		113.1	115.0	M	4.50	7	12.20	12.50	82	80	
		113.1	115.0	H	5.40	5	14.50	14.80	69	68	
125	(5")	138.5	140.8	M	4.80	6	15.90	16.40	63	61	
		138.5	140.8	H	5.40	5	17.90	18.40	56	54	
150	(6")	163.9	166.5	M	4.80	6	18.90	19.50	53	51	
		163.9	166.5	H	5.40	5	21.30	21.90	47	46	

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## PHYSICAL PROPERTIES & TOLERANCES

Thickness	:	For quantities per load of 10 ton Min.: ± 7.5% (Medium & Heavy series)
Light Tubes	:	+ not limited -8%
Medium & Heavy Tubes	:	+ not limited -10%
Weight	:	Chemical Composition
Single Tube (Light series)	:	As per IS-10748:2004.
Single Tube (Medium & Heavy Series)	:	± 10%
For quantities per load of 10 ton Min.: + 7.5% , -5% (Light series)	:	12% Min. (For, ≤ 25mm NB) 20% Min. (For, > 25mm NB)
Hydro Test Pressure	:	5MPa (Min)



# FRONT



## STEEL TUBES FOR STRUCTURAL PURPOSE

Conforming to IS : 1161-2014



Nominal Size (NB)		Outside Diameter (OD)	Thickness (T)		Black Tubes	Plain End
mm	Inch	mm	mm	SWG	Kg/Meter	Meter/Ton
15	(1/2")	21.30	2.0	14	0.95	1050
			2.6	12	1.20	833
			3.2	10	1.43	699
20	(3/4")	26.90	2.3	13	1.40	714
			2.6	12	1.56	641
			3.2	10	1.87	535
25	(1")	33.70	2.6	12	1.99	503
			3.2	10	2.41	415
			4.0	8	2.93	341
32	(1 1/4")	42.40	2.6	12	2.55	392
			3.2	10	3.09	324
			4.0	8	3.79	264
40	(1 1/2")	48.30	2.9	11	3.25	308
			3.2	10	3.56	281
			4.0	8	4.37	229
50	(2")	60.30	2.9	11	4.11	243
			3.6	9	5.03	199
			4.5	7	6.19	162
65	(2 1/2")	76.10	2.9	10	5.24	191
			3.6	9	6.44	155
			4.5	7	7.95	126
80	(3")	88.90	3.2	10	6.76	148
			4.0	8	8.38	119
			4.8	6	9.96	100
100	(4")	114.30	3.6	9	9.83	102
			4.5	7	12.19	82
			5.4	5	14.50	69
125	(5")	139.70	4.5	7	15.00	67
			4.8	6	15.97	63
			5.4	5	21.27	47
150	(6")	165.10	4.5	7	17.82	56
			4.8	5	18.98	53
			5.4	5	23.20	43
175	(7")	193.70	4.8	6	22.36	45
			5.4	5	25.08	40
			5.9	4	27.33	37

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## Chemical Properties

As per IS-10748:2004 (Gr-1 to Gr-5).

## Physical Properties & Tolerances

Grade	T.S. (MPa) (Min.)	Y.S. (MPa) (Min.)	Elong. (%) (Min.)
YSI 210	330	210	20
YSI 240	410	240	17
YSI 310	450	310	14
YSI 355	490	355	10

Note: Elongation percentage for tubes upto and including 25mm NB bore for all grades shall be 12 minimum.

## Tolerances :

### Weight :

Single tube	:	±10%
For 10 tonne lots	:	±7.5%

### Outside diameter:

Upto and including 48.3mm	:	+0.4, -0.8mm
Over 48.3mm	:	±1%

### Thickness

For all sizes	:	±10%
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## FRONT

### STEEL TUBES FOR MECHANICAL AND GENERAL ENGINEERING PURPOSES

Conforming to IS-3601:2006

Outside Diameter mm	Thickness mm	Mass Kg/m	Area of cross Section cm <sup>2</sup>	Moment of Inertia cm <sup>4</sup>	Modules of Sections cm <sup>3</sup>	Radius of Gyration cm
21.3	1.8	0.866	1.10	0.53	0.50	0.69
	2.0	0.952	1.21	0.57	0.54	0.69
	2.6	1.20	1.53	0.68	0.64	0.67
	3.2	1.43	1.82	0.77	0.72	0.65
26.9	1.8	1.11	1.42	1.12	0.83	0.89
	2.0	1.23	1.56	1.22	0.91	0.88
	2.3	1.40	1.78	1.36	1.01	0.87
	2.6	1.56	1.98	1.48	1.10	0.86
33.7	1.8	1.87	2.38	1.70	1.27	0.85
	2.0	2.00	1.56	2.51	1.49	1.12
	2.3	1.78	2.27	2.81	1.67	1.11
	2.6	1.99	2.54	3.09	1.84	1.10
42.4	2.0	2.41	3.07	3.60	2.14	1.08
	2.3	2.41	3.07	4.19	2.49	1.06
	2.6	2.55	3.25	4.64	3.05	1.41
	3.2	3.09	3.94	7.62	3.59	1.39
48.3	2.3	2.61	3.32	8.80	3.64	1.63
	2.6	2.93	3.73	9.77	4.05	1.62
	2.9	3.25	4.14	10.70	4.43	1.61
	3.2	3.56	4.53	11.59	4.80	1.60
60.3	2.3	3.29	4.19	17.65	5.85	2.05
	2.6	3.70	4.71	19.64	6.51	2.04
	2.9	4.11	5.23	21.59	7.16	2.03
	3.2	4.51	5.74	23.47	7.78	2.02
76.1	2.3	4.56	5.03	25.87	8.58	2.01
	2.6	5.05	5.55	28.15	9.34	2.00
	3.2	5.50	6.19	30.90	10.29	1.98
	4.5	7.67	8.77	40.57	10.66	2.00
88.9	2.6	5.24	6.00	44.74	11.76	2.09
	2.9	5.75	6.67	48.78	12.89	2.58
	3.2	6.44	7.33	56.34	21.79	3.00
	3.6	7.11	8.20	54.01	14.29	2.57
101.6	4.5	7.95	10.10	65.12	17.10	2.54
	5.0	8.77	11.16	70.87	18.63	2.52
	5.6	11.16	14.65	127.64	28.72	2.95
	3.6	8.70	11.10	133.20	26.29	3.47
114.3	4.0	9.63	12.30	146.20	28.89	3.45
	5.0	11.90	15.20	177.50	34.90	3.42
	3.2	8.77	11.16	172.33	30.15	3.93
	3.6	9.83	12.50	192.00	33.60	3.92
139.7	4.5	12.20	15.50	234.30	41.00	3.89
	5.4	14.50	18.50	274.50	48.00	3.86
	6.3	16.80	21.20	315.00	55.10	3.83
	3.6	12.10	15.38	356.36	51.02	4.81
165.1	4.0	13.40	17.04	392.57	56.29	4.80
	4.5	15.00	19.10	437.20	62.60	4.78
	5.0	16.60	21.20	480.50	68.80	4.77
	5.4	17.90	22.80	514.50	73.70	4.75
193.7	4.5	17.80	22.70	732.60	88.70	5.68
	5.0	19.70	25.10	806.60	97.70	5.66
	5.4	21.20	27.10	864.70	105.00	5.65



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### PHYSICAL PROPERTIES

Tube Designation	T.S. (Min.) (MPa)	Y.S. (Min.) (MPa)	Elongation % (Min.)	
			Less than or equal to 33.7mm OD	More than OD 33.7 mm
WT 210	330	210	12	20
WT 240	410	240	10	15
WT 310	450	310	6	10

### MANUFACTURING TOLERANCES

S.No.	Over (mm)	Up to and Including (mm)	Tolerance on Outer Dia
1	-	25.4	±0.15
2	25.4	51.0	±0.18
3	51.0	63.5	±0.25
4	63.5	76.1	±0.25
5	76.1	88.9	±0.31
6	88.9	101.6	±0.36
7	101.6	114.3	±0.43
8	114.3	152.4	±0.58
9	152.4	168.3	±0.65
10	168.3	-	±0.75

Note:

1) Any OD & Thickness not covered in this table may be supplied as per customer requirement(Clause No. -10) of IS 3601:2006.

2) The Tolerance of thickness excluding the weld shall be ± 10%



# FRONT

## HOLLOW STEEL SECTIONS FOR STRUCTURAL USE SQUARE HOLLOW SECTION (SHS)

Conforming to IS-4923:2017

SHS mm	THICKNESS mm	UNIT WEIGHT Kg/Meter	Meter/Ton
15 X 15	1.80	0.68	1471
	2.00	0.74	1351
	2.30	0.81	1235
19 X 19	2.00	0.99	1010
	2.60	1.20	833
	2.90	1.30	769
25 X 25	2.00	1.36	735
	2.60	1.69	592
	3.20	1.98	505
30 X 30	2.00	1.68	595
	2.30	1.89	529
	2.60	2.10	476
	3.20	2.49	402
32 X 32	2.60	2.26	442
	2.90	2.48	403
	3.20	2.69	372
38 X 38	2.00	2.18	459
	2.60	2.75	364
	2.90	3.03	330
	3.20	3.29	304
40 X 40	2.00	2.31	433
	2.60	2.92	342
	3.20	3.49	287
	3.50	3.76	266
50 X 50	2.60	3.73	268
	3.20	4.50	222
	3.50	4.86	206
60 X 60	2.60	4.55	220
	3.20	5.50	182
	4.00	6.71	149
	4.50	7.43	135
	3.20	6.71	149
72 X 72	4.00	8.22	122
	5.00	10.01	100

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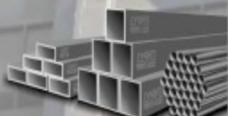
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SHS mm	THICKNESS mm	UNIT WEIGHT Kg/Meter	Meter/Ton
80 X 80	2.90	6.85	146
	3.20	7.51	133
	4.00	9.22	108
	4.50	10.26	97
91.5 X 91.5	3.60	9.67	103
	4.50	11.88	84
	4.80	12.60	79
100 X 100	4.00	11.73	85
	5.00	14.41	69
	6.00	16.98	59
113.5 X 113.5	4.50	14.99	67
	4.80	15.92	63
	5.40	17.74	56
	6.00	19.53	51
125 X 125	4.50	16.62	60
	5.00	18.33	55
	6.00	21.69	46
132 X 132	4.50	17.61	57
	4.80	18.71	53
	5.40	20.88	48
	6.00	23.01	43
150 X 150	4.00	18.01	56
	5.00	22.26	45
	6.00	26.40	38

Note :- The sizes & thickness other than those given in table may be supplied by mutual agreement b/w supplier and purchaser.

## TENSILE PROPERTIES

Grade	Y.S. (MPa) (Min.)	T.S. (MPa) (Min.)	Elongation (%)	
			For Size <25.4mm	For Size >25.4mm
YSt 210	210	330	12	20
YSt 240	240	410	10	15
YSt 310	310	450	8	10
YSt 355	355	490	8	10



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