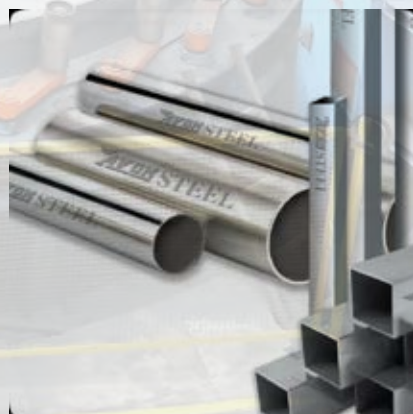




**AVON STEEL**

THE SYMBOL OF  
**TRUST**



GI PIPES | ERW STEEL TUBES | HOT ROLLED COILS | CYCLE & HEAVY DUTY RIMS



THE SYMBOL OF  
TRUST

# OVERVIEW

Welcome to Avon Steel Industries Pvt. Ltd., a trusted and leading name in the steel industry, built on a strong legacy of over seven decades of excellence. As a proud member of the Avon Group of Industries, which started its journey with Avon Cycles Limited in 1952, we have expanded our expertise and capabilities to become one of India's most reliable manufacturers of high-quality steel products.

At Avon Steel, we offer a comprehensive range of steel solutions, including Hot Rolled Coils, ERW Pipes, Galvanized Pipes, and Hollow Section Pipes, catering to the needs of various industries such as construction, automotive, infrastructure, engineering, and manufacturing. Our products are trusted for their durability, precision, and compliance with the highest industry standards.

With an annual turnover of ₹1000 crores (120 Million USD), we have built a strong presence in the domestic market and are actively expanding our footprint in global markets, delivering excellence across borders.

Our state-of-the-art manufacturing facility in Ludhiana, Punjab, is equipped with cutting-edge technology to ensure superior production quality. We strictly adhere to national and international standards, including IS, BS, EN, ASTM, AS, and SL, ensuring that our steel products meet the highest levels of performance, safety, and reliability.

At Avon Steel, quality, sustainability, and innovation are at the core of our operations. Our ISO & CE certifications stand as a testament to our unwavering commitment to delivering world-class products while upholding environmentally responsible practices.



**75+**  
Years

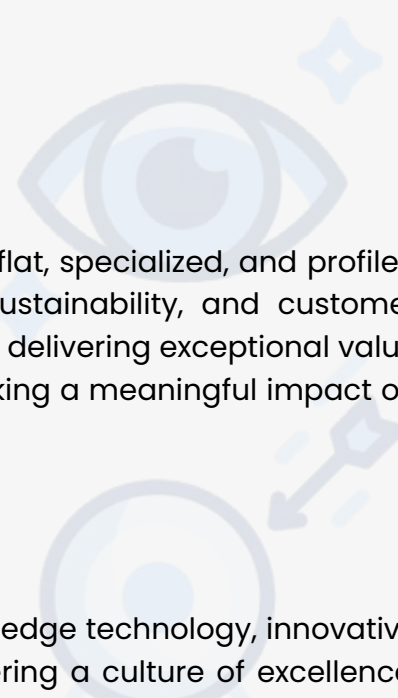


**9,75,080.25**  
Square Feet



**1,000+**  
Employees

# Vision, Mission & Values



## Our Vision

At Avon Steel, we aspire to be a global leader in value-added flat, specialized, and profiled steel products. With a strong commitment to innovation, sustainability, and customer satisfaction, we aim to expand our international presence while delivering exceptional value to our stakeholders. Beyond business, we are dedicated to making a meaningful impact on society through responsible and ethical practices.

## Our Mission

To turn our vision into reality, we continuously invest in cutting-edge technology, innovative solutions, and the optimization of our human capital. By fostering a culture of excellence, efficiency, and sustainability, we strive to enhance productivity and ensure long-term growth. Our unwavering commitment to environmental stewardship and corporate responsibility remains at the heart of our operations, shaping a better future for all.

## Our Core Values

### 1. Responsibility

We prioritize environmental protection, energy conservation, and workplace safety. Our commitment extends beyond business, ensuring the well-being of all stakeholders.

### 2. Innovation

We embrace cutting-edge technology, process improvements, and product advancements. Our forward-thinking approach drives growth and delivers value to our customers.

### 3. Integrity

We embrace cutting-edge technology, process improvements, and product advancements. Our forward-thinking approach drives growth and delivers value to our customers.

### 4. Continuous Learning

We evolve through knowledge, experience, and innovation. By fostering a culture of growth, we empower individuals and teams to achieve excellence.

### 5. Trust

Trust forms the foundation of our relationships. We operate with integrity and reliability, building lasting partnerships for mutual success.

# Avon Steels Advantage

Strength • Quality • Sustainability • Community

1.

## Manufacturing Excellence

Bringing Steel to Life

2.

## Quality Control

Uncompromised Precision

3.

## Sustainability

Leading the Green Revolution

4.

## CSR

Empowering Communities



## Breadth of Capabilities

Avon Steel offers a comprehensive range of steel solutions, catering to diverse industries with precision engineering, advanced manufacturing, and innovative product offerings.



## Quality

Committed to excellence, we ensure top-tier quality through rigorous testing, industry-leading standards, and continuous improvement in our processes and products.



## Experience

With years of expertise in the steel industry, Avon Steel has built a strong reputation for reliability, technical proficiency, and customer-centric solutions.



[www.avonsteel.com](http://www.avonsteel.com)

# Manufacturing Excellence

At Avon Steel Industries Pvt. Ltd., manufacturing excellence is at the core of our operations. Our state-of-the-art production facility in Ludhiana, Punjab, integrates advanced technology with stringent process controls to ensure superior quality and efficiency.

## Key Features of Our Manufacturing Excellence:

1.

### Advanced Production Lines

Our state-of-the-art high-speed automation and precision machinery allow us to optimize production while maintaining consistent quality. With cutting-edge technology.

2.

### Quality Assurance Systems

We prioritize quality at every stage of production, implementing real-time monitoring and defect detection systems to ensure excellence.

3.

### Highly Skilled Workforce

Our team of seasoned professionals and technical experts ensures that every steel product meets the highest industry standards. With years of experience in metallurgy and engineering.

4.

### Integrated Supply Chain

A seamless production process requires an efficient and well-managed supply chain. At Avon Steel, we maintain a fully integrated system that optimizes material procurement and logistics.

## Innovative Technologies & Processes

- **High-precision tube mills and rolling mills** for consistent and durable steel products.
- **Automated galvanization plants** to enhance corrosion resistance.
- **Energy-efficient production systems** to reduce environmental impact.
- **Custom fabrication capabilities** tailored to industry-specific needs.



# Quality Control

At Avon Steel Industries Pvt. Ltd., quality is at the core of everything we do. We are an ISO 9001-certified company, dedicated to delivering high-quality steel products that meet industry standards and customer expectations. Our quality management system is continuously improved through advanced technology, rigorous testing, and strict compliance with national and international standards.

## Quality Policy

We are committed to:

- Enhancing customer satisfaction
- Supplying high-quality products
- Ensuring timely delivery
- Introducing new and upgraded technology
- Complying with regulatory and statutory requirements
- Continual improvement in our quality management system

## Quality Assurance Protocols

1.

### Raw Material Inspection:

Ensuring high-grade steel inputs for consistent product quality.

2.

### In-Process Quality Checks:

Real-time monitoring during manufacturing.

3.

### Finished Goods Testing:

Mechanical, chemical, and structural analysis before dispatch.

4.

### ISO & CE Certifications:

Compliance with global quality and safety norms.

# Testimony to our Capacity

"Certificate of Recognition" from Govt. of India

## Management System Certifications:

1. ISO 9001:2015
2. ISO 14001:2015
3. ISO 45001:2018
4. ISO 50001:2018

## Product and Marking Certificate:

1. EN 10219-1:2006
2. EN 10255:2004
3. EN-39



THE SYMBOL OF  
TRUST

## Conforming to the highest standards

Delivering high quality

### Equivalent Standards of Tubes & Pipes with Applications

| S.No. | Standard End Use              | Indian   | British/European             | American               | Japanese   | German                | Australian |
|-------|-------------------------------|----------|------------------------------|------------------------|------------|-----------------------|------------|
| 1     | Water, Gas, Steam             | IS-1239  | BS-1387 EN-10255             | ASTM A-53              | –          | DIN-2439, 2440 & 2441 | AS 1074    |
| 2     | Water, Sewage                 | IS-3589  | BS-5534                      | –                      | –          | –                     | –          |
| 3     | Structural, Scaffolding       | IS-1161  | BS-1139, 6323 EN-39 EN-10219 | ASTM A-500             | JIS G 3444 | –                     | AS 1163    |
| 4     | Water Wells, Casing           | IS-4270  | BS-879                       | –                      | –          | –                     | –          |
| 5     | Sectional Tubes (Sq. & Rect.) | IS-4923  | --                           | ASTM A-500             | JIS G 3466 | DIN-2395              | AS 1163    |
| 6     | Sectional Tubes (Sq. & Rect.) | IS-18573 | --                           | ASTM A-500             | JIS G 3466 | DIN-2395              | AS 1163    |
| 7     | Mechanical Application        | IS-3601  | BS-6323                      | –                      | JIS G 3445 | DIN-2393              |            |
| 8     | Boiler & APH Tubes            | –        | BS: 3059, 6323               | ASTM A 423 Gr 1 & Gr 2 | –          | –                     | –          |

# ERW Steel Tubes & GI Pipes

**Erw Steel Tubes** For Ordinary Uses In Water, Gas And Air Lines Conforming To Is 1239 (Part-1): 2004 Correspondence To Bs 1387/ 1985

| N.B.& SERIES |   | OUTSIDE DIAMETER |         | WALL THICKNESS |     | NORMAL WEIGHT BLACK TUBES |         |                    |        | NORMAL WEIGHT |        |                    |        | SOCKETS  |            |
|--------------|---|------------------|---------|----------------|-----|---------------------------|---------|--------------------|--------|---------------|--------|--------------------|--------|----------|------------|
|              |   |                  |         |                |     | PLAIN END                 |         | SCREWED & SOCKETED |        | PLAIN END     |        | SCREWED & SOCKETED |        | MIN. OD. | MIN LENGTH |
| MM           |   | MINIMUM          | MAXIMUM | MM             | SWG | KG/M                      | M/ TONE | KG/M               | M/TONE | KG/M          | M/TONE | KG/M               | M/TONE | MM       | SOCKETS    |
| 15           | L | 21.0             | 21.4    | 2.00           | 14  | 0.947                     | 1056    | 0.956              | 1046   | 0.947         | 1056   | 0.956              | 1046   | 27.0     | 37.0       |
|              | M | 21.0             | 21.8    | 2.60           | 12  | 1.21                      | 826     | 1.22               | 819    | 1.21          | 826    | 1.22               | 819    |          |            |
|              | H | 21.0             | 21.8    | 3.20           | 10  | 1.44                      | 694     | 1.45               | 689    | 1.44          | 694    | 1.45               | 689    |          |            |
| 20           | L | 26.4             | 26.9    | 2.30           | 13  | 1.38                      | 724     | 1.39               | 719    | 1.38          | 724    | 1.39               | 719    | 32.5     | 39.0       |
|              | M | 26.5             | 27.3    | 2.60           | 12  | 1.56                      | 641     | 1.57               | 637    | 1.56          | 641    | 1.57               | 637    |          |            |
|              | H | 26.5             | 27.3    | 3.20           | 10  | 1.87                      | 534     | 1.88               | 532    | 1.87          | 534    | 1.88               | 532    |          |            |
| 25           | L | 33.2             | 33.8    | 2.60           | 12  | 1.98                      | 505     | 2.00               | 500    | 1.98          | 505    | 2.00               | 500    | 39.5     | 46.0       |
|              | M | 33.3             | 34.2    | 3.20           | 10  | 2.41                      | 415     | 2.43               | 411    | 2.41          | 415    | 2.43               | 411    |          |            |
|              | H | 33.3             | 34.2    | 4.00           | 8   | 2.93                      | 341     | 2.95               | 339    | 2.93          | 341    | 2.95               | 339    |          |            |
| 32           | L | 41.9             | 42.5    | 2.60           | 12  | 2.54                      | 393     | 2.57               | 389    | 2.54          | 393    | 2.57               | 389    | 49.0     | 51.0       |
|              | M | 42.0             | 42.9    | 3.20           | 10  | 3.10                      | 322     | 3.13               | 319    | 3.10          | 322    | 3.13               | 319    |          |            |
|              | H | 42.0             | 42.9    | 4.00           | 8   | 3.79                      | 264     | 3.82               | 261    | 3.79          | 264    | 3.82               | 261    |          |            |
| 40           | L | 47.8             | 48.4    | 2.90           | 11  | 3.23                      | 309     | 3.27               | 306    | 3.23          | 309    | 3.27               | 306    | 56.0     | 51.0       |
|              | M | 47.9             | 48.8    | 3.20           | 10  | 3.56                      | 281     | 3.60               | 277    | 3.56          | 281    | 3.60               | 277    |          |            |
|              | H | 47.9             | 48.8    | 4.00           | 8   | 4.37                      | 229     | 4.41               | 226    | 4.37          | 229    | 4.41               | 226    |          |            |
| 50           | L | 59.6             | 60.2    | 2.90           | 11  | 4.08                      | 245     | 4.15               | 241    | 4.08          | 245    | 4.15               | 241    | 68.0     | 60.0       |
|              | M | 59.7             | 60.8    | 3.60           | 9   | 5.03                      | 199     | 5.10               | 196    | 5.03          | 199    | 5.10               | 196    |          |            |
|              | H | 59.7             | 60.8    | 4.50           | 7   | 6.19                      | 161     | 6.26               | 159    | 6.19          | 161    | 6.26               | 159    |          |            |
| 65           | L | 75.2             | 76.0    | 3.20           | 10  | 5.71                      | 175     | 5.83               | 171    | 5.71          | 175    | 5.83               | 171    | 84.0     | 69.0       |
|              | M | 75.3             | 76.6    | 3.60           | 9   | 6.42                      | 155     | 6.54               | 153    | 6.42          | 155    | 6.54               | 153    |          |            |
|              | H | 75.3             | 76.6    | 4.50           | 7   | 7.93                      | 126     | 8.05               | 124    | 7.93          | 126    | 8.05               | 124    |          |            |
| 80           | L | 87.9             | 88.7    | 3.20           | 10  | 6.72                      | 149     | 6.89               | 145    | 6.72          | 149    | 6.89               | 145    | 98.0     | 75.0       |
|              | M | 88.0             | 89.5    | 4.00           | 8   | 8.36                      | 119     | 8.53               | 117    | 8.36          | 119    | 8.53               | 117    |          |            |
|              | H | 88.0             | 89.5    | 4.80           | 6   | 9.90                      | 101     | 10.10              | 99     | 9.90          | 101    | 10.10              | 99     |          |            |
| 100          | L | 113.0            | 113.9   | 3.60           | 9   | 9.75                      | 102     | 10.00              | 100    | 9.75          | 102    | 10.00              | 100    | 124.0    | 87.0       |
|              | M | 113.1            | 115.0   | 4.50           | 7   | 12.20                     | 82      | 12.50              | 80     | 12.20         | 82     | 12.50              | 80     |          |            |
|              | H | 113.1            | 115.0   | 5.40           | 5   | 14.50                     | 69      | 14.80              | 67     | 14.50         | 69     | 14.80              | 67     |          |            |
| 125          | M | 138.5            | 140.8   | 4.80           | 6   | 15.90                     | 63      | 16.40              | 61     | 15.90         | 63     | 16.40              | 61     | 151.0    | 96.0       |
|              | H | 138.5            | 140.8   | 5.40           | 5   | 17.90                     | 56      | 18.40              | 54     | 17.90         | 56     | 18.40              | 54     |          |            |
| 150          | M | 163.9            | 166.5   | 4.80           | 6   | 18.90                     | 53      | 19.50              | 51     | 18.90         | 53     | 19.50              | 51     | 178.0    | 96.0       |
|              | H | 163.9            | 166.5   | 5.40           | 5   | 21.30                     | 47      | 21.90              | 45     | 21.30         | 47     | 21.90              | 45     |          |            |

TOLERANCE

|              |                                           |               |                         |               |     |                                                                    |       |                                                                                |       |  |  |
|--------------|-------------------------------------------|---------------|-------------------------|---------------|-----|--------------------------------------------------------------------|-------|--------------------------------------------------------------------------------|-------|--|--|
| A. Thickness | Light Tubes                               | + not limited | Medium &<br>Heavy tubes | + not limited |     |                                                                    |       |                                                                                |       |  |  |
|              |                                           | -8%           |                         | -10%          |     | For quantities<br>per load of 10<br>Tonnes mini.<br>(Light Series) | +7.5% | For quantities<br>per load of 10<br>Tonnes mini.<br>(Medium &<br>Heavy Series) | +7.5% |  |  |
| B. Weight    | Single Tube                               | +10%          | Single Tube             | +10%          | -5% |                                                                    | -7.5% |                                                                                |       |  |  |
|              | (Light Series)                            | -8%           | (Medium & Heavy Series) | -10%          |     |                                                                    |       |                                                                                |       |  |  |
| C. Length    | Unless otherwise specified 4 to 7 meters. |               |                         |               |     |                                                                    |       |                                                                                |       |  |  |



**ERW STEEL TUBES FOR MECHANICAL & GENERAL ENGINEERING PURPOSE IS 3601:2006**

DIMENSIONS AND DESIGN PROPERTIES OF STEEL TUBES GRADE WT 210, WT 240 &amp; WT 310

| OUTSIDE<br>DIAMETE | Thick<br>mm2 | Mass kg/m<br>3 | Area of cross<br>section m 4 | Moment of inertia<br>cm 5 | MODAL OF<br>SECTION CM 6 | REDIUS OF<br>GYRATION CM |
|--------------------|--------------|----------------|------------------------------|---------------------------|--------------------------|--------------------------|
| 21.3               | 1.8          | 0.866          | 1.1                          | 0.53                      | 0.5                      | 0.69                     |
|                    | 2            | 0.952          | 1.21                         | 0.57                      | 0.54                     | 0.69                     |
|                    | 2.6          | 1.2            | 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            | 1.23           | 1.56                         | 1.22                      | 0.91                     | 0.88                     |
|                    | 2.3          | 1.4            | 1.78                         | 1.36                      | 1.01                     | 0.87                     |
|                    | 2.6          | 1.56           | 1.98                         | 1.48                      | 1.1                      | 0.86                     |
|                    | 3.2          | 1.87           | 2.38                         | 1.7                       | 1.27                     | 0.85                     |
| 33.7               | 2            | 1.56           | 1.99                         | 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                     | 1.1                      |
|                    | 3.2          | 2.41           | 3.07                         | 3.6                       | 2.14                     | 1.08                     |
|                    | 4            | 2.93           | 3.73                         | 4.19                      | 2.49                     | 1.06                     |
| 42.4               | 2.3          | 2.27           | 2.9                          | 5.85                      | 2.76                     | 1.42                     |
|                    | 2.6          | 2.55           | 3.25                         | 6.46                      | 3.05                     | 1.41                     |
|                    | 3.2          | 3.09           | 3.94                         | 7.62                      | 3.59                     | 1.39                     |
|                    | 3.6          | 3.44           | 4.39                         | 8.33                      | 3.93                     | 1.38                     |
|                    | 4            | 3.79           | 4.83                         | 8.9                       | 4.24                     | 1.36                     |
| 48.3               | 2.3          | 2.61           | 3.32                         | 8.8                       | 3.64                     | 1.63                     |
|                    | 2.6          | 2.93           | 3.73                         | 9.77                      | 4.05                     | 1.62                     |
|                    | 2.9          | 3.25           | 4.14                         | 10.7                      | 4.43                     | 1.61                     |
|                    | 3.2          | 3.56           | 4.53                         | 11.59                     | 4.8                      | 1.6                      |
|                    | 3.6          | 3.97           | 5.05                         | 12.69                     | 5.25                     | 1.59                     |
|                    | 4            | 4.37           | 5.57                         | 13.77                     | 5.7                      | 1.57                     |
| 60.3               | 2.3          | 3.29           | 4.19                         | 17.65                     | 5.85                     | 2.05                     |
|                    | 2.6          | 3.7            | 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                     |
|                    | 3.6          | 5.03           | 6.41                         | 25.87                     | 8.58                     | 2.01                     |
|                    | 4            | 5.55           | 7.07                         | 28.15                     | 9.34                     | 2                        |
|                    | 4.5          | 6.19           | 7.89                         | 30.9                      | 10.2                     | 1.98                     |
| 76.1               | 2.6          | 5.24           | 6                            | 40.57                     | 10.66                    | 2.6                      |
|                    | 2.9          | 5.75           | 6.67                         | 44.74                     | 11.76                    | 2.59                     |
|                    | 3.2          | 6.44           | 7.33                         | 48.78                     | 12.8                     | 2.58                     |
|                    | 3.6          | 7.11           | 8.2                          | 54.01                     | 14.2                     | 2.57                     |
|                    | 4.5          | 7.95           | 10.1                         | 65.12                     | 17.1                     | 2.54                     |
|                    | 5            | 8.77           | 11.16                        | 70.87                     | 18.63                    | 2.52                     |
| 88.9               | 2.9          | 6.15           | 7.83                         | 72.47                     | 16.3                     | 3.04                     |
|                    | 3.2          | 6.76           | 8.62                         | 79.21                     | 17.8                     | 3.03                     |
|                    | 4            | 8.38           | 10.7                         | 96.34                     | 21.7                     | 3                        |
|                    | 5            | 10.3           | 13.2                         | 116.4                     | 26.2                     | 2.97                     |
|                    | 5.4          | 11.1           | 14                           | 123.8                     | 27.8                     | 2.97                     |
|                    | 5.6          | 11.5           | 14.65                        | 127.64                    | 28.72                    | 2.95                     |
| 101.6              | 3.6          | 8.7            | 11.1                         | 133.2                     | 26.2                     | 3.47                     |
|                    | 4            | 9.63           | 12.3                         | 146.2                     | 28.8                     | 3.45                     |
|                    | 5            | 11.9           | 15.2                         | 177.5                     | 34.9                     | 3.42                     |

| OUTSIDE<br>DIAMETE | Thick<br>mm2 | Mass kg/m<br>3 | Area of cross<br>section m 4 | Moment of inertia<br>cm 5 | MODAL OF<br>SECTION CM 6 | REDIUS OF<br>GYRATION CM |
|--------------------|--------------|----------------|------------------------------|---------------------------|--------------------------|--------------------------|
| 114.3              | 3.2          | 8.77           | 11.16                        | 172.33                    | 30.15                    | 3.93                     |
|                    | 3.6          | 9.83           | 12.5                         | 192                       | 33.6                     | 3.92                     |
|                    | 4.5          | 12.2           | 15.5                         | 234.3                     | 41                       | 3.89                     |
|                    | 5.4          | 14.5           | 18.5                         | 274.5                     | 48                       | 3.86                     |
|                    | 6.3          | 16.8           | 21.2                         | 315                       | 55.1                     | 3.83                     |
| 139.7              | 3.6          | 12.1           | 15.38                        | 356.36                    | 51.02                    | 4.81                     |
|                    | 4            | 13.4           | 17.04                        | 392.57                    | 56.2                     | 4.8                      |
|                    | 4.5          | 15             | 19.1                         | 437.2                     | 62.6                     | 4.78                     |
|                    | 5            | 16.6           | 21.2                         | 480.5                     | 68.8                     | 4.77                     |
|                    | 5.4          | 17.9           | 22.8                         | 514.5                     | 73.7                     | 4.75                     |
|                    | 6.3          | 20.7           | 26.3                         | 591                       | 84.7                     | 4.73                     |
| 152.4              | 4.5          | 16.4           | 20.9                         | 572.2                     | 75.1                     | 5.23                     |
|                    | 5            | 18.2           | 23.2                         | 629.5                     | 82.6                     | 5.21                     |
|                    | 5.4          | 19.6           | 24.9                         | 674.5                     | 88.5                     | 5.2                      |
| 165.1              | 4.5          | 17.8           | 22.7                         | 732.6                     | 88.7                     | 5.68                     |
|                    | 5            | 19.7           | 25.1                         | 806.6                     | 97.7                     | 5.66                     |
|                    | 5.4          | 21.2           | 27.1                         | 864.7                     | 105                      | 5.65                     |
|                    | 6.3          | 24.8           | 31.4                         | 992                       | 120                      | 5.63                     |
| 168.3              | 4            | 16.2           | 20.64                        | 696.87                    | 82.81                    | 5.81                     |
|                    | 4.5          | 18.2           | 23.2                         | 777.2                     | 98.4                     | 5.79                     |
|                    | 5            | 20.1           | 25.7                         | 855.8                     | 102                      | 5.78                     |
|                    | 5.4          | 21.7           | 27.6                         | 917.7                     | 109                      | 5.76                     |
|                    | 6.3          | 25.2           | 32.1                         | 1053                      | 125                      | 5.73                     |
|                    | 7.1          | 28.2           | 35.94                        | 1169.66                   | 139                      | 5.7                      |
| 193.7              | 5            | 23.3           | 29.6                         | 1320                      | 136                      | 6.67                     |
|                    | 5.4          | 25.1           | 31.9                         | 1417                      | 146                      | 6.66                     |
|                    | 5.9          | 27.3           | 34.8                         | 1536                      | 159                      | 6.64                     |
|                    | 6.3          | 29.1           | 37                           | 1600                      | 165                      | 6.6                      |
|                    | 8            | 36.6           | 46.3                         | 2004                      | 207                      | 6.57                     |
| 219.1              | 4.5          | 23.8           | 30.32                        | 1746.18                   | 159.4                    | 7.59                     |
|                    | 5            | 26.4           | 33.6                         | 1928                      | 176                      | 7.57                     |
|                    | 5.6          | 29.5           | 37.6                         | 2142                      | 195                      | 7.56                     |
|                    | 6.3          | 33.1           | 42                           | 2404                      | 219                      | 7.54                     |
|                    | 8            | 41.6           | 52                           | 1940                      | 268                      | 7.52                     |

## A. PHYSICAL PROPERTIES

| Grade  | Y.S.      | T.S       | % age Elongation (Min.)                           |                                                   |
|--------|-----------|-----------|---------------------------------------------------|---------------------------------------------------|
|        | Mpa (min) | Mpa (min) | As welded (less<br>then Or equal<br>to 33.7 mm OD | As welded (more<br>then Or equal to<br>33.7 mm OD |
| WT 160 | 160       | 310       | 15                                                | 22                                                |
| WT 210 | 210       | 330       | 12                                                | 20                                                |
| WT 240 | 240       | 410       | 10                                                | 15                                                |
| WT 310 | 310       | 450       | 6                                                 | 10                                                |

## B. MANUFACTURING TOLERANCE

| Over mm                                                               | Up to & including mm | Tolerance on<br>outside |
|-----------------------------------------------------------------------|----------------------|-------------------------|
| -                                                                     | 25.4                 | ±0.15                   |
| 25.4                                                                  | 51                   | ±0.18                   |
| 51                                                                    | 63.5                 | ±0.25                   |
| 63.5                                                                  | 76.1                 | ±0.25                   |
| 76.1                                                                  | 88.9                 | ±0.31                   |
| 88.9                                                                  | 101.6                | ±0.36                   |
| 101.6                                                                 | 114.3                | ±0.43                   |
| 114.3                                                                 | 152.4                | ±0.58                   |
| 152.4                                                                 | 168.3                | ±0.65                   |
| 168.3                                                                 | -                    | ±0.75                   |
| NOTE: The tolerance of thickness excluding the weld<br>shall be ± 10% |                      |                         |

# **DIMENSIONS AND DEPTH PROPERTIES OF SQUARE HOLLOW SECTIONS IS 4923:2017**

GRADE YST 210, YST 240, YST 310

| SHS       | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA            | MOMENT OF       | RADIUS OF | ELASTIC         | PLASTIC         |
|-----------|-------|-------|-----------|--------|-----------------|-----------------|-----------|-----------------|-----------------|
| DXD       | D     | D     |           |        | OF SECTION      | INERTIA         | GYRATION  | MODULUS         | MODULUS         |
| MM        | MM    | MM    | MM        | KG/M   | CM <sup>2</sup> | CM <sup>4</sup> | CM        | CM <sup>3</sup> | CM <sup>3</sup> |
| 1         | 2     | 3     | 4         | 5      | 6               | 7               | 8         | 9               | 10              |
| 20.0x20.0 | 20.0  | 20.0  | 2.0       | 1.15   | 1.33            | 0.58            | 0.68      | 0.61            | 0.61            |
|           | 20.0  | 20.0  | 2.6       | 1.46   | 2.17            | 0.63            | 0.66      | 0.66            | 0.66            |
| 25.0x25.0 | 25.0  | 25.0  | 2.6       | 1.69   | 2.16            | 1.72            | 0.89      | 1.38            | 1.76            |
|           | 25.0  | 25.0  | 3.2       | 1.98   | 2.53            | 1.89            | 0.86      | 1.51            | 1.98            |
| 30.0X30.0 | 30.0  | 30.0  | 2.0       | 1.68   | 2.14            | 2.72            | 1.13      | 1.81            | 2.21            |
|           | 30.0  | 30.0  | 2.5       | 2.03   | 2.59            | 3.16            | 1.1       | 2.1             | 2.61            |
|           | 30.0  | 30.0  | 2.6       | 2.1    | 2.68            | 3.23            | 1.1       | 2.15            | 2.68            |
|           | 30.0  | 30.0  | 3.0       | 2.36   | 3.01            | 3.5             | 1.08      | 2.34            | 2.96            |
|           | 30.0  | 30.0  | 3.2       | 2.49   | 3.17            | 3.62            | 1.07      | 2.41            | 3.08            |
| 32.0x32.0 | 32.0  | 32.0  | 2.6       | 2.26   | 2.88            | 4.02            | 1.18      | 2.51            | 3.11            |
|           | 32.0  | 32.0  | 3.2       | 2.69   | 3.42            | 4.54            | 1.15      | 2.84            | 3.59            |
|           | 32.0  | 32.0  | 4.0       | 3.19   | 4.07            | 5.02            | 1.11      | 3.14            | 4.11            |
| 35.0x35.0 | 35.0  | 35.0  | 2.0       | 1.99   | 2.54            | 4.51            | 1.33      | 2.58            | 3.09            |
|           | 35.0  | 35.0  | 2.6       | 2.51   | 3.2             | 5.43            | 1.3       | 3.1             | 3.81            |
|           | 35.0  | 35.0  | 3.2       | 2.99   | 3.81            | 6.18            | 1.27      | 3.53            | 4.42            |
|           | 35.0  | 35.0  | 4.0       | 3.57   | 4.55            | 6.93            | 1.23      | 3.96            | 5.11            |
| 38.0x38.0 | 38.0  | 38.0  | 2.0       | 2.18   | 2.78            | 5.88            | 1.46      | 3.1             | 3.7             |
|           | 38.0  | 38.0  | 2.6       | 2.75   | 3.51            | 7.14            | 1.43      | 3.76            | 4.57            |
|           | 38.0  | 38.0  | 3.2       | 3.29   | 4.19            | 8.18            | 1.4       | 4.3             | 5.34            |
|           | 38.0  | 38.0  | 4.0       | 3.95   | 5.03            | 9.26            | 1.36      | 4.87            | 6.22            |
| 40.0x40.0 | 40.0  | 40.0  | 2.6       | 2.92   | 3.72            | 8.45            | 1.51      | 4.22            | 5.12            |
|           | 40.0  | 40.0  | 3.2       | 3.49   | 4.45            | 9.72            | 1.48      | 4.86            | 6.01            |
|           | 40.0  | 40.0  | 3.6       | 3.85   | 4.91            | 10.45           | 1.46      | 5.22            | 6.53            |
|           | 40.0  | 40.0  | 4.0       | 4.2    | 5.35            | 11.07           | 1.44      | 5.54            | 7.01            |
| 45.0x45.0 | 45.0  | 45.0  | 2.0       | 2.62   | 3.34            | 10.12           | 1.74      | 4.5             | 5.32            |
|           | 45.0  | 45.0  | 2.6       | 3.33   | 4.24            | 12.42           | 1.71      | 5.52            | 6.64            |
|           | 45.0  | 45.0  | 2.9       | 3.66   | 4.67            | 13.45           | 1.7       | 5.98            | 7.25            |
|           | 45.0  | 45.0  | 3.0       | 3.77   | 4.81            | 13.78           | 1.69      | 6.12            | 7.44            |
|           | 45.0  | 45.0  | 3.2       | 3.99   | 5.09            | 14.41           | 1.68      | 6.4             | 7.82            |
|           | 45.0  | 45.0  | 4.0       | 4.83   | 6.15            | 16.61           | 1.64      | 7.38            | 9.22            |
| 49.5x49.5 | 49.5  | 49.5  | 2.0       | 2.9    | 3.7             | 13.7            | 1.93      | 5.54            | 6.52            |
|           | 49.5  | 49.5  | 2.6       | 3.69   | 4.7             | 16.91           | 1.9       | 6.83            | 8.16            |
|           | 49.5  | 49.5  | 3.0       | 4.2    | 5.35            | 18.84           | 1.88      | 7.61            | 9.18            |
|           | 49.5  | 49.5  | 3.2       | 4.45   | 5.66            | 19.74           | 1.87      | 7.98            | 9.67            |
|           | 49.5  | 49.5  | 4.0       | 5.39   | 6.87            | 22.95           | 1.83      | 9.27            | 11.46           |
|           | 49.5  | 49.5  | 5.0       | 6.48   | 8.26            | 26.11           | 1.78      | 10.55           | 13.38           |
| 50.0x50.0 | 50.0  | 50.0  | 2.0       | 2.93   | 3.74            | 14.15           | 1.95      | 5.66            | 6.66            |
|           | 50.0  | 50.0  | 2.9       | 4.07   | 5.19            | 18.37           | 1.88      | 7.42            | 8.93            |
|           | 50.0  | 50.0  | 3.6       | 4.93   | 6.28            | 21.42           | 1.85      | 8.66            | 10.6            |
|           | 50.0  | 50.0  | 4.5       | 5.95   | 7.58            | 24.64           | 1.8       | 9.96            | 12.47           |
| 60.0x60.0 | 60.0  | 60.0  | 2.0       | 3.56   | 4.54            | 25.14           | 2.35      | 8.38            | 9.79            |
|           | 60.0  | 60.0  | 2.5       | 4.39   | 5.59            | 30.34           | 2.33      | 10.11           | 11.93           |
|           | 60.0  | 60.0  | 3.0       | 5.19   | 6.61            | 35.13           | 2.31      | 11.71           | 13.95           |
|           | 60.0  | 60.0  | 4.0       | 6.71   | 8.55            | 43.55           | 2.26      | 14.52           | 17.64           |
|           | 60.0  | 60.0  | 5.0       | 8.13   | 10.36           | 50.49           | 2.21      | 16.83           | 20.88           |
|           | 60.0  | 60.0  | 6.0       | 9.45   | 12.03           | 56.07           | 2.16      | 18.69           | 23.67           |
|           | 60.0  | 60.0  | 6.3       | 9.82   | 12.51           | 57.48           | 2.14      | 19.16           | 24.43           |
| 63.5x63.5 | 63.5  | 63.5  | 2.5       | 4.66   | 5.94            | 36.32           | 2.47      | 11.44           | 13.46           |
|           | 63.5  | 63.5  | 3.2       | 5.85   | 7.46            | 44.35           | 2.44      | 13.97           | 16.65           |
|           | 63.5  | 63.5  | 3.6       | 6.51   | 8.29            | 48.55           | 2.42      | 15.29           | 18.36           |
|           | 63.5  | 63.5  | 4.5       | 7.93   | 10.1            | 57              | 2.38      | 17.95           | 21.93           |

| SHS         | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF | RADIUS OF | ELASTIC | PLASTIC |
|-------------|-------|-------|-----------|--------|------------|-----------|-----------|---------|---------|
| DXD         | D     | D     |           |        | OF SECTION | INERTIA   | GYRATION  | MODULUS | MODULUS |
| MM          | MM    | MM    | MM        | KG/M   | CM2        | CM4       | CM        | CM3     | CM3     |
| 70.0x70.0   | 70.0  | 70.0  | 2.5       | 5.17   | 6.59       | 49.41     | 2.74      | 14.12   | 16.54   |
|             | 70.0  | 70.0  | 3.0       | 6.13   | 7.81       | 57.53     | 2.71      | 16.44   | 19.41   |
|             | 70.0  | 70.0  | 4.0       | 7.97   | 10.15      | 72.12     | 2.67      | 20.61   | 24.75   |
|             | 70.0  | 70.0  | 5.0       | 9.7    | 12.36      | 84.63     | 2.62      | 24.18   | 29.55   |
|             | 70.0  | 70.0  | 6.0       | 11.33  | 14.43      | 95.17     | 2.57      | 27.19   | 33.83   |
|             | 70.0  | 70.0  | 6.3       | 11.8   | 15.03      | 97.97     | 2.55      | 27.99   | 35.01   |
| 72.0x72.0   | 72.0  | 72.0  | 2.5       | 5.33   | 6.79       | 53.99     | 2.82      | 15      | 17.55   |
|             | 72.0  | 72.0  | 3.0       | 6.32   | 8.05       | 62.92     | 2.8       | 17.48   | 20.62   |
|             | 72.0  | 72.0  | 3.2       | 6.71   | 8.54       | 66.32     | 2.79      | 18.42   | 21.8    |
|             | 72.0  | 72.0  | 4.0       | 8.22   | 10.47      | 79.03     | 2.75      | 21.95   | 26.32   |
|             | 72.0  | 72.0  | 4.8       | 9.66   | 12.31      | 90.31     | 2.71      | 25.09   | 30.48   |
|             | 72.0  | 72.0  | 5.0       | 10.01  | 12.76      | 92.91     | 2.7       | 25.81   | 31.47   |
| 75.0x75.0   | 75.0  | 75.0  | 3.0       | 6.6    | 8.41       | 71.62     | 2.92      | 19.1    | 22.48   |
|             | 75.0  | 75.0  | 3.2       | 7.01   | 8.93       | 75.53     | 2.91      | 20.14   | 23.79   |
|             | 75.0  | 75.0  | 3.6       | 7.81   | 9.95       | 83.06     | 2.89      | 22.15   | 26.32   |
|             | 75.0  | 75.0  | 4.5       | 9.55   | 12.17      | 98.55     | 2.85      | 26.28   | 31.68   |
| 80.0x80.0   | 80.0  | 80.0  | 3.0       | 7.07   | 9.01       | 87.84     | 3.12      | 21.96   | 25.78   |
|             | 80.0  | 80.0  | 4.0       | 9.22   | 11.75      | 111.04    | 3.07      | 27.76   | 33.07   |
|             | 80.0  | 80.0  | 5.0       | 11.27  | 14.36      | 131.44    | 3.03      | 32.86   | 39.73   |
|             | 80.0  | 80.0  | 6.0       | 13.21  | 16.83      | 149.18    | 2.98      | 37.29   | 45.78   |
|             | 80.0  | 80.0  | 6.3       | 13.78  | 17.55      | 154       | 2.96      | 38.5    | 47.48   |
|             | 80.0  | 80.0  | 8.0       | 16.79  | 21.39      | 177.19    | 2.88      | 44.3    | 56.11   |
| 88.9x88.9   | 88.9  | 88.9  | 3.0       | 7.91   | 10.08      | 122.46    | 3.49      | 27.55   | 32.2    |
|             | 88.9  | 88.9  | 3.2       | 8.4    | 10.71      | 129.4     | 3.48      | 29.11   | 34.11   |
|             | 88.9  | 88.9  | 3.6       | 9.38   | 11.95      | 142.83    | 3.46      | 32.13   | 37.85   |
|             | 88.9  | 88.9  | 4.5       | 11.52  | 14.67      | 170.97    | 3.41      | 38.46   | 45.85   |
| 90.0x90.0   | 90.0  | 90.0  | 3.0       | 8.01   | 10.21      | 127.28    | 3.53      | 28.29   | 33.04   |
|             | 90.0  | 90.0  | 4.0       | 10.48  | 13.35      | 161.92    | 3.48      | 35.98   | 42.58   |
|             | 90.0  | 90.0  | 5.0       | 12.84  | 16.36      | 192.93    | 3.43      | 42.87   | 51.41   |
|             | 90.0  | 90.0  | 6.0       | 15.1   | 19.23      | 220.48    | 3.39      | 48.99   | 59.54   |
|             | 90.0  | 90.0  | 6.3       | 15.76  | 20.07      | 228.09    | 3.37      | 50.69   | 61.84   |
|             | 90.0  | 90.0  | 8.0       | 19.31  | 24.59      | 265.78    | 3.29      | 59.06   | 73.77   |
| 91.5x91.5   | 91.5  | 91.5  | 3.0       | 8.16   | 10.39      | 134.06    | 3.59      | 29.3    | 34.21   |
|             | 91.5  | 91.5  | 3.6       | 9.67   | 12.32      | 156.49    | 3.56      | 34.21   | 40.24   |
|             | 91.5  | 91.5  | 4.0       | 10.67  | 13.59      | 170.68    | 3.54      | 37.31   | 44.11   |
|             | 91.5  | 91.5  | 4.5       | 11.88  | 15.14      | 187.57    | 3.52      | 41      | 48.79   |
|             | 91.5  | 91.5  | 4.8       | 12.6   | 16.05      | 197.27    | 3.51      | 43.12   | 51.51   |
| 100.0x100.0 | 100.0 | 100.0 | 3.0       | 8.96   | 11.41      | 177.05    | 3.94      | 35.41   | 41.21   |
|             | 100.0 | 100.0 | 4.0       | 11.73  | 14.95      | 226.35    | 3.89      | 45.27   | 53.3    |
|             | 100.0 | 100.0 | 5.0       | 14.41  | 18.36      | 271.1     | 3.84      | 54.22   | 64.59   |
|             | 100.0 | 100.0 | 6.0       | 16.98  | 21.63      | 311.47    | 3.79      | 62.29   | 75.09   |
|             | 100.0 | 100.0 | 6.3       | 17.73  | 22.59      | 322.76    | 3.78      | 64.55   | 78.1    |
|             | 100.0 | 100.0 | 8.0       | 21.82  | 27.79      | 379.77    | 3.7       | 75.95   | 93.82   |
|             | 100.0 | 100.0 | 10.0      | 26.24  | 33.43      | 432.6     | 3.6       | 86.52   | 109.59  |
|             | 100.0 | 100.0 | 12.0      | 30.25  | 38.54      | 471.27    | 3.5       | 94.25   | 122.53  |
|             | 100.0 | 100.0 | 12.5      | 31.19  | 39.73      | 478.87    | 3.47      | 95.77   | 125.34  |
| 113.5x113.5 | 113.5 | 113.5 | 3.0       | 10.23  | 13.03      | 262.73    | 4.49      | 46.3    | 53.66   |
|             | 113.5 | 113.5 | 4.0       | 13.43  | 17.11      | 337.67    | 4.44      | 59.5    | 69.66   |
|             | 113.5 | 113.5 | 4.5       | 14.99  | 19.1       | 372.88    | 4.42      | 65.71   | 77.32   |
|             | 113.5 | 113.5 | 4.8       | 15.92  | 20.28      | 393.3     | 4.4       | 69.3    | 81.81   |
|             | 113.5 | 113.5 | 5.0       | 16.53  | 21.06      | 406.63    | 4.39      | 71.65   | 84.76   |
|             | 113.5 | 113.5 | 5.4       | 17.74  | 22.6       | 432.58    | 4.38      | 76.23   | 90.54   |
| 120.0x120.0 | 120.0 | 120.0 | 3.0       | 10.84  | 13.81      | 312.35    | 4.76      | 52.06   | 60.23   |
|             | 120.0 | 120.0 | 4.0       | 14.25  | 18.15      | 402.28    | 4.71      | 67.05   | 78.32   |
|             | 120.0 | 120.0 | 5.0       | 17.55  | 22.36      | 485.47    | 4.66      | 80.91   | 95.44   |
|             | 120.0 | 120.0 | 6.0       | 20.75  | 26.43      | 562.16    | 4.61      | 93.69   | 111.61  |
|             | 120.0 | 120.0 | 6.3       | 21.69  | 27.63      | 583.92    | 4.6       | 97.32   | 116.27  |
|             | 120.0 | 120.0 | 8.0       | 26.84  | 34.19      | 696.82    | 4.51      | 116.14  | 141.13  |
|             | 120.0 | 120.0 | 10.0      | 32.52  | 41.43      | 807.91    | 4.42      | 134.65  | 167.01  |
|             | 120.0 | 120.0 | 12.0      | 37.79  | 48.14      | 897.05    | 4.32      | 149.51  | 189.38  |
|             | 120.0 | 120.0 | 12.5      | 39.04  | 49.73      | 916.09    | 4.29      | 152.68  | 194.43  |

| SHS         | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA            | MOMENT OF       | RADIUS OF | ELASTIC         | PLASTIC         |
|-------------|-------|-------|-----------|--------|-----------------|-----------------|-----------|-----------------|-----------------|
| DXD         | D     | D     |           |        | OF<br>SECTION   | INERTIA         | GYRATION  | MODULUS         | MODULUS         |
| MM          | MM    | MM    | MM        | KG/M   | CM <sup>2</sup> | CM <sup>4</sup> | CM        | CM <sup>3</sup> | CM <sup>3</sup> |
| 125.0x125.0 | 125.0 | 125.0 | 3.0       | 11.31  | 14.41           | 354.5           | 4.96      | 56.72           | 65.55           |
|             | 125.0 | 125.0 | 4.5       | 16.62  | 21.17           | 505.83          | 4.89      | 80.93           | 94.84           |
|             | 125.0 | 125.0 | 5.0       | 18.34  | 23.36           | 552.62          | 4.86      | 88.42           | 104.09          |
|             | 125.0 | 125.0 | 6.0       | 21.69  | 27.63           | 640.89          | 4.82      | 102.54          | 121.86          |
| 132.0x132.0 | 132.0 | 132.0 | 4.0       | 15.75  | 20.07           | 542.25          | 5.2       | 82.16           | 95.64           |
|             | 132.0 | 132.0 | 4.5       | 17.61  | 22.43           | 600.45          | 5.17      | 90.98           | 106.37          |
|             | 132.0 | 132.0 | 4.8       | 18.71  | 23.83           | 634.39          | 5.16      | 96.12           | 112.68          |
|             | 132.0 | 132.0 | 5.0       | 19.43  | 24.76           | 656.62          | 5.15      | 99.49           | 116.83          |
|             | 132.0 | 132.0 | 5.4       | 20.88  | 26.6            | 700.11          | 5.13      | 106.08          | 125.01          |
|             | 132.0 | 132.0 | 6.0       | 23.01  | 29.31           | 762.98          | 5.1       | 115.6           | 136.97          |
| 140.0x140.0 | 140.0 | 140.0 | 4.0       | 16.76  | 21.35           | 651.6           | 5.52      | 93.09           | 108.15          |
|             | 140.0 | 140.0 | 5.0       | 20.69  | 26.36           | 790.6           | 5.48      | 112.94          | 132.3           |
|             | 140.0 | 140.0 | 6.0       | 24.52  | 31.23           | 920.4           | 5.43      | 131.49          | 155.32          |
|             | 140.0 | 140.0 | 6.3       | 25.65  | 32.67           | 957.7           | 5.41      | 136.81          | 162.01          |
|             | 140.0 | 140.0 | 8.0       | 31.87  | 40.59           | 1153.9          | 5.33      | 164.85          | 198.04          |
|             | 140.0 | 140.0 | 10.0      | 38.8   | 49.43           | 1354.1          | 5.23      | 193.44          | 236.43          |
|             | 140.0 | 140.0 | 12.0      | 45.32  | 57.74           | 1522.8          | 5.14      | 217.54          | 270.62          |
|             | 140.0 | 140.0 | 12.5      | 46.89  | 59.73           | 1560.2          | 5.11      | 222.89          | 278.53          |
|             | 140.0 | 140.0 | 16.0      | 57.13  | 72.78           | 1773.3          | 4.94      | 253.32          | 326.86          |
| 150.0x150.0 | 150.0 | 150.0 | 4.0       | 18.01  | 22.95           | 807.82          | 5.93      | 107.71          | 124.86          |
|             | 150.0 | 150.0 | 5.0       | 22.26  | 28.36           | 982.12          | 5.89      | 130.95          | 152.97          |
|             | 150.0 | 150.0 | 6.0       | 26.4   | 33.63           | 1146            | 5.84      | 152.79          | 179.87          |
|             | 150.0 | 150.0 | 6.3       | 27.63  | 35.19           | 1193            | 5.82      | 159.07          | 187.71          |
|             | 150.0 | 150.0 | 7.0       | 30.44  | 38.78           | 1299            | 5.79      | 173.26          | 205.57          |
|             | 150.0 | 150.0 | 8.0       | 34.38  | 43.79           | 1443            | 5.74      | 192.4           | 230.09          |
|             | 150.0 | 150.0 | 10.0      | 41.94  | 53.43           | 1701            | 5.64      | 226.83          | 275.64          |
| 160.0x160.0 | 160.0 | 160.0 | 4.0       | 19.27  | 24.55           | 987             | 6.34      | 123.4           | 142.78          |
|             | 160.0 | 160.0 | 5.0       | 23.83  | 30.36           | 1202            | 6.29      | 150.29          | 175.15          |
|             | 160.0 | 160.0 | 6.0       | 28.29  | 36.03           | 1405            | 6.25      | 175.69          | 206.23          |
|             | 160.0 | 160.0 | 6.3       | 29.6   | 37.71           | 1464            | 6.23      | 183.01          | 215.3           |
|             | 160.0 | 160.0 | 8.0       | 36.89  | 46.99           | 1777            | 6.15      | 222.09          | 264.55          |
|             | 160.0 | 160.0 | 10.0      | 45.08  | 57.43           | 2103            | 6.05      | 262.88          | 317.85          |
| 180.0x180.0 | 180.0 | 180.0 | 4.0       | 21.78  | 27.75           | 1422            | 7.16      | 157.97          | 182.2           |
|             | 180.0 | 180.0 | 5.0       | 26.97  | 34.36           | 1737            | 7.11      | 192.99          | 224.01          |
|             | 180.0 | 180.0 | 6.0       | 32.05  | 40.83           | 2037            | 7.06      | 226.28          | 264.34          |
|             | 180.0 | 180.0 | 6.3       | 33.56  | 42.75           | 2123            | 7.05      | 235.94          | 276.15          |
|             | 180.0 | 180.0 | 8.0       | 41.91  | 53.39           | 2591            | 6.97      | 287.86          | 340.66          |
|             | 180.0 | 180.0 | 10.0      | 51.36  | 65.43           | 3087            | 6.87      | 342.99          | 411.27          |
| 200.0x200.0 | 200.0 | 200.0 | 4.0       | 24.29  | 30.95           | 1968            | 7.97      | 196.81          | 226.43          |
|             | 200.0 | 200.0 | 5.0       | 30.11  | 38.36           | 2410            | 7.93      | 241.01          | 278.86          |
|             | 200.0 | 200.0 | 6.0       | 35.82  | 45.63           | 2833            | 7.88      | 283.27          | 329.65          |
|             | 200.0 | 200.0 | 6.3       | 37.52  | 47.79           | 2956            | 7.86      | 295.58          | 344.57          |
|             | 200.0 | 200.0 | 8.0       | 46.94  | 59.79           | 3622            | 7.78      | 362.16          | 426.36          |
|             | 200.0 | 200.0 | 10.0      | 57.64  | 73.43           | 4338            | 7.69      | 433.76          | 516.69          |

Apart from above mentioned size, We also manufacture customized and need based requirement.

## STEEL HOLLOW SECTIONS FOR STRUCTURAL USE (RHS)

DIMENSIONS AND DEPTH PROPERTIES OF RECTANGULAR HOLLOW SECTIONS IS  
4923:2017 GRADE YST 210,YST 240,YST 310 CORRESPONDENSE TO EN-10219/ASTM A500

| HS    | DEPTH | WIDTH |           |        | AREA       | MOMENT OF INERTIA |       | RADIUS OF |      | ELASTIC MODULUS |       | PLASTIC MODULUS |       |
|-------|-------|-------|-----------|--------|------------|-------------------|-------|-----------|------|-----------------|-------|-----------------|-------|
| DXB   | D     | D     | THICKNESS | WEIGHT | OF SECTION | ABOUT             |       | ABOUT     |      | ABOUT           |       | ABOUT           |       |
|       |       |       |           |        |            | X-X               | Y-Y   | X-X       | Y-Y  | X-X             | Y-Y   | X-X             | Y-Y   |
| 40x20 | 40.0  | 20.0  | 2.0       | 1.68   | 2.14       | 4.05              | 1.34  | 1.38      | 0.79 | 2.02            | 1.34  | 2.61            | 1.6   |
|       | 40.0  | 20.0  | 2.5       | 2.03   | 2.59       | 4.69              | 1.54  | 1.35      | 0.77 | 2.35            | 1.54  | 3.09            | 1.88  |
|       | 40.0  | 20.0  | 3.0       | 2.36   | 3.01       | 5.21              | 1.68  | 1.32      | 0.75 | 2.6             | 1.68  | 3.5             | 2.12  |
| 50x25 | 50.0  | 25.0  | 2.0       | 2.15   | 2.74       | 8.38              | 2.81  | 1.75      | 1.01 | 3.35            | 2.25  | 4.26            | 2.62  |
|       | 50.0  | 25.0  | 2.5       | 2.62   | 3.34       | 9.89              | 3.28  | 1.72      | 0.99 | 3.95            | 2.62  | 5.1             | 3.12  |
|       | 50.0  | 25.0  | 2.9       | 2.98   | 3.8        | 10.93             | 3.6   | 1.7       | 0.97 | 4.37            | 2.88  | 5.72            | 3.48  |
|       | 50.0  | 25.0  | 3.2       | 3.24   | 4.13       | 11.63             | 3.8   | 1.68      | 0.96 | 4.65            | 3.04  | 6.14            | 3.73  |
|       | 50.0  | 25.0  | 4.0       | 3.88   | 4.95       | 13.13             | 4.23  | 1.63      | 0.92 | 5.25            | 3.38  | 7.13            | 4.29  |
| 50x30 | 50.0  | 30.0  | 2.0       | 2.31   | 2.94       | 9.54              | 4.29  | 1.8       | 1.21 | 3.81            | 2.86  | 4.74            | 3.33  |
|       | 50.0  | 30.0  | 2.5       | 2.82   | 3.59       | 11.3              | 5.05  | 1.77      | 1.19 | 4.52            | 3.37  | 5.7             | 3.98  |
|       | 50.0  | 30.0  | 3.0       | 3.3    | 4.21       | 12.83             | 5.7   | 1.75      | 1.16 | 5.13            | 3.8   | 6.57            | 4.58  |
|       | 50.0  | 30.0  | 4.0       | 4.2    | 5.35       | 15.25             | 6.69  | 1.69      | 1.12 | 6.1             | 4.46  | 8.05            | 5.58  |
| 66x33 | 66.0  | 33.0  | 2.0       | 2.9    | 3.7        | 20.37             | 6.9   | 2.35      | 1.37 | 6.17            | 4.18  | 7.73            | 4.77  |
|       | 66.0  | 33.0  | 2.6       | 3.69   | 4.7        | 25.15             | 8.43  | 2.31      | 1.34 | 7.62            | 5.11  | 9.68            | 5.94  |
|       | 66.0  | 33.0  | 2.9       | 4.07   | 5.19       | 27.33             | 9.12  | 2.29      | 1.33 | 8.28            | 5.53  | 10.59           | 6.49  |
|       | 66.0  | 33.0  | 3.6       | 4.93   | 6.28       | 31.87             | 10.52 | 2.25      | 1.29 | 9.66            | 6.37  | 12.56           | 7.65  |
|       | 66.0  | 33.0  | 4.0       | 5.39   | 6.87       | 34.13             | 11.2  | 2.23      | 1.28 | 10.34           | 6.79  | 13.58           | 8.26  |
|       | 66.0  | 33.0  | 4.5       | 5.95   | 7.58       | 36.64             | 11.93 | 2.2       | 1.25 | 11.1            | 7.23  | 14.76           | 8.94  |
| 60x40 | 60.0  | 40.0  | 2.0       | 2.93   | 3.74       | 18.41             | 9.83  | 2.22      | 1.62 | 6.14            | 4.92  | 7.47            | 5.65  |
|       | 60.0  | 40.0  | 2.5       | 3.6    | 4.59       | 22.07             | 11.74 | 2.19      | 1.6  | 7.36            | 5.87  | 9.06            | 6.84  |
|       | 60.0  | 40.0  | 2.9       | 4.12   | 5.25       | 24.74             | 13.11 | 2.17      | 1.58 | 8.25            | 6.56  | 10.24           | 7.73  |
|       | 60.0  | 40.0  | 3.0       | 4.25   | 5.41       | 25.38             | 13.44 | 2.17      | 1.58 | 8.46            | 6.72  | 10.53           | 7.94  |
|       | 60.0  | 40.0  | 4.0       | 5.45   | 6.95       | 30.99             | 16.28 | 2.11      | 1.53 | 10.33           | 8.14  | 13.16           | 9.89  |
|       | 60.0  | 40.0  | 5.0       | 6.56   | 8.36       | 35.33             | 18.43 | 2.06      | 1.48 | 11.78           | 9.21  | 15.38           | 11.52 |
| 70x30 | 70.0  | 30.0  | 2.0       | 2.93   | 3.74       | 22.22             | 5.86  | 2.44      | 1.25 | 6.35            | 3.91  | 8.08            | 4.45  |
|       | 70.0  | 30.0  | 2.5       | 3.6    | 4.59       | 26.62             | 6.95  | 2.41      | 1.23 | 7.61            | 4.63  | 9.79            | 5.36  |
|       | 70.0  | 30.0  | 2.9       | 4.12   | 5.25       | 29.82             | 7.72  | 2.38      | 1.21 | 8.52            | 5.14  | 11.07           | 6.04  |
|       | 70.0  | 30.0  | 3.2       | 4.5    | 5.73       | 32.04             | 8.24  | 2.37      | 1.2  | 9.15            | 5.49  | 11.98           | 6.51  |
|       | 70.0  | 30.0  | 4.0       | 5.45   | 6.95       | 37.23             | 9.42  | 2.31      | 1.16 | 10.64           | 6.28  | 14.19           | 7.66  |
| 70x50 | 70.0  | 50.0  | 2.0       | 3.56   | 4.54       | 31.48             | 18.76 | 2.63      | 2.03 | 8.99            | 7.5   | 10.8            | 8.58  |
|       | 70.0  | 50.0  | 2.5       | 4.39   | 5.59       | 38.01             | 22.59 | 2.61      | 2.01 | 10.86           | 9.04  | 13.16           | 10.45 |
|       | 70.0  | 50.0  | 3.2       | 5.5    | 7.01       | 46.33             | 27.42 | 2.57      | 1.98 | 13.24           | 10.97 | 16.25           | 12.88 |
|       | 70.0  | 50.0  | 4.0       | 6.71   | 8.55       | 54.67             | 32.22 | 2.53      | 1.94 | 15.62           | 12.89 | 19.47           | 15.41 |
|       | 70.0  | 50.0  | 5.0       | 8.13   | 10.36      | 63.46             | 37.2  | 2.48      | 1.9  | 18.13           | 14.88 | 23.05           | 18.2  |
| 80x40 | 80.0  | 40.0  | 2.0       | 3.56   | 4.54       | 37.36             | 12.72 | 2.87      | 1.67 | 9.34            | 6.36  | 11.61           | 7.17  |
|       | 80.0  | 40.0  | 2.5       | 4.39   | 5.59       | 45.11             | 15.26 | 2.84      | 1.65 | 11.28           | 7.63  | 14.14           | 8.72  |
|       | 80.0  | 40.0  | 2.9       | 5.03   | 6.41       | 50.87             | 17.11 | 2.82      | 1.63 | 12.72           | 8.56  | 16.07           | 9.88  |
|       | 80.0  | 40.0  | 3.0       | 5.19   | 6.61       | 52.25             | 17.56 | 2.81      | 1.63 | 13.06           | 8.78  | 16.54           | 10.16 |
|       | 80.0  | 40.0  | 3.2       | 5.5    | 7.01       | 54.94             | 18.41 | 2.8       | 1.62 | 13.74           | 9.21  | 17.46           | 10.71 |
|       | 80.0  | 40.0  | 4.0       | 6.71   | 8.55       | 64.79             | 21.49 | 2.75      | 1.59 | 16.2            | 10.74 | 20.91           | 12.77 |
|       | 80.0  | 40.0  | 5.0       | 8.13   | 10.36      | 75.11             | 24.59 | 2.69      | 1.54 | 18.78           | 12.3  | 24.73           | 15.02 |
| 80x50 | 80.0  | 50.0  | 2.0       | 3.88   | 4.94       | 43.44             | 21.06 | 2.97      | 2.07 | 10.86           | 8.43  | 13.17           | 9.54  |
|       | 80.0  | 50.0  | 2.5       | 4.78   | 6.09       | 52.62             | 25.41 | 2.94      | 2.04 | 13.15           | 10.17 | 16.08           | 11.64 |
|       | 80.0  | 50.0  | 3.0       | 5.66   | 7.21       | 61.15             | 29.42 | 2.91      | 2.02 | 15.29           | 11.77 | 18.85           | 13.62 |
|       | 80.0  | 50.0  | 4.0       | 7.34   | 9.35       | 76.36             | 36.46 | 2.86      | 1.97 | 19.09           | 14.59 | 23.95           | 17.25 |
|       | 80.0  | 50.0  | 4.5       | 8.14   | 10.37      | 83.06             | 39.52 | 2.83      | 1.95 | 20.77           | 15.81 | 26.28           | 18.9  |
|       | 80.0  | 50.0  | 5.0       | 8.92   | 11.36      | 89.19             | 42.29 | 2.8       | 1.93 | 22.3            | 16.92 | 28.48           | 20.45 |
| 80x60 | 80.0  | 60.0  | 2.0       | 4.19   | 5.34       | 49.53             | 31.87 | 3.05      | 2.44 | 12.38           | 10.62 | 14.73           | 12.11 |
|       | 80.0  | 60.0  | 2.5       | 5.17   | 6.59       | 60.13             | 38.61 | 3.02      | 2.42 | 15.03           | 12.87 | 18.02           | 14.81 |
|       | 80.0  | 60.0  | 3.0       | 6.13   | 7.81       | 70.05             | 44.89 | 3         | 2.4  | 17.51           | 14.96 | 21.16           | 17.37 |
|       | 80.0  | 60.0  | 4.0       | 7.97   | 10.15      | 87.92             | 56.12 | 2.94      | 2.35 | 21.98           | 18.71 | 26.99           | 22.12 |
|       | 80.0  | 60.0  | 5.0       | 9.7    | 12.36      | 103.28            | 65.66 | 2.89      | 2.31 | 25.82           | 21.89 | 32.23           | 26.38 |
| 90x50 | 90.0  | 50.0  | 2.0       | 4.19   | 5.34       | 57.88             | 23.37 | 3.29      | 2.09 | 12.86           | 9.35  | 15.74           | 10.5  |
|       | 90.0  | 50.0  | 2.5       | 5.17   | 6.59       | 70.26             | 28.24 | 3.27      | 2.07 | 15.61           | 11.29 | 19.25           | 12.82 |
|       | 90.0  | 50.0  | 3.0       | 6.13   | 7.81       | 81.85             | 32.74 | 3.24      | 2.05 | 18.19           | 13.1  | 22.6            | 15.03 |
|       | 90.0  | 50.0  | 4.0       | 7.97   | 10.15      | 102.71            | 40.71 | 3.18      | 2    | 22.82           | 16.28 | 28.82           | 19.09 |
|       | 90.0  | 50.0  | 5.0       | 9.7    | 12.36      | 120.6             | 47.37 | 3.12      | 1.96 | 26.8            | 18.95 | 34.41           | 22.7  |
| 96x48 | 96.0  | 48.0  | 2.0       | 4.32   | 5.5        | 66.04             | 22.59 | 3.47      | 2.03 | 13.76           | 9.41  | 17              | 10.52 |
|       | 96.0  | 48.0  | 2.5       | 5.33   | 6.79       | 80.23             | 27.29 | 3.44      | 2    | 16.71           | 11.37 | 20.8            | 12.85 |
|       | 96.0  | 48.0  | 3.2       | 6.71   | 8.54       | 98.61             | 33.28 | 3.4       | 1.97 | 20.54           | 13.87 | 25.85           | 15.91 |
|       | 96.0  | 48.0  | 4.0       | 8.22   | 10.47      | 117.54            | 39.32 | 3.35      | 1.94 | 24.49           | 16.38 | 31.2            | 19.14 |
|       | 96.0  | 48.0  | 4.8       | 9.66   | 12.31      | 134.35            | 44.55 | 3.3       | 1.9  | 27.99           | 18.56 | 36.13           | 22.07 |

| HS      | DEPTH | WIDTH |           |        | AREA       | MOMENT OF INERTIA |        | RADIUS OF |      | ELASTIC MODULUS |        | PLASTIC MODULUS |        |
|---------|-------|-------|-----------|--------|------------|-------------------|--------|-----------|------|-----------------|--------|-----------------|--------|
| DXB     | D     | D     | THICKNESS | WEIGHT | OF SECTION | ABOUT             |        | ABOUT     |      | ABOUT           |        | ABOUT           |        |
|         |       |       |           |        |            | X-X               | Y-Y    | X-X       | Y-Y  | X-X             | Y-Y    | X-X             | Y-Y    |
| 100x40  | 100.0 | 40.0  | 2.5       | 5.17   | 6.59       | 79.32             | 18.78  | 3.47      | 1.69 | 15.86           | 9.39   | 20.23           | 10.59  |
|         | 100.0 | 40.0  | 3.0       | 6.13   | 7.81       | 92.34             | 21.67  | 3.44      | 1.67 | 18.47           | 10.84  | 23.75           | 12.38  |
|         | 100.0 | 40.0  | 4.0       | 7.97   | 10.15      | 115.7             | 26.69  | 3.38      | 1.62 | 23.14           | 13.35  | 30.26           | 15.65  |
|         | 100.0 | 40.0  | 5.0       | 9.7    | 12.36      | 135.6             | 30.76  | 3.31      | 1.58 | 27.12           | 15.38  | 36.09           | 18.52  |
|         | 100.0 | 50.0  | 2.5       | 5.57   | 7.09       | 91.2              | 31.06  | 3.59      | 2.09 | 18.24           | 12.42  | 22.67           | 14.01  |
|         | 100.0 | 50.0  | 3.2       | 7.01   | 8.93       | 112.29            | 37.95  | 3.55      | 2.06 | 22.46           | 15.18  | 28.2            | 17.37  |
|         | 100.0 | 50.0  | 4.0       | 8.59   | 10.95      | 134.14            | 44.95  | 3.5       | 2.03 | 26.83           | 17.98  | 34.1            | 20.93  |
| 100x60  | 100.0 | 60.0  | 2.5       | 5.96   | 7.59       | 103.09            | 46.88  | 3.69      | 2.49 | 20.62           | 15.63  | 25.11           | 17.68  |
|         | 100.0 | 60.0  | 3.0       | 7.07   | 9.01       | 120.57            | 54.65  | 3.66      | 2.46 | 24.11           | 18.22  | 29.57           | 20.79  |
|         | 100.0 | 60.0  | 4.0       | 9.22   | 11.75      | 152.58            | 68.68  | 3.6       | 2.42 | 30.52           | 22.89  | 37.94           | 26.6   |
|         | 100.0 | 60.0  | 5.0       | 11.27  | 14.36      | 180.77            | 80.83  | 3.55      | 2.37 | 36.15           | 26.94  | 45.59           | 31.88  |
|         | 100.0 | 60.0  | 6.0       | 13.21  | 16.83      | 205.3             | 91.2   | 3.49      | 2.33 | 41.06           | 30.4   | 52.53           | 36.63  |
|         | 100.0 | 60.0  | 6.3       | 13.78  | 17.55      | 211.97            | 93.99  | 3.48      | 2.31 | 42.39           | 31.33  | 54.48           | 37.96  |
| 100x80  | 100.0 | 80.0  | 2.5       | 6.74   | 8.59       | 126.86            | 90.17  | 3.84      | 3.24 | 25.37           | 22.54  | 29.98           | 25.77  |
|         | 100.0 | 80.0  | 3.0       | 8.01   | 10.21      | 148.81            | 105.64 | 3.82      | 3.22 | 29.76           | 26.41  | 35.39           | 30.4   |
|         | 100.0 | 80.0  | 4.0       | 10.48  | 13.35      | 189.47            | 134.17 | 3.77      | 3.17 | 37.89           | 33.54  | 45.62           | 39.15  |
|         | 100.0 | 80.0  | 5.0       | 12.84  | 16.36      | 225.94            | 159.61 | 3.72      | 3.12 | 45.19           | 39.9   | 55.09           | 47.23  |
|         | 100.0 | 80.0  | 6.0       | 15.1   | 19.23      | 258.39            | 182.1  | 3.67      | 3.08 | 51.68           | 45.53  | 63.81           | 54.66  |
|         | 100.0 | 80.0  | 6.3       | 15.76  | 20.07      | 267.36            | 188.3  | 3.65      | 3.06 | 53.47           | 47.08  | 66.29           | 56.77  |
| 120x60  | 120.0 | 60.0  | 2.5       | 6.74   | 8.59       | 161.23            | 55.15  | 4.33      | 2.53 | 26.87           | 18.38  | 33.2            | 20.56  |
|         | 120.0 | 60.0  | 3.0       | 8.01   | 10.21      | 189.12            | 64.4   | 4.3       | 2.51 | 31.52           | 21.47  | 39.17           | 24.21  |
|         | 120.0 | 60.0  | 4.0       | 10.48  | 13.35      | 240.74            | 81.25  | 4.25      | 2.47 | 40.12           | 27.08  | 50.48           | 31.08  |
|         | 120.0 | 60.0  | 5.0       | 12.48  | 16.36      | 286.97            | 95.99  | 4.19      | 2.42 | 47.83           | 32     | 60.94           | 37.38  |
|         | 120.0 | 60.0  | 6.0       | 15.1   | 19.23      | 328.01            | 108.77 | 4.13      | 2.38 | 54.67           | 36.26  | 70.57           | 43.11  |
| 120x80  | 120.0 | 80.0  | 6.3       | 17.73  | 22.59      | 420.87            | 222.6  | 4.32      | 3.14 | 70.14           | 55.65  | 87.62           | 66.05  |
|         | 120.0 | 80.0  | 8.0       | 21.82  | 27.79      | 495.77            | 260.48 | 4.22      | 3.06 | 82.63           | 65.12  | 105.29          | 79.15  |
| 122x61  | 122.0 | 61.0  | 2.5       | 6.86   | 8.74       | 169.74            | 58.09  | 4.41      | 2.58 | 27.83           | 19.05  | 34.36           | 21.28  |
|         | 122.0 | 61.0  | 3.0       | 8.16   | 10.39      | 199.18            | 67.86  | 4.38      | 2.56 | 32.65           | 22.25  | 40.56           | 25.07  |
|         | 122.0 | 61.0  | 3.6       | 9.67   | 12.32      | 232.61            | 78.83  | 4.34      | 2.53 | 38.13           | 25.84  | 47.71           | 29.42  |
|         | 122.0 | 61.0  | 4.0       | 10.67  | 13.59      | 253.76            | 85.69  | 4.32      | 2.51 | 41.6            | 28.1   | 52.3            | 32.21  |
|         | 122.0 | 61.0  | 4.5       | 11.88  | 15.14      | 278.94            | 93.78  | 4.29      | 2.49 | 45.73           | 30.75  | 57.84           | 35.55  |
|         | 122.0 | 61.0  | 5.0       | 13.08  | 16.66      | 302.75            | 101.35 | 4.26      | 2.47 | 49.63           | 33.23  | 63.17           | 38.76  |
|         | 122.0 | 61.0  | 5.4       | 14.01  | 17.85      | 320.83            | 107.03 | 4.24      | 2.45 | 52.6            | 35.09  | 67.28           | 41.22  |
| 127x50  | 127.0 | 50.0  | 3.0       | 6.62   | 8.44       | 166.16            | 38.68  | 4.44      | 2.14 | 26.17           | 15.47  | 33.15           | 17.22  |
|         | 127.0 | 50.0  | 3.6       | 7.87   | 10.03      | 194.74            | 45.02  | 4.41      | 2.12 | 30.67           | 18.01  | 39.1            | 20.24  |
|         | 127.0 | 50.0  | 4.6       | 11.69  | 14.89      | 276.33            | 62.46  | 4.31      | 2.05 | 43.52           | 24.98  | 56.65           | 29.03  |
| 140x80  | 140.0 | 80.0  | 4.0       | 12.99  | 16.55      | 429.6             | 180.42 | 5.1       | 3.3  | 61.37           | 45.1   | 75.51           | 51.31  |
|         | 140.0 | 80.0  | 5.0       | 15.98  | 20.36      | 517.06            | 215.94 | 5.04      | 3.26 | 73.87           | 53.99  | 91.8            | 62.23  |
|         | 140.0 | 80.0  | 6.0       | 18.87  | 24.03      | 597               | 247.96 | 4.98      | 3.21 | 85.29           | 61.99  | 107.08          | 72.42  |
|         | 140.0 | 80.0  | 6.3       | 19.71  | 25.11      | 619.55            | 256.91 | 4.97      | 3.2  | 88.51           | 64.23  | 111.47          | 75.34  |
|         | 140.0 | 80.0  | 8.0       | 24.33  | 30.99      | 735.24            | 302.12 | 4.87      | 3.12 | 105.03          | 75.53  | 134.68          | 90.67  |
| 145x82  | 145.0 | 82.0  | 4.0       | 13.43  | 17.11      | 476.35            | 196.94 | 5.28      | 3.39 | 65.7            | 48.03  | 80.82           | 54.53  |
|         | 145.0 | 82.0  | 4.8       | 15.92  | 20.28      | 555.16            | 228.5  | 5.23      | 3.36 | 76.57           | 55.73  | 94.93           | 63.93  |
|         | 145.0 | 82.0  | 5.0       | 16.53  | 21.06      | 574.05            | 236.02 | 5.22      | 3.35 | 79.18           | 57.56  | 98.35           | 66.2   |
|         | 145.0 | 82.0  | 5.4       | 17.74  | 22.6       | 610.85            | 250.59 | 5.2       | 3.33 | 84.26           | 61.12  | 105.06          | 70.66  |
| 150x100 | 150.0 | 100.0 | 4.0       | 13.62  | 17.35      | 509.32            | 191.98 | 5.42      | 3.33 | 67.91           | 48     | 83.98           | 54.35  |
|         | 150.0 | 100.0 | 5.0       | 16.77  | 21.36      | 614.04            | 230.03 | 5.36      | 3.28 | 81.87           | 57.51  | 102.22          | 65.98  |
|         | 150.0 | 100.0 | 6.0       | 19.81  | 25.23      | 710.2             | 264.42 | 5.31      | 3.24 | 94.69           | 66.11  | 119.39          | 76.86  |
|         | 150.0 | 100.0 | 6.3       | 20.7   | 26.37      | 737.41            | 274.06 | 5.29      | 3.22 | 98.32           | 68.51  | 124.34          | 79.98  |
|         | 150.0 | 100.0 | 8.0       | 25.59  | 32.59      | 877.81            | 322.94 | 5.19      | 3.15 | 117.04          | 80.74  | 150.57          | 96.43  |
|         | 150.0 | 100.0 | 10.0      | 30.95  | 39.43      | 1014.05           | 368.81 | 5.07      | 3.06 | 135.21          | 92.02  | 177.64          | 113.17 |
|         | 150.0 | 100.0 | 12.0      | 35.9   | 45.74      | 1120.74           | 403.26 | 4.95      | 2.97 | 149.43          | 100.82 | 200.72          | 127.21 |
|         | 150.0 | 100.0 | 12.5      | 37.08  | 47.23      | 1143.01           | 410.23 | 4.92      | 2.95 | 152.4           | 102.56 | 205.89          | 130.31 |
| 160x80  | 160.0 | 80.0  | 4.0       | 14.25  | 18.15      | 597.71            | 203.54 | 5.74      | 3.35 | 74.71           | 50.89  | 92.86           | 57.39  |
|         | 160.0 | 80.0  | 5.0       | 17.55  | 22.36      | 721.69            | 244.11 | 5.68      | 3.3  | 90.21           | 61.03  | 113.15          | 69.73  |
|         | 160.0 | 80.0  | 6.0       | 20.75  | 26.43      | 836.01            | 280.89 | 5.62      | 3.26 | 104.5           | 70.22  | 132.31          | 81.3   |
|         | 160.0 | 80.0  | 6.3       | 21.69  | 27.63      | 868.46            | 291.21 | 5.61      | 3.25 | 108.56          | 72.8   | 137.84          | 84.63  |
|         | 160.0 | 80.0  | 8.0       | 26.84  | 34.19      | 1036.68           | 343.77 | 5.51      | 3.17 | 129.59          | 85.94  | 167.27          | 102.19 |
|         | 160.0 | 80.0  | 10.0      | 32.52  | 41.43      | 1201.74           | 393.48 | 5.39      | 3.08 | 150.22          | 98.37  | 197.85          | 120.17 |
|         | 160.0 | 80.0  | 12.5      | 39.04  | 49.73      | 1360.95           | 439.03 | 5.23      | 2.97 | 170.12          | 109.76 | 230.12          | 138.74 |
| 172x92  | 172.0 | 92.0  | 4.0       | 15.75  | 20.07      | 783.54            | 297.66 | 6.25      | 3.85 | 91.11           | 64.71  | 112.1           | 72.79  |
|         | 172.0 | 92.0  | 4.8       | 18.71  | 23.83      | 917.13            | 346.91 | 6.2       | 3.82 | 106.64          | 75.41  | 132.07          | 85.61  |
|         | 172.0 | 92.0  | 5.0       | 19.43  | 24.76      | 949.37            | 358.72 | 6.19      | 3.81 | 110.39          | 77.98  | 136.94          | 88.72  |
|         | 172.0 | 92.0  | 5.4       | 20.88  | 26.6       | 1012.47           | 381.74 | 6.17      | 3.79 | 117.73          | 82.99  | 146.54          | 94.85  |

| HS      | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF INERTIA |        | RADIUS OF |      | ELASTIC MODULUS |        | PLASTIC MODULUS |        |
|---------|-------|-------|-----------|--------|------------|-------------------|--------|-----------|------|-----------------|--------|-----------------|--------|
| DXB     | D     | D     |           |        | OF SECTION | ABOUT             |        | ABOUT     |      | ABOUT           |        | ABOUT           |        |
|         |       |       |           |        |            | X-X               | Y-Y    | X-X       | Y-Y  | X-X             | Y-Y    | X-X             | Y-Y    |
| 180x100 | 180.0 | 100.0 | 4.0       | 16.76  | 21.35      | 926.04            | 373.89 | 6.59      | 4.18 | 102.89          | 74.78  | 125.88          | 84.02  |
|         | 180.0 | 100.0 | 5.0       | 20.69  | 26.36      | 1124.2            | 451.77 | 6.53      | 4.14 | 124.91          | 90.35  | 154.01          | 102.59 |
|         | 180.0 | 100.0 | 6.0       | 31.23  | 31.23      | 1309.61           | 523.83 | 6.48      | 4.1  | 145.51          | 104.77 | 180.82          | 120.21 |
|         | 180.0 | 100.0 | 6.3       | 32.67  | 32.67      | 1362.79           | 543.34 | 6.46      | 4.08 | 151.42          | 108.87 | 188.61          | 125.32 |
|         | 180.0 | 100.0 | 8.0       | 40.59  | 40.59      | 1643.36           | 651.3  | 6.36      | 4.01 | 182.6           | 130.26 | 230.58          | 152.7  |
|         | 180.0 | 100.0 | 10.0      | 49.43  | 49.43      | 1929.6            | 757.94 | 6.25      | 3.92 | 214.4           | 151.59 | 275.27          | 181.59 |
| 200x100 | 200.0 | 100.0 | 4.0       | 18.01  | 22.95      | 1200              | 411    | 7.23      | 4.23 | 119.97          | 82.16  | 148.03          | 91.7   |
|         | 200.0 | 100.0 | 5.0       | 22.26  | 28.36      | 1459              | 497    | 7.17      | 4.19 | 145.93          | 99.39  | 181.36          | 112.09 |
|         | 200.0 | 100.0 | 6.0       | 26.4   | 33.63      | 1703              | 577    | 7.12      | 4.14 | 170.33          | 115.38 | 213.25          | 131.49 |
|         | 200.0 | 100.0 | 6.3       | 27.63  | 35.19      | 1774              | 600    | 7.1       | 4.13 | 177.36          | 119.95 | 222.54          | 137.13 |
|         | 200.0 | 100.0 | 8.0       | 34.38  | 43.79      | 2146              | 719    | 7         | 4.05 | 214.62          | 143.84 | 272.76          | 167.42 |
|         | 200.0 | 100.0 | 10.0      | 41.94  | 53.43      | 2531              | 839    | 6.88      | 3.96 | 253.1           | 167.85 | 326.99          | 199.59 |
| 250x150 | 250.0 | 150.0 | 5.0       | 30.11  | 38.36      | 3304              | 1508   | 9.28      | 6.27 | 264.33          | 201.06 | 319.75          | 225.47 |
|         | 250.0 | 150.0 | 6.0       | 35.82  | 45.63      | 3886              | 1768   | 9.23      | 6.22 | 310.84          | 235.78 | 378.03          | 266.27 |
|         | 250.0 | 150.0 | 6.3       | 37.52  | 47.79      | 4055              | 1844   | 9.21      | 6.21 | 324.4           | 245.86 | 395.13          | 278.24 |
|         | 250.0 | 150.0 | 8.0       | 46.94  | 59.79      | 4972              | 2250   | 9.12      | 6.13 | 397.78          | 300.06 | 489.04          | 343.69 |
|         | 250.0 | 150.0 | 10.0      | 57.64  | 73.43      | 5960              | 2683   | 9.01      | 6.04 | 476.82          | 357.72 | 592.74          | 415.64 |



**STEEL TUBES FOR STRUCTURAL PURPOSES  
CONFORMING TO IS 1161 :2014**

Grade Yst 210 , Yst 240, Yst 310

| N.B. | OUT SIDE<br>DIAMETER | THICKNESS | NORMAL WEIGHT BLACK<br>TUBES PLAIN END |        | CALCUATED NORMAL WEIGHT<br>GALVANIZED TUBES PLAIN<br>END |        |
|------|----------------------|-----------|----------------------------------------|--------|----------------------------------------------------------|--------|
|      |                      |           | KG/M                                   | M/TONE | KG/M                                                     | M/TONE |
| 15   | 21.3                 | 2         | 0.947                                  | 1056   | 1                                                        | 1003   |
|      |                      | 2.6       | 1.21                                   | 826    | 1.26                                                     | 794    |
|      |                      | 3.2       | 1.44                                   | 694    | 1.49                                                     | 671    |
| 20   | 26.9                 | 2.3       | 1.38                                   | 725    | 1.43                                                     | 699    |
|      |                      | 2.6       | 1.56                                   | 641    | 1.61                                                     | 621    |
|      |                      | 3.2       | 1.87                                   | 535    | 1.92                                                     | 521    |
| 25   | 33.7                 | 2.6       | 1.98                                   | 505    | 2.03                                                     | 493    |
|      |                      | 3.2       | 2.41                                   | 415    | 2.46                                                     | 407    |
|      |                      | 4         | 2.93                                   | 341    | 2.98                                                     | 336    |
| 32   | 42.4                 | 2.6       | 2.54                                   | 394    | 2.62                                                     | 382    |
|      |                      | 3.2       | 3.1                                    | 323    | 3.18                                                     | 314    |
|      |                      | 4         | 3.79                                   | 264    | 3.87                                                     | 258    |
| 40   | 48.3                 | 2.9       | 3.23                                   | 310    | 3.34                                                     | 299    |
|      |                      | 3.2       | 3.56                                   | 281    | 3.67                                                     | 272    |
|      |                      | 4         | 4.37                                   | 229    | 4.48                                                     | 236    |
| 50   | 60.3                 | 2.9       | 4.08                                   | 245    | 4.2                                                      | 238    |
|      |                      | 3.6       | 5.03                                   | 199    | 5.15                                                     | 194    |
|      |                      | 4.5       | 6.19                                   | 162    | 6.31                                                     | 158    |
| 65   | 76.1                 | 3.2       | 5.71                                   | 175    | 5.86                                                     | 171    |
|      |                      | 3.6       | 6.42                                   | 156    | 6.57                                                     | 152    |
|      |                      | 4.5       | 7.93                                   | 126    | 8.1                                                      | 123    |
| 80   | 88.9                 | 3.2       | 6.72                                   | 149    | 6.9                                                      | 145    |
|      |                      | 4         | 8.36                                   | 120    | 8.54                                                     | 117    |
|      |                      | 4.8       | 9.9                                    | 101    | 10.08                                                    | 99     |
| 90   | 101.6                | 3.6       | 8.7                                    | 115    | 8.97                                                     | 111    |
|      |                      | 4         | 9.63                                   | 144    | 7.2                                                      | 139    |
|      |                      | 4.8       | 11.5                                   | 87     | 11.77                                                    | 85     |
| 100  | 114.3                | 3.6       | 9.75                                   | 103    | 9.97                                                     | 100    |
|      |                      | 4.5       | 12.2                                   | 82     | 12.42                                                    | 81     |
|      |                      | 5.4       | 14.5                                   | 69     | 14.72                                                    | 68     |
| 110  | 127                  | 4.5       | 13.6                                   | 74     | 13.9                                                     | 72     |
|      |                      | 4.8       | 14.5                                   | 69     | 14.8                                                     | 68     |
|      |                      | 5.4       | 16.2                                   | 62     | 14.8                                                     | 61     |
| 125  | 139.7                | 4.5       | 15                                     | 67     | 15.25                                                    | 66     |
|      |                      | 4.8       | 15.9                                   | 63     | 16.15                                                    | 62     |
|      |                      | 5.4       | 17.9                                   | 56     | 18.15                                                    | 55     |
| 135  | 152.4                | 4.5       | 16.4                                   | 61     | 16.78                                                    | 60     |
|      |                      | 4.8       | 17.5                                   | 57     | 17.88                                                    | 56     |
|      |                      | 5.4       | 19.6                                   | 51     | 19.98                                                    | 55     |
| 150  | 165.1                | 4.5       | 17.8                                   | 56     | 18.2                                                     | 55     |
|      |                      | 4.8       | 18.9                                   | 53     | 19.3                                                     | 52     |
|      |                      | 5.4       | 21.3                                   | 47     | 21.7                                                     | 46     |

| N.B. | OUT SIDE<br>DIAMETER | THICKNESS | NORMAL WEIGHT BLACK<br>TUBES PLAIN END |        | CALCUTED NORMAL WEIGHT<br>GALVANIZED TUBES PLAIN<br>END |        |
|------|----------------------|-----------|----------------------------------------|--------|---------------------------------------------------------|--------|
| MM   | MM                   | MM        | KG/M                                   | M/TONE | KG/M                                                    | M/TONE |
| 150  | 168.3                | 4.5       | 18.2                                   | 55     | 18.66                                                   | 54     |
|      |                      | 4.8       | 19.4                                   | 52     | 19.88                                                   | 50     |
|      |                      | 5.4       | 21.7                                   | 46     | 22.24                                                   | 45     |
|      |                      | 6.3       | 25.2                                   | 40     | 41                                                      | 24     |
| 170  | 177.8                | 4         | 17.14                                  | 51     | 17.25                                                   | 50     |
|      |                      | 5         | 21.31                                  | 48     | 21.4                                                    | 57     |
|      |                      | 6         | 25.42                                  | 42     | 25.64                                                   | 41     |
|      |                      | 6.3       | 26.65                                  | 36     | 26.78                                                   | 35     |
| 175  | 193.7                | 4         | 18.71                                  | 49     | 18.75                                                   | 48     |
|      |                      | 5         | 23.27                                  | 45     | 23.31                                                   | 44     |
|      |                      | 6         | 27.77                                  | 38     | 27.82                                                   | 37     |
|      |                      | 6.3       | 29.12                                  | 30     | 29.17                                                   | 29     |
| 200  | 219.1                | 4         | 21.22                                  | 40     | 21.26                                                   | 39     |
|      |                      | 5         | 26.4                                   | 39     | 26.48                                                   | 38     |
|      |                      | 6         | 31.53                                  | 30     | 31.57                                                   | 29     |
|      |                      | 6.3       | 33.06                                  | 26     | 33.1                                                    | 25     |
| 225  | 244.5                | 5         | 29.53                                  | 30     | 29.64                                                   | 29     |
|      |                      | 6         | 35.29                                  | 26     | 35.35                                                   | 25     |
|      |                      | 6.3       | 37.01                                  | 24     | 37.26                                                   | 23     |
|      |                      | 8         | 46.66                                  | 22     | 46.78                                                   | 21     |
| 250  | 273                  | 5         | 33.05                                  | 24     | 33.26                                                   | 23     |
|      |                      | 6         | 39.51                                  | 22     | 39.7                                                    | 21     |
|      |                      | 6.3       | 41.44                                  | 20     | 41.6                                                    | 19     |
|      |                      | 8         | 52.28                                  | 16     | 52.41                                                   | 15     |

## TOLERANCES

| SECTION<br>TYPE    | GRADE    | OUT SIDE<br>DIMENSION                                   | THICKNESS   | SQUARE NESS   | CORNER<br>RADIUS | WEIGHT INDIVIDUAL<br>LENGTHS | WEIGHT ON<br>LOT OF 10<br>MT | CUSTOMIZE<br>D OFFER                                      |
|--------------------|----------|---------------------------------------------------------|-------------|---------------|------------------|------------------------------|------------------------------|-----------------------------------------------------------|
| RHS/SHS IS<br>4923 | Yst- 210 | ±1%with a<br>minimum of<br>±0.50 mm                     | ±7.5%       | 90 deg ±2deg. | 3t max           | -8%,+10%                     | ±7.5%                        | Length-4 M<br>to 12 M<br>Thickness-1.4<br>MM to 8.0<br>MM |
|                    | Yst- 240 |                                                         |             |               |                  |                              |                              |                                                           |
|                    | Yst- 310 |                                                         |             |               |                  |                              |                              |                                                           |
| RHS/SHS<br>IS18573 | Yst- 240 | ±1%with a<br>minimum of<br>±0.50 mm                     | ±10%        |               |                  |                              |                              |                                                           |
| CHS IS-1161        | Yst- 210 | OD upto and<br>incl48.3+0.4/-<br>0.8 mm;over<br>48.3±1% | +no limited | NA            | NA               |                              |                              |                                                           |
|                    | Yst- 240 |                                                         | -10.00%     |               |                  |                              |                              |                                                           |
|                    | Yst- 310 |                                                         |             |               |                  |                              |                              |                                                           |
|                    |          |                                                         |             |               |                  |                              |                              |                                                           |

DIMENSIONS AND DEPTH PROPERTIES OF SQUARE HOLLOW SECTIONS IS 18573:2024 GRADE YST-240

| SHS       | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF | RADIUS OF | ELASTIC | PLASTIC |
|-----------|-------|-------|-----------|--------|------------|-----------|-----------|---------|---------|
| DXD       | D     | D     |           |        | OF SECTION | INERTIA   | GYRATION  | MODULUS | MODULUS |
| MM        | MM    | MM    |           |        | CM2        | CM4       | CM        | CM3     | CM3     |
| 20.0X20.0 | 20.0  | 20.0  | 0.9       | 0.52   | 0.67       | 0.4       | 0.77      | 0.4     | 0.47    |
|           | 20.0  | 20.0  | 1.2       | 0.68   | 0.87       | 0.5       | 0.76      | 0.5     | 0.6     |
|           | 20.0  | 20.0  | 1.4       | 0.78   | 0.99       | 0.56      | 0.75      | 0.56    | 0.68    |
|           | 20.0  | 20.0  | 1.6       | 0.87   | 1.11       | 0.61      | 0.74      | 0.61    | 0.75    |
|           | 20.0  | 20.0  | 1.8       | 0.96   | 1.23       | 0.65      | 0.73      | 0.65    | 0.82    |
|           | 20.0  | 20.0  | 1.9       | 1.01   | 1.28       | 0.67      | 0.72      | 0.67    | 0.85    |
| 25.0X25.0 | 25.0  | 25.0  | 0.9       | 0.66   | 0.85       | 0.81      | 0.98      | 0.65    | 0.76    |
|           | 25.0  | 25.0  | 1.2       | 0.87   | 1.11       | 1.03      | 0.96      | 0.82    | 0.97    |
|           | 25.0  | 25.0  | 1.4       | 1      | 1.27       | 1.16      | 0.95      | 0.92    | 1.11    |
|           | 25.0  | 25.0  | 1.6       | 1.12   | 1.43       | 1.28      | 0.94      | 1.02    | 1.24    |
|           | 25.0  | 25.0  | 1.8       | 1.25   | 1.59       | 1.38      | 0.93      | 1.11    | 1.35    |
|           | 25.0  | 25.0  | 1.9       | 1.31   | 1.66       | 1.43      | 0.93      | 1.15    | 1.41    |
| 30.0X30.0 | 30.0  | 30.0  | 1.2       | 1.06   | 1.35       | 1.83      | 1.17      | 1.22    | 1.44    |
|           | 30.0  | 30.0  | 1.4       | 1.22   | 1.55       | 2.08      | 1.16      | 1.39    | 1.64    |
|           | 30.0  | 30.0  | 1.6       | 1.37   | 1.75       | 2.31      | 1.15      | 1.54    | 1.84    |
|           | 30.0  | 30.0  | 1.8       | 1.53   | 1.95       | 2.52      | 1.14      | 1.68    | 2.03    |
|           | 30.0  | 30.0  | 1.9       | 1.6    | 2.04       | 2.62      | 1.13      | 1.75    | 2.12    |
| 32.0X32.0 | 32.0  | 32.0  | 1.2       | 1.13   | 1.44       | 2.25      | 1.25      | 1.41    | 1.65    |
|           | 32.0  | 32.0  | 1.4       | 1.31   | 1.66       | 2.55      | 1.24      | 1.6     | 1.89    |
|           | 32.0  | 32.0  | 1.6       | 1.48   | 1.88       | 2.84      | 1.23      | 1.78    | 2.12    |
|           | 32.0  | 32.0  | 1.8       | 1.64   | 2.09       | 3.11      | 1.22      | 1.95    | 2.33    |
|           | 32.0  | 32.0  | 1.9       | 1.72   | 2.19       | 3.24      | 1.22      | 2.03    | 2.44    |
| 35.0X35.0 | 35.0  | 35.0  | 1.2       | 1.24   | 1.59       | 2.98      | 1.37      | 1.7     | 1.99    |
|           | 35.0  | 35.0  | 1.4       | 1.44   | 1.83       | 3.4       | 1.36      | 1.94    | 2.29    |
|           | 35.0  | 35.0  | 1.6       | 1.63   | 2.07       | 3.79      | 1.35      | 2.16    | 2.57    |
|           | 35.0  | 35.0  | 1.8       | 1.81   | 2.31       | 4.16      | 1.34      | 2.38    | 2.84    |
|           | 35.0  | 35.0  | 1.9       | 1.9    | 2.42       | 4.34      | 1.34      | 2.48    | 2.97    |
| 38.0X38.0 | 38.0  | 38.0  | 1.2       | 1.36   | 1.73       | 3.86      | 1.49      | 2.03    | 2.37    |
|           | 38.0  | 38.0  | 1.4       | 1.57   | 2          | 4.41      | 1.48      | 2.32    | 2.72    |
|           | 38.0  | 38.0  | 1.6       | 1.78   | 2.26       | 4.92      | 1.47      | 2.59    | 3.06    |
|           | 38.0  | 38.0  | 1.8       | 1.98   | 2.52       | 5.42      | 1.47      | 2.85    | 3.39    |
|           | 38.0  | 38.0  | 1.9       | 2.08   | 2.65       | 5.65      | 1.46      | 2.97    | 3.54    |
| 40.0X40.0 | 40.0  | 40.0  | 1.2       | 1.43   | 1.83       | 4.53      | 1.58      | 2.27    | 2.64    |
|           | 40.0  | 40.0  | 1.4       | 1.66   | 2.11       | 5.18      | 1.57      | 2.59    | 3.03    |
|           | 40.0  | 40.0  | 1.6       | 1.88   | 2.39       | 5.79      | 1.56      | 2.9     | 3.41    |
|           | 40.0  | 40.0  | 1.8       | 2.09   | 2.67       | 6.38      | 1.55      | 3.19    | 3.78    |
|           | 40.0  | 40.0  | 1.9       | 2.2    | 2.8        | 6.66      | 1.54      | 3.33    | 3.96    |
| 45.0X45.0 | 45.0  | 45.0  | 1.2       | 1.62   | 2.07       | 6.54      | 1.78      | 2.91    | 3.37    |
|           | 45.0  | 45.0  | 1.4       | 1.88   | 2.39       | 7.49      | 1.77      | 3.33    | 3.88    |
|           | 45.0  | 45.0  | 1.6       | 2.13   | 2.71       | 8.41      | 1.76      | 3.74    | 4.38    |
|           | 45.0  | 45.0  | 1.8       | 2.38   | 3.03       | 9.28      | 1.75      | 4.13    | 4.86    |
|           | 45.0  | 45.0  | 1.9       | 2.5    | 3.18       | 9.7       | 1.75      | 4.31    | 5.09    |
| 49.5X49.5 | 49.5  | 49.5  | 1.2       | 1.79   | 2.28       | 8.8       | 1.96      | 3.55    | 4.11    |
|           | 49.5  | 49.5  | 1.4       | 2.07   | 2.64       | 10.09     | 1.95      | 4.08    | 4.74    |
|           | 49.5  | 49.5  | 1.6       | 2.35   | 3          | 11.34     | 1.94      | 4.58    | 5.35    |
|           | 49.5  | 49.5  | 1.8       | 2.63   | 3.35       | 12.5      | 1.93      | 5.07    | 5.94    |
|           | 49.5  | 49.5  | 1.9       | 2.77   | 3.52       | 13.1      | 1.93      | 5.3     | 6.23    |
| 50.0X50.0 | 50.0  | 50.0  | 1.2       | 1.81   | 2.31       | 9.07      | 1.98      | 3.63    | 4.2     |
|           | 50.0  | 50.0  | 1.4       | 2.1    | 2.67       | 10.41     | 1.97      | 4.17    | 4.84    |
|           | 50.0  | 50.0  | 1.6       | 2.38   | 3.03       | 11.7      | 1.96      | 4.68    | 5.46    |
|           | 50.0  | 50.0  | 1.8       | 2.66   | 3.39       | 12.9      | 1.96      | 5.18    | 6.07    |
|           | 50.0  | 50.0  | 1.9       | 2.8    | 3.56       | 13.6      | 1.95      | 5.42    | 6.37    |
| 60.0X60.0 | 60.0  | 60.0  | 1.2       | 2.19   | 2.79       | 15.9      | 2.39      | 5.31    | 6.11    |
|           | 60.0  | 60.0  | 1.4       | 2.54   | 3.23       | 18.3      | 2.38      | 6.12    | 7.06    |
|           | 60.0  | 60.0  | 1.6       | 2.88   | 3.67       | 20.7      | 2.37      | 6.89    | 7.99    |
|           | 60.0  | 60.0  | 1.8       | 3.22   | 4.11       | 22.9      | 2.36      | 7.65    | 8.9     |
|           | 60.0  | 60.0  | 1.9       | 3.39   | 4.32       | 24.1      | 2.36      | 8.02    | 9.35    |

| SHS         | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF | RADIUS OF | ELASTIC | PLASTIC |
|-------------|-------|-------|-----------|--------|------------|-----------|-----------|---------|---------|
| DXD         | D     | D     |           |        | OF SECTION | INERTIA   | GYRATION  | MODULUS | MODULUS |
| MM          | MM    | MM    | MM        | KG/M   | CM2        | CM4       | CM        | CM3     | CM3     |
| 63.5X63.5   | 63.5  | 63.5  | 1.2       | 2.32   | 2.95       | 19        | 2.54      | 5.98    | 6.87    |
|             | 63.5  | 63.5  | 1.4       | 2.69   | 3.43       | 21.9      | 2.53      | 6.89    | 7.94    |
|             | 63.5  | 63.5  | 1.6       | 3.06   | 3.9        | 24.7      | 2.52      | 7.77    | 8.99    |
|             | 63.5  | 63.5  | 1.8       | 3.42   | 4.36       | 27.4      | 2.51      | 8.63    | 10.02   |
|             | 63.5  | 63.5  | 1.9       | 3.6    | 4.59       | 28.7      | 2.5       | 9.05    | 10.53   |
|             | 63.5  | 63.5  | 2.4       | 4.49   | 5.72       | 35.1      | 2.48      | 11.05   | 12.98   |
| 70.0X70.0   | 70.0  | 70.0  | 1.2       | 2.56   | 3.27       | 25.6      | 2.8       | 7.32    | 8.39    |
|             | 70.0  | 70.0  | 1.4       | 2.98   | 3.79       | 29.5      | 2.79      | 8.44    | 9.71    |
|             | 70.0  | 70.0  | 1.6       | 3.38   | 4.31       | 33.4      | 2.78      | 9.53    | 11      |
|             | 70.0  | 70.0  | 1.8       | 3.79   | 4.83       | 37.1      | 2.77      | 10.6    | 12.27   |
|             | 70.0  | 70.0  | 1.9       | 3.99   | 5.08       | 38.9      | 2.77      | 11.12   | 12.9    |
|             | 70.0  | 70.0  | 2.4       | 4.98   | 6.34       | 47.7      | 2.74      | 13.63   | 15.94   |
| 72.0X72.0   | 72.0  | 72.0  | 1.2       | 2.64   | 3.36       | 27.9      | 2.88      | 7.76    | 8.89    |
|             | 72.0  | 72.0  | 1.4       | 3.06   | 3.9        | 32.2      | 2.87      | 8.95    | 10.29   |
|             | 72.0  | 72.0  | 1.6       | 3.49   | 4.44       | 36.4      | 2.86      | 10.11   | 11.66   |
|             | 72.0  | 72.0  | 1.8       | 3.9    | 4.97       | 40.5      | 2.85      | 11.24   | 13.01   |
|             | 72.0  | 72.0  | 1.9       | 4.11   | 5.23       | 42.5      | 2.85      | 11.8    | 13.68   |
|             | 72.0  | 72.0  | 2.4       | 5.13   | 6.53       | 52.1      | 2.82      | 14.48   | 16.92   |
| 75.0X75.0   | 75.0  | 75.0  | 1.2       | 2.75   | 3.51       | 31.65     | 3         | 8.44    | 9.67    |
|             | 75.0  | 75.0  | 1.4       | 3.2    | 4.07       | 36.52     | 3         | 9.74    | 11.19   |
|             | 75.0  | 75.0  | 1.6       | 3.64   | 4.63       | 41.29     | 2.99      | 11.01   | 12.69   |
|             | 75.0  | 75.0  | 1.8       | 4.07   | 5.19       | 45.94     | 2.98      | 12.25   | 14.16   |
|             | 75.0  | 75.0  | 1.9       | 4.29   | 5.46       | 48.23     | 2.97      | 12.86   | 14.89   |
|             | 75.0  | 75.0  | 2.5       | 5.56   | 7.09       | 61.38     | 2.94      | 16.37   | 19.12   |
|             | 75.0  | 75.0  | 2.9       | 6.4    | 8.15       | 69.62     | 2.92      | 18.57   | 21.82   |
| 80.0X80.0   | 80.0  | 80.0  | 1.2       | 2.94   | 3.75       | 38.57     | 3.21      | 9.64    | 11.03   |
|             | 80.0  | 80.0  | 1.4       | 3.42   | 4.35       | 44.54     | 3.2       | 11.13   | 12.77   |
|             | 80.0  | 80.0  | 1.6       | 3.89   | 4.95       | 50.38     | 3.19      | 12.6    | 14.49   |
|             | 80.0  | 80.0  | 1.8       | 4.35   | 5.55       | 56.1      | 3.18      | 14.03   | 16.18   |
|             | 80.0  | 80.0  | 1.9       | 4.59   | 5.84       | 58.91     | 3.18      | 14.73   | 17.02   |
|             | 80.0  | 80.0  | 2         | 4.82   | 6.14       | 61.7      | 3.17      | 15.42   | 17.85   |
|             | 80.0  | 80.0  | 2.5       | 5.96   | 7.59       | 75.1      | 3.15      | 18.79   | 21.89   |
| 88.9X88.9   | 80.0  | 80.0  | 2.9       | 6.85   | 8.73       | 85.4      | 3.13      | 21.34   | 25.01   |
|             | 88.9  | 88.9  | 1.2       | 3.28   | 4.17       | 53.2      | 3.57      | 11.98   | 13.68   |
|             | 88.9  | 88.9  | 1.4       | 3.81   | 4.85       | 61.6      | 3.56      | 13.85   | 15.86   |
|             | 88.9  | 88.9  | 1.6       | 4.33   | 5.52       | 69.7      | 3.55      | 15.68   | 18      |
|             | 88.9  | 88.9  | 1.8       | 4.86   | 6.19       | 77.7      | 3.54      | 17.48   | 20.12   |
|             | 88.9  | 88.9  | 1.9       | 5.12   | 6.52       | 81.6      | 3.54      | 18.37   | 21.16   |
|             | 88.9  | 88.9  | 2         | 5.38   | 6.85       | 85.5      | 3.53      | 19.24   | 22.2    |
|             | 88.9  | 88.9  | 2.5       | 6.66   | 8.48       | 104.5     | 3.51      | 23.5    | 27.29   |
| 90.0X90.0   | 88.9  | 88.9  | 2.9       | 7.66   | 9.76       | 118.9     | 3.49      | 26.76   | 31.23   |
|             | 90.0  | 90.0  | 1.2       | 3.32   | 4.23       | 55.3      | 3.62      | 12.29   | 14.03   |
|             | 90.0  | 90.0  | 1.4       | 3.86   | 4.91       | 63.9      | 3.61      | 14.2    | 16.26   |
|             | 90.0  | 90.0  | 1.6       | 4.39   | 5.59       | 72.4      | 3.6       | 16.09   | 18.46   |
|             | 90.0  | 90.0  | 1.8       | 4.92   | 6.27       | 80.7      | 3.59      | 17.93   | 20.63   |
|             | 90.0  | 90.0  | 1.9       | 5.18   | 6.6        | 84.8      | 3.58      | 18.84   | 21.71   |
|             | 90.0  | 90.0  | 2         | 5.45   | 6.94       | 88.9      | 3.58      | 19.75   | 22.78   |
|             | 90.0  | 90.0  | 2.5       | 6.74   | 8.59       | 108.5     | 3.56      | 24.12   | 28      |
| 91.5X91.5   | 90.0  | 90.0  | 2.9       | 7.76   | 9.89       | 123.6     | 3.54      | 27.47   | 32.05   |
|             | 91.5  | 91.5  | 1.2       | 3.37   | 4.3        | 58.1      | 3.68      | 12.71   | 14.51   |
|             | 91.5  | 91.5  | 1.4       | 3.92   | 5          | 67.2      | 3.67      | 14.7    | 16.82   |
|             | 91.5  | 91.5  | 1.6       | 4.46   | 5.69       | 76.2      | 3.66      | 16.65   | 19.1    |
|             | 91.5  | 91.5  | 1.8       | 5      | 6.37       | 84.9      | 3.65      | 18.56   | 21.35   |
|             | 91.5  | 91.5  | 1.9       | 5.27   | 6.72       | 89.2      | 3.65      | 19.51   | 22.46   |
|             | 91.5  | 91.5  | 2         | 5.54   | 7.06       | 93.5      | 3.64      | 20.44   | 23.57   |
|             | 91.5  | 91.5  | 2.5       | 6.86   | 8.74       | 114.3     | 3.62      | 24.98   | 28.98   |
| 100.0X100.0 | 91.5  | 91.5  | 2.9       | 7.9    | 10.06      | 130.2     | 3.6       | 28.45   | 33.18   |
|             | 100.0 | 100.0 | 1.2       | 3.69   | 4.71       | 76.2      | 4.03      | 15.25   | 17.39   |
|             | 100.0 | 100.0 | 1.4       | 4.29   | 5.47       | 88.2      | 4.02      | 17.65   | 20.17   |
|             | 100.0 | 100.0 | 1.6       | 4.89   | 6.23       | 100       | 4.01      | 20      | 22.91   |
|             | 100.0 | 100.0 | 1.8       | 5.48   | 6.99       | 111.6     | 4         | 22.32   | 25.62   |
|             | 100.0 | 100.0 | 1.9       | 5.78   | 7.36       | 117.3     | 3.99      | 23.47   | 26.97   |
|             | 100.0 | 100.0 | 2         | 6.07   | 7.74       | 123       | 3.99      | 24.6    | 28.3    |
|             | 100.0 | 100.0 | 2.5       | 7.53   | 9.59       | 150.6     | 3.96      | 30.12   | 34.86   |
| 100.0X100.0 | 100.0 | 100.0 | 2.9       | 8.67   | 11.05      | 171.85    | 3.94      | 34.37   | 39.95   |

| SHS         | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF | RADIUS OF | ELASTIC | PLASTIC |
|-------------|-------|-------|-----------|--------|------------|-----------|-----------|---------|---------|
| DXD         | D     | D     |           |        | OF SECTION | INERTIA   | GYRATION  | MODULUS | MODULUS |
| MM          | MM    | MM    | MM        | KG/M   | CM2        | CM4       | CM        | CM3     | CM3     |
| 113.5X113.5 | 113.5 | 113.5 | 1.6       | 5.57   | 7.1        | 147.38    | 4.56      | 25.97   | 29.68   |
|             | 113.5 | 113.5 | 1.8       | 6.25   | 7.96       | 164.62    | 4.55      | 29.01   | 33.22   |
|             | 113.5 | 113.5 | 1.9       | 6.58   | 8.39       | 173.15    | 4.54      | 30.51   | 34.97   |
|             | 113.5 | 113.5 | 2         | 6.92   | 8.82       | 181.61    | 4.54      | 32      | 36.72   |
|             | 113.5 | 113.5 | 2.5       | 8.59   | 10.94      | 222.95    | 4.51      | 39.29   | 45.3    |
|             | 113.5 | 113.5 | 2.9       | 9.9    | 12.61      | 254.89    | 4.5       | 44.91   | 52      |
| 120.0X120.0 | 120.0 | 120.0 | 1.8       | 6.62   | 8.43       | 195.24    | 4.81      | 32.54   | 37.23   |
|             | 120.0 | 120.0 | 1.9       | 6.97   | 8.88       | 205.39    | 4.81      | 34.23   | 39.2    |
|             | 120.0 | 120.0 | 2         | 7.33   | 9.34       | 215.47    | 4.8       | 35.91   | 41.16   |
|             | 120.0 | 120.0 | 2.5       | 9.1    | 11.59      | 264.78    | 4.78      | 44.13   | 50.82   |
|             | 120.0 | 120.0 | 2.9       | 10.49  | 13.37      | 302.96    | 4.76      | 50.49   | 58.37   |
| 125.0X125.0 | 125.0 | 125.0 | 2         | 7.64   | 9.74       | 244.2     | 5.01      | 39.07   | 44.75   |
|             | 125.0 | 125.0 | 2.5       | 9.49   | 12.09      | 300.3     | 4.98      | 48.05   | 55.28   |
|             | 125.0 | 125.0 | 2.9       | 10.95  | 13.95      | 343.8     | 4.97      | 55.01   | 63.52   |
| 132.0X132.0 | 132.0 | 132.0 | 3.2       | 12.73  | 16.22      | 444.82    | 5.24      | 67.4    | 77.92   |
|             | 132.0 | 132.0 | 3.6       | 14.25  | 18.16      | 494.19    | 5.22      | 74.88   | 86.87   |
|             | 132.0 | 132.0 | 3.9       | 15.38  | 19.59      | 530.34    | 5.2       | 80.35   | 93.47   |
| 140.0X140.0 | 140.0 | 140.0 | 3.2       | 13.54  | 17.25      | 533.7     | 5.56      | 76.25   | 88.01   |
|             | 140.0 | 140.0 | 3.6       | 15.16  | 19.31      | 593.4     | 5.54      | 84.77   | 98.17   |
|             | 140.0 | 140.0 | 3.9       | 16.36  | 20.84      | 637.2     | 5.53      | 91.03   | 105.67  |
| 150.0X150.0 | 150.0 | 150.0 | 3.2       | 14.54  | 18.53      | 660.6     | 5.97      | 88.08   | 101.49  |
|             | 150.0 | 150.0 | 3.6       | 16.29  | 20.75      | 735.1     | 5.95      | 98.01   | 113.28  |
|             | 150.0 | 150.0 | 3.9       | 17.58  | 22.4       | 789.8     | 5.94      | 105.3   | 121.99  |
| 160.0X160.0 | 160.0 | 160.0 | 3.2       | 15.55  | 19.81      | 806.1     | 6.38      | 100.77  | 115.93  |
|             | 160.0 | 160.0 | 3.6       | 17.42  | 22.19      | 897.6     | 6.36      | 112.2   | 129.46  |
|             | 160.0 | 160.0 | 3.9       | 18.81  | 23.96      | 964.9     | 6.35      | 120.62  | 139.47  |
| 180.0X180.0 | 180.0 | 180.0 | 3.6       | 19.68  | 25.07      | 291.2     | 7.18      | 143.47  | 165.07  |
|             | 180.0 | 180.0 | 3.9       | 21.26  | 27.08      | 389.3     | 7.16      | 154.37  | 177.94  |

STEEL HOLLOW SECTIONS FOR STRUCTURAL USE (RHS)

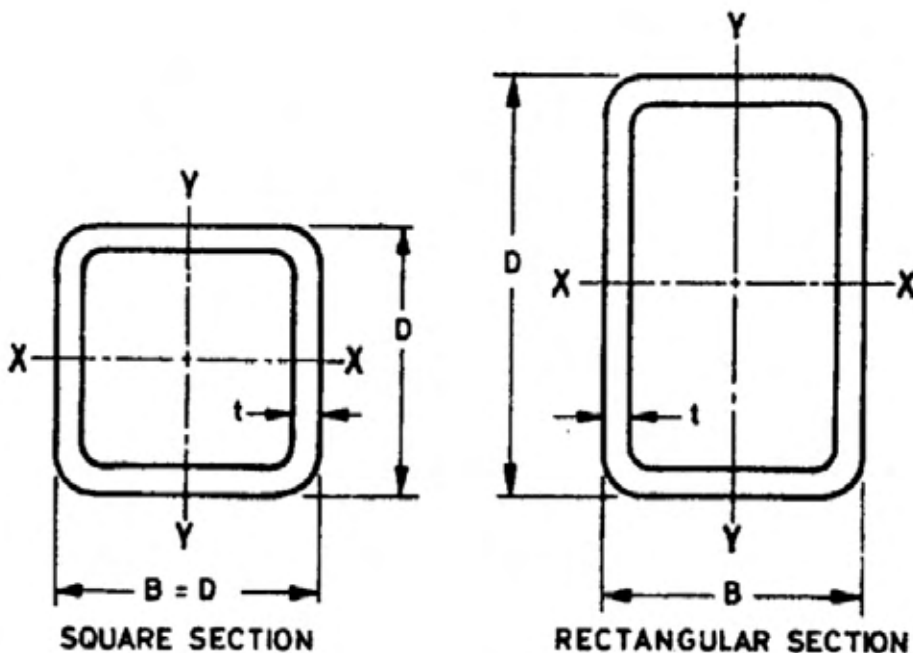
DIMENSIONS AND DEPTH PROPERTIES OF RECTANGULAR HOLLOW SECTIONS IS
18573:2024 GRADE YST- 240

| HS<br>DXB | DEPTH<br>D | WIDTH<br>D | THICKNESS | WEIGHT | AREA       | MOMENT OF INERTIA |       | RADIUS OF GYRATION |      | ELASTIC MODULUS |      | PLASTIC MODULUS |      |
|-----------|------------|------------|-----------|--------|------------|-------------------|-------|--------------------|------|-----------------|------|-----------------|------|
|           |            |            |           |        | OF SECTION | ABOUT             |       | ABOUT              |      | ABOUT           |      | ABOUT           |      |
|           |            |            |           |        |            | X-X               | Y-Y   | X-X                | Y-Y  | X-X             | Y-Y  | X-X             | Y-Y  |
| 40.0X20.0 | 40         | 20         | 1.2       | 1.06   | 1.35       | 2.7               | 0.92  | 1.42               | 0.83 | 1.36            | 0.92 | 1.71            | 1.05 |
|           | 40         | 20         | 1.4       | 1.22   | 1.55       | 3.1               | 1.04  | 1.41               | 0.82 | 1.55            | 1.04 | 1.95            | 1.2  |
|           | 40         | 20         | 1.6       | 1.37   | 1.75       | 3.4               | 1.15  | 1.4                | 0.81 | 1.72            | 1.15 | 2.18            | 1.34 |
|           | 40         | 20         | 1.8       | 1.53   | 1.95       | 3.8               | 1.25  | 1.39               | 0.8  | 1.88            | 1.25 | 2.4             | 1.47 |
|           | 40         | 20         | 1.9       | 1.6    | 2.04       | 3.9               | 1.3   | 1.38               | 0.8  | 1.95            | 1.3  | 2.51            | 1.54 |
| 50.0X25.0 | 50         | 25         | 1.2       | 1.34   | 1.71       | 5.5               | 1.88  | 1.8                | 1.05 | 2.2             | 1.5  | 2.73            | 1.69 |
|           | 50         | 25         | 1.4       | 1.55   | 1.97       | 6.3               | 2.13  | 1.78               | 1.04 | 2.51            | 1.71 | 3.14            | 1.94 |
|           | 50         | 25         | 1.6       | 1.75   | 2.23       | 7.02              | 2.37  | 1.77               | 1.03 | 2.81            | 1.9  | 3.53            | 2.17 |
|           | 50         | 25         | 1.8       | 1.95   | 2.49       | 7.72              | 2.6   | 1.76               | 1.02 | 3.09            | 2.08 | 3.9             | 2.4  |
|           | 50         | 25         | 1.9       | 2.05   | 2.61       | 8.06              | 2.71  | 1.76               | 1.02 | 3.22            | 2.16 | 4.08            | 2.51 |
| 50.0X30.0 | 50         | 30         | 1.2       | 1.43   | 1.83       | 6.2               | 2.83  | 1.85               | 1.25 | 2.49            | 1.89 | 3.02            | 2.13 |
|           | 50         | 30         | 1.4       | 1.66   | 2.11       | 7.1               | 3.23  | 1.83               | 1.24 | 2.84            | 2.15 | 3.48            | 2.45 |
|           | 50         | 30         | 1.6       | 1.88   | 2.39       | 8                 | 3.6   | 1.82               | 1.23 | 3.18            | 2.4  | 3.91            | 2.75 |
|           | 50         | 30         | 1.8       | 2.09   | 2.67       | 8.8               | 3.96  | 1.81               | 1.22 | 3.51            | 2.64 | 4.33            | 3.04 |
|           | 50         | 30         | 1.9       | 2.2    | 2.8        | 9.2               | 4.13  | 1.81               | 1.21 | 3.66            | 2.75 | 4.54            | 3.19 |
| 60.0X40.0 | 60         | 40         | 1.2       | 1.81   | 2.31       | 11.8              | 6.34  | 2.26               | 1.66 | 3.93            | 3.17 | 4.7             | 3.57 |
|           | 60         | 40         | 1.4       | 2.1    | 2.67       | 13.5              | 7.26  | 2.25               | 1.65 | 4.51            | 3.63 | 5.42            | 4.11 |
|           | 60         | 40         | 1.6       | 2.38   | 3.03       | 15.2              | 8.15  | 2.24               | 1.64 | 5.07            | 4.08 | 6.12            | 4.64 |
|           | 60         | 40         | 1.8       | 2.66   | 3.39       | 16.85             | 9.01  | 2.23               | 1.63 | 5.62            | 4.5  | 6.81            | 5.15 |
|           | 60         | 40         | 1.9       | 2.8    | 3.56       | 17.64             | 9.42  | 2.22               | 1.63 | 5.88            | 4.71 | 7.14            | 5.41 |
| 66.0X33.0 | 66         | 33         | 1.2       | 1.79   | 2.28       | 13.06             | 4.48  | 2.39               | 1.4  | 3.96            | 2.72 | 4.87            | 3.02 |
|           | 66         | 33         | 1.4       | 2.07   | 2.64       | 14.99             | 5.13  | 2.38               | 1.39 | 4.54            | 3.11 | 5.61            | 3.48 |
|           | 66         | 33         | 1.6       | 2.35   | 3          | 16.85             | 5.74  | 2.37               | 1.38 | 5.11            | 3.48 | 6.34            | 3.92 |
|           | 66         | 33         | 1.8       | 2.63   | 3.35       | 18.64             | 6.33  | 2.36               | 1.37 | 5.65            | 3.84 | 7.04            | 4.35 |
|           | 66         | 33         | 1.9       | 2.77   | 3.52       | 19.51             | 6.62  | 2.35               | 1.37 | 5.91            | 4.01 | 7.39            | 4.56 |
| 70.0X30.0 | 70         | 30         | 1.2       | 1.81   | 2.31       | 14.25             | 3.83  | 2.49               | 1.29 | 4.07            | 2.55 | 5.09            | 2.82 |
|           | 70         | 30         | 1.4       | 1.66   | 2.11       | 7.11              | 3.23  | 1.83               | 1.24 | 2.84            | 2.15 | 3.48            | 2.45 |
|           | 70         | 30         | 1.6       | 1.88   | 2.39       | 7.95              | 3.6   | 1.82               | 1.23 | 3.18            | 2.4  | 3.91            | 2.75 |
|           | 70         | 30         | 1.8       | 2.09   | 2.67       | 8.76              | 3.96  | 1.81               | 1.22 | 3.51            | 2.64 | 4.33            | 3.04 |
|           | 70         | 30         | 1.9       | 2.2    | 2.8        | 9.15              | 4.13  | 1.81               | 1.21 | 3.66            | 2.75 | 4.54            | 3.19 |
| 70.0X50.0 | 70         | 50         | 1.2       | 2.19   | 2.79       | 19.9              | 11.93 | 2.68               | 2.07 | 5.69            | 4.77 | 6.74            | 5.37 |
|           | 70         | 50         | 1.4       | 2.54   | 3.23       | 22.9              | 13.72 | 2.66               | 2.06 | 6.56            | 5.49 | 7.79            | 6.2  |
|           | 70         | 50         | 1.6       | 2.88   | 3.67       | 25.9              | 15.45 | 2.65               | 2.05 | 7.39            | 6.18 | 8.81            | 7.01 |
|           | 70         | 50         | 1.8       | 3.22   | 4.11       | 28.7              | 17.13 | 2.64               | 2.04 | 8.2             | 6.85 | 9.82            | 7.8  |
|           | 70         | 50         | 1.9       | 3.39   | 4.32       | 30.1              | 17.95 | 2.64               | 2.04 | 8.6             | 7.18 | 10.31           | 8.2  |

| HS         | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF INERTIA |        | RADIUS OF GYRATION |      | ELASTIC MODULUS |       | PLASTIC MODULUS |       |
|------------|-------|-------|-----------|--------|------------|-------------------|--------|--------------------|------|-----------------|-------|-----------------|-------|
| DXB        | D     | D     |           |        | OF SECTION | ABOUT             |        | ABOUT              |      | ABOUT           |       | ABOUT           |       |
|            |       |       |           |        |            | X-X               | Y-Y    | X-X                | Y-Y  | X-X             | Y-Y   | X-X             | Y-Y   |
| 80.0X40.0  | 80    | 40    | 1.2       | 2.19   | 2.79       | 23.7              | 8.15   | 2.91               | 1.71 | 5.92            | 4.07  | 7.25            | 4.5   |
|            | 80    | 40    | 1.4       | 2.54   | 3.23       | 27.2              | 9.35   | 2.9                | 1.7  | 6.81            | 4.68  | 8.37            | 5.19  |
|            | 80    | 40    | 1.6       | 2.88   | 3.67       | 30.71             | 10.52  | 2.89               | 1.69 | 7.68            | 5.26  | 9.47            | 5.87  |
|            | 80    | 40    | 1.8       | 3.22   | 4.11       | 34.08             | 11.64  | 2.88               | 1.68 | 8.52            | 5.82  | 10.55           | 6.53  |
|            | 80    | 40    | 1.9       | 3.39   | 4.32       | 35.73             | 12.18  | 2.88               | 1.68 | 8.93            | 6.09  | 11.08           | 6.85  |
| 80.0X50.0  | 80    | 50    | 1.2       | 2.37   | 3.03       | 27.39             | 13.36  | 3.01               | 2.1  | 6.85            | 5.34  | 8.19            | 5.95  |
|            | 80    | 50    | 1.4       | 2.76   | 3.51       | 31.56             | 15.37  | 3                  | 2.09 | 7.89            | 6.15  | 9.47            | 6.88  |
|            | 80    | 50    | 1.6       | 3.13   | 3.99       | 35.63             | 17.33  | 2.99               | 2.08 | 8.91            | 6.93  | 10.73           | 7.78  |
|            | 80    | 50    | 1.8       | 3.51   | 4.47       | 39.59             | 19.22  | 2.98               | 2.07 | 9.9             | 7.69  | 11.96           | 8.67  |
|            | 80    | 50    | 1.9       | 3.69   | 4.7        | 41.53             | 20.15  | 2.97               | 2.07 | 10.38           | 8.06  | 12.57           | 9.11  |
| 80.0X60.0  | 80    | 60    | 1.2       | 2.56   | 3.27       | 31.1              | 20.09  | 3.09               | 2.48 | 7.78            | 6.7   | 9.14            | 7.52  |
|            | 80    | 60    | 1.4       | 2.98   | 3.79       | 35.9              | 23.15  | 3.08               | 2.47 | 8.97            | 7.72  | 10.57           | 8.7   |
|            | 80    | 60    | 1.6       | 3.38   | 4.31       | 40.5              | 26.14  | 3.07               | 2.46 | 10.14           | 8.71  | 11.98           | 9.86  |
|            | 80    | 60    | 1.8       | 3.79   | 4.83       | 45.1              | 29.04  | 3.06               | 2.45 | 11.27           | 9.68  | 13.37           | 11    |
|            | 80    | 60    | 1.9       | 3.99   | 5.08       | 47.3              | 30.47  | 3.05               | 2.45 | 11.83           | 10.16 | 14.05           | 11.56 |
| 90.0X50.0  | 90    | 50    | 1.2       | 2.56   | 3.27       | 36.4              | 14.79  | 3.34               | 2.13 | 8.08            | 5.92  | 9.77            | 6.54  |
|            | 90    | 50    | 1.4       | 2.98   | 3.79       | 41.9              | 17.03  | 3.33               | 2.12 | 9.32            | 6.81  | 11.3            | 7.56  |
|            | 90    | 50    | 1.6       | 3.38   | 4.31       | 47.38             | 19.2   | 3.32               | 2.11 | 10.53           | 7.68  | 12.8            | 8.56  |
|            | 90    | 50    | 1.8       | 3.79   | 4.83       | 52.69             | 21.32  | 3.3                | 2.1  | 11.71           | 8.53  | 14.28           | 9.54  |
|            | 90    | 50    | 1.9       | 3.99   | 5.08       | 55.3              | 22.35  | 3.3                | 2.1  | 12.29           | 8.94  | 15.01           | 10.02 |
| 96.0X48.0  | 96    | 48    | 1.2       | 2.64   | 3.36       | 41.4              | 14.31  | 3.51               | 2.06 | 8.63            | 5.96  | 10.54           | 6.55  |
|            | 96    | 48    | 1.4       | 3.06   | 3.9        | 47.8              | 16.47  | 3.5                | 2.05 | 9.96            | 6.86  | 12.2            | 7.57  |
|            | 96    | 48    | 1.6       | 3.49   | 4.44       | 54.03             | 18.57  | 3.49               | 2.05 | 11.26           | 7.74  | 13.82           | 8.58  |
|            | 96    | 48    | 1.8       | 3.9    | 4.97       | 60.11             | 20.61  | 3.48               | 2.04 | 12.52           | 8.59  | 15.42           | 9.56  |
|            | 96    | 48    | 1.9       | 4.11   | 5.23       | 63.09             | 21.61  | 3.47               | 2.03 | 13.14           | 9     | 16.21           | 10.04 |
| 100.0X40.0 | 100   | 40    | 1.2       | 2.56   | 3.27       | 41.1              | 9.95   | 3.55               | 1.75 | 8.22            | 4.98  | 10.27           | 5.43  |
|            | 100   | 40    | 1.4       | 2.98   | 3.79       | 47.4              | 11.44  | 3.54               | 1.74 | 9.48            | 5.72  | 11.88           | 6.27  |
|            | 100   | 40    | 1.6       | 3.38   | 4.31       | 53.5              | 12.88  | 3.52               | 1.73 | 10.71           | 6.44  | 13.47           | 7.1   |
|            | 100   | 40    | 1.8       | 3.79   | 4.83       | 59.5              | 14.27  | 3.51               | 1.72 | 11.91           | 7.13  | 15.02           | 7.9   |
|            | 100   | 40    | 1.9       | 3.99   | 5.08       | 62.5              | 14.95  | 3.51               | 1.71 | 12.49           | 7.47  | 15.79           | 8.3   |
|            | 100   | 40    | 2         | 4.19   | 5.34       | 65.4              | 15.61  | 3.5                | 1.71 | 13.07           | 7.81  | 16.54           | 8.69  |
|            | 100   | 40    | 2.4       | 4.98   | 6.34       | 76.6              | 18.17  | 3.48               | 1.69 | 15.32           | 9.08  | 19.51           | 10.22 |
| 100.0X50.0 | 100   | 50    | 1.2       | 2.75   | 3.51       | 46.96             | 16.22  | 3.66               | 2.15 | 9.39            | 6.49  | 11.46           | 7.12  |
|            | 100   | 50    | 1.4       | 3.2    | 4.07       | 54.21             | 18.68  | 3.65               | 2.14 | 10.84           | 7.47  | 13.26           | 8.24  |
|            | 100   | 50    | 1.6       | 3.64   | 4.63       | 61.3              | 21.08  | 3.64               | 2.13 | 12.26           | 8.43  | 15.04           | 9.33  |
|            | 100   | 50    | 1.8       | 4.07   | 5.19       | 68.2              | 23.41  | 3.63               | 2.12 | 13.64           | 9.36  | 16.79           | 10.41 |
|            | 100   | 50    | 1.9       | 4.29   | 5.46       | 71.6              | 24.55  | 3.62               | 2.12 | 14.32           | 9.82  | 17.65           | 10.94 |
|            | 100   | 50    | 2         | 4.5    | 5.74       | 75                | 25.67  | 3.62               | 2.12 | 15              | 10.27 | 18.5            | 11.46 |
|            | 100   | 50    | 2.4       | 5.35   | 6.82       | 88                | 30.01  | 3.59               | 2.1  | 17.61           | 12    | 21.85           | 13.51 |
| 100.0X60.0 | 100   | 60    | 1.2       | 2.94   | 3.75       | 52.82             | 24.24  | 3.76               | 2.54 | 10.56           | 8.08  | 12.64           | 8.94  |
|            | 100   | 60    | 1.4       | 3.42   | 4.35       | 61.01             | 27.96  | 3.74               | 2.54 | 12.2            | 9.32  | 14.64           | 10.34 |
|            | 100   | 60    | 1.6       | 3.89   | 4.95       | 69.04             | 31.6   | 3.73               | 2.53 | 13.81           | 10.53 | 16.61           | 11.73 |
|            | 100   | 60    | 1.8       | 4.35   | 5.55       | 76.89             | 35.14  | 3.72               | 2.52 | 15.38           | 11.71 | 18.55           | 13.09 |
|            | 100   | 60    | 1.9       | 4.59   | 5.84       | 80.76             | 36.88  | 3.72               | 2.51 | 16.15           | 12.29 | 19.51           | 13.76 |
|            | 100   | 60    | 2         | 4.82   | 6.14       | 84.58             | 38.6   | 3.71               | 2.51 | 16.92           | 12.87 | 20.46           | 14.43 |
|            | 100   | 60    | 2.4       | 5.73   | 7.3        | 99.46             | 45.27  | 3.69               | 2.49 | 19.89           | 15.09 | 24.19           | 17.04 |
| 100.0X80.0 | 100   | 80    | 1.2       | 3.32   | 4.23       | 64.5              | 46.02  | 3.91               | 3.3  | 12.91           | 11.5  | 15.02           | 12.92 |
|            | 100   | 80    | 1.4       | 3.86   | 4.91       | 74.6              | 53.19  | 3.9                | 3.29 | 14.92           | 13.3  | 17.41           | 14.97 |
|            | 100   | 80    | 1.6       | 4.39   | 5.59       | 84.5              | 60.22  | 3.89               | 3.28 | 16.91           | 15.05 | 19.76           | 17    |
|            | 100   | 80    | 1.8       | 4.92   | 6.27       | 94.3              | 67.11  | 3.88               | 3.27 | 18.85           | 16.78 | 22.09           | 19    |
|            | 100   | 80    | 1.9       | 5.18   | 6.6        | 99                | 70.51  | 3.87               | 3.27 | 19.81           | 17.63 | 23.24           | 19.99 |
|            | 100   | 80    | 2         | 5.45   | 6.94       | 103.8             | 73.87  | 3.87               | 3.26 | 20.76           | 18.47 | 24.38           | 20.97 |
|            | 100   | 80    | 2.4       | 6.48   | 8.26       | 122.3             | 86.97  | 3.85               | 3.24 | 24.47           | 21.74 | 28.88           | 24.82 |
| 120.0X60.0 | 120   | 60    | 1.2       | 3.32   | 4.23       | 82                | 28.39  | 4.41               | 2.59 | 13.67           | 9.46  | 16.63           | 10.35 |
|            | 120   | 60    | 1.4       | 3.86   | 4.91       | 94.8              | 32.77  | 4.39               | 2.58 | 15.81           | 10.92 | 19.28           | 11.98 |
|            | 120   | 60    | 1.6       | 4.39   | 5.59       | 107.4             | 37.05  | 4.38               | 2.57 | 17.91           | 12.35 | 21.89           | 13.6  |
|            | 120   | 60    | 1.8       | 4.92   | 6.27       | 119.8             | 41.24  | 4.37               | 2.57 | 19.96           | 13.75 | 24.46           | 15.19 |
|            | 120   | 60    | 1.9       | 5.18   | 6.6        | 125.9             | 43.3   | 4.37               | 2.56 | 20.98           | 14.43 | 25.74           | 15.97 |
|            | 120   | 60    | 2         | 5.45   | 6.94       | 131.9             | 45.33  | 4.36               | 2.56 | 21.99           | 15.11 | 27              | 16.75 |
|            | 120   | 60    | 2.4       | 6.48   | 8.26       | 155.5             | 53.24  | 4.34               | 2.54 | 25.91           | 17.75 | 31.97           | 19.81 |
| 120.0X80.0 | 120   | 80    | 1.2       | 3.69   | 4.71       | 98.9              | 53.47  | 4.59               | 3.37 | 16.49           | 13.37 | 19.48           | 14.81 |
|            | 120   | 80    | 1.4       | 4.29   | 5.47       | 114.5             | 61.84  | 4.58               | 3.36 | 19.09           | 15.46 | 22.6            | 17.18 |
|            | 120   | 80    | 1.6       | 4.89   | 6.23       | 129.9             | 70.05  | 4.57               | 3.35 | 21.64           | 17.51 | 25.67           | 19.51 |
|            | 120   | 80    | 1.8       | 5.48   | 6.99       | 144.9             | 78.12  | 4.55               | 3.34 | 24.16           | 19.53 | 28.72           | 21.81 |
|            | 120   | 80    | 1.9       | 5.78   | 7.36       | 152.4             | 82.1   | 4.55               | 3.34 | 25.4            | 20.52 | 30.22           | 22.95 |
|            | 120   | 80    | 2         | 6.07   | 7.74       | 159.8             | 86.04  | 4.54               | 3.33 | 26.63           | 21.51 | 31.72           | 24.09 |
|            | 120   | 80    | 2.4       | 7.24   | 9.22       | 188.7             | 101.43 | 4.52               | 3.32 | 31.44           | 25.36 | 37.62           | 28.55 |
|            | 120   | 80    | 2.9       | 8.67   | 11.05      | 223.4             | 119.85 | 4.5                | 3.29 | 37.24           | 29.96 | 44.79           | 33.96 |
| 122.0X61.0 | 122   | 61    | 1.2       | 3.37   | 4.3        | 86.3              | 29.86  | 4.48               | 2.64 | 14.14           | 9.79  | 17.2            | 10.7  |
|            | 122   | 61    | 1.4       | 3.92   | 5          | 99.8              | 34.48  | 4.47               | 2.63 | 16.35           | 11.3  | 19.94           | 12.4  |
|            | 122   | 61    | 1.6       | 4.46   | 5.69       | 113               | 38.99  | 4.46               | 2.62 | 18.53           | 12.78 | 22.64           | 14.07 |
|            | 122   | 61    | 1.8       | 5      | 6.37       | 126               | 43.41  | 4.45               | 2.61 | 20.66           | 14.23 | 25.31           | 15.71 |
|            | 122   | 61    | 1.9       | 5.27   | 6.72       | 132.5             | 45.58  | 4.44               | 2.6  | 21.72           | 14.94 | 26.63           | 16.53 |
|            | 122   | 61    | 2         | 5.54   | 7.06       | 138.8             | 47.72  | 4.44               | 2.6  | 22.76           | 15.65 | 27.94           | 17.33 |
|            | 122   | 61    | 2.4       | 6.6    | 8.4        | 163.7             | 56.06  | 4.41               | 2.58 | 26.83           | 18.38 | 33.09           | 20.5  |

| HS          | DEPTH | WIDTH | THICKNESS | WEIGHT | AREA       | MOMENT OF INERTIA |        | RADIUS OF GYRATION |      | ELASTIC MODULUS |       | PLASTIC MODULUS |       |
|-------------|-------|-------|-----------|--------|------------|-------------------|--------|--------------------|------|-----------------|-------|-----------------|-------|
| DXB         | D     | D     |           |        | OF SECTION | ABOUT             |        | ABOUT              |      | ABOUT           |       | ABOUT           |       |
|             |       |       |           |        |            | X-X               | Y-Y    | X-X                | Y-Y  | X-X             | Y-Y   | X-X             | Y-Y   |
| 127.0X50.0  | 127   | 50    | 1.2       | 3.26   | 4.15       | 84.7              | 20.08  | 4.52               | 2.2  | 13.34           | 8.03  | 16.63           | 8.7   |
|             | 127   | 50    | 1.4       | 3.79   | 4.83       | 97.9              | 23.15  | 4.5                | 2.19 | 15.42           | 9.26  | 19.27           | 10.08 |
|             | 127   | 50    | 1.6       | 4.31   | 5.5        | 110.9             | 26.14  | 4.49               | 2.18 | 17.46           | 10.46 | 21.88           | 11.42 |
|             | 127   | 50    | 1.8       | 4.83   | 6.16       | 123.6             | 29.06  | 4.48               | 2.17 | 19.46           | 11.62 | 24.44           | 12.75 |
|             | 127   | 50    | 1.9       | 5.09   | 6.49       | 129.8             | 30.49  | 4.47               | 2.17 | 20.45           | 12.19 | 25.72           | 13.4  |
|             | 127   | 50    | 2         | 5.35   | 6.82       | 136               | 31.9   | 4.47               | 2.16 | 21.43           | 12.76 | 26.98           | 14.05 |
|             | 127   | 50    | 2.4       | 6.37   | 8.12       | 160.2             | 37.36  | 4.44               | 2.15 | 25.24           | 14.94 | 31.93           | 16.6  |
|             | 127   | 50    | 2.9       | 7.62   | 9.71       | 189.1             | 43.78  | 4.41               | 2.12 | 29.78           | 17.51 | 37.93           | 19.65 |
| 140.0X80.0  | 140   | 80    | 1.6       | 5.39   | 6.87       | 187.66            | 79.89  | 5.23               | 3.41 | 26.81           | 19.97 | 32.23           | 22.02 |
|             | 140   | 80    | 2         | 6.7    | 8.54       | 231.21            | 98.21  | 5.2                | 3.39 | 33.03           | 24.55 | 39.86           | 27.21 |
|             | 140   | 80    | 2.9       | 9.58   | 12.21      | 324.42            | 137.1  | 5.16               | 3.35 | 46.35           | 34.27 | 56.41           | 38.43 |
|             | 140   | 80    | 3.2       | 10.52  | 13.41      | 354               | 149.36 | 5.14               | 3.34 | 50.58           | 37.34 | 61.75           | 42.03 |
|             | 140   | 80    | 3.6       | 11.76  | 14.99      | 392.4             | 165.19 | 5.12               | 3.32 | 56.06           | 41.3  | 68.71           | 46.73 |
|             | 140   | 80    | 3.9       | 12.68  | 16.16      | 420.4             | 176.66 | 5.1                | 3.31 | 60.06           | 44.17 | 73.83           | 50.18 |
| 145.0X82.0  | 145   | 82    | 1.6       | 5.57   | 7.1        | 207.5             | 86.95  | 5.41               | 3.5  | 28.62           | 21.21 | 34.42           | 23.35 |
|             | 145   | 82    | 2         | 6.92   | 8.82       | 255.8             | 106.94 | 5.39               | 3.48 | 35.28           | 26.08 | 42.59           | 28.86 |
|             | 145   | 82    | 2.9       | 9.9    | 12.61      | 359.3             | 149.45 | 5.34               | 3.44 | 49.55           | 36.45 | 60.33           | 40.8  |
|             | 145   | 82    | 3.2       | 10.88  | 13.85      | 392.2             | 162.88 | 5.32               | 3.43 | 54.1            | 39.73 | 66.05           | 44.64 |
|             | 145   | 82    | 3.6       | 12.16  | 15.49      | 434.93            | 180.22 | 5.3                | 3.41 | 59.99           | 43.96 | 73.52           | 49.65 |
|             | 145   | 82    | 3.9       | 13.11  | 16.71      | 466.1             | 192.81 | 5.28               | 3.4  | 64.29           | 47.03 | 79.01           | 53.32 |
| 150.0X100.0 | 150   | 100   | 1.6       | 6.15   | 7.83       | 256.9             | 138.76 | 5.73               | 4.21 | 34.25           | 27.75 | 40.49           | 30.78 |
|             | 150   | 100   | 2         | 7.64   | 9.74       | 317               | 171.03 | 5.71               | 4.19 | 42.27           | 34.21 | 50.15           | 38.1  |
|             | 150   | 100   | 2.9       | 10.95  | 13.95      | 446.7             | 240.23 | 5.66               | 4.15 | 59.56           | 48.05 | 71.19           | 54.03 |
|             | 150   | 100   | 3.2       | 12.03  | 15.33      | 488.2             | 262.26 | 5.64               | 4.14 | 65.09           | 52.45 | 78              | 59.18 |
|             | 150   | 100   | 3.6       | 13.46  | 17.15      | 542.1             | 290.85 | 5.62               | 4.12 | 72.28           | 58.17 | 86.92           | 65.91 |
|             | 150   | 100   | 3.9       | 14.52  | 18.5       | 581.6             | 311.71 | 5.61               | 4.1  | 77.55           | 62.34 | 93.5            | 70.86 |
| 160.0X80.0  | 160   | 80    | 1.6       | 5.9    | 7.51       | 259.2             | 89.73  | 5.87               | 3.46 | 32.4            | 22.43 | 39.42           | 24.53 |
|             | 160   | 80    | 2         | 7.33   | 9.34       | 319.7             | 110.38 | 5.85               | 3.44 | 39.97           | 27.59 | 48.79           | 30.33 |
|             | 160   | 80    | 2.9       | 10.49  | 13.37      | 449.8             | 154.35 | 5.8                | 3.4  | 56.23           | 38.59 | 69.2            | 42.9  |
|             | 160   | 80    | 3.2       | 11.53  | 14.69      | 491.4             | 168.25 | 5.78               | 3.38 | 61.42           | 42.06 | 75.79           | 46.95 |
|             | 160   | 80    | 3.6       | 12.9   | 16.43      | 545.3             | 186.21 | 5.76               | 3.37 | 68.17           | 46.55 | 84.42           | 52.23 |
|             | 160   | 80    | 3.9       | 13.91  | 17.72      | 584.7             | 199.27 | 5.74               | 3.35 | 73.09           | 49.82 | 90.76           | 56.11 |
| 172.0X92.0  | 172   | 92    | 3.2       | 12.73  | 16.22      | 642.42            | 245.11 | 6.29               | 3.89 | 74.7            | 53.29 | 91.32           | 59.4  |
|             | 172   | 92    | 3.6       | 14.25  | 18.16      | 713.91            | 271.8  | 6.27               | 3.87 | 83.01           | 59.09 | 101.81          | 66.17 |
|             | 172   | 92    | 3.9       | 15.38  | 19.59      | 766.28            | 291.26 | 6.25               | 3.86 | 89.1            | 63.32 | 109.54          | 71.15 |
| 180.0X100.0 | 180   | 100   | 3.2       | 13.54  | 17.25      | 758.1             | 307.25 | 6.63               | 4.22 | 84.23           | 61.45 | 102.43          | 68.47 |
|             | 180   | 100   | 3.6       | 15.16  | 19.31      | 843.1             | 341.06 | 6.61               | 4.2  | 93.68           | 68.21 | 114.27          | 76.32 |
|             | 180   | 100   | 3.9       | 16.36  | 20.84      | 905.5             | 365.76 | 6.59               | 4.19 | 100.61          | 73.15 | 123             | 82.11 |
| 200.0X100.0 | 200   | 100   | 3.6       | 16.29  | 20.75      | 1091.42           | 374.53 | 7.25               | 4.25 | 109.14          | 74.91 | 134.29          | 83.26 |
|             | 200   | 100   | 3.9       | 17.58  | 22.4       | 1172.82           | 401.8  | 7.24               | 4.24 | 117.28          | 80.36 | 144.62          | 89.6  |

| Grade     | Y.S       | T.S        | %age Elongation (Min.) |
|-----------|-----------|------------|------------------------|
|           | Mpa (min) | Mpa( min.) |                        |
| Yst – 240 | 240       | 410        | 10                     |



## Steel tubes for water, gas and sewerage purposes

Conforming to IS:3589 / 2001 (grade FE 330 and FE 410)

| Outside Diameter mm | Thickness mm | Weight (Plain End) |           |
|---------------------|--------------|--------------------|-----------|
|                     |              | Kg / M             | M / Tonne |
| 168.3               | 2.6          | 10.6               | 94        |
|                     | 3.2          | 13.02              | 77        |
|                     | 4            | 16.2               | 62        |
|                     | 4.5          | 18.2               | 55        |
| 219.1               | 2.6          | 13.9               | 72        |
|                     | 3.6          | 19.1               | 52        |
|                     | 4.5          | 23.8               | 42        |
|                     | 6.3          | 33.1               | 30        |
|                     | 7            | 36.61              | 27        |
|                     | 8            | 41.64              | 24        |
| 273                 | 3.6          | 23.9               | 42        |
|                     | 4            | 26.5               | 38        |
|                     | 5            | 33                 | 30        |
|                     | 6.3          | 41.4               | 24        |
|                     | 7            | 45.92              | 22        |
|                     | 8            | 52.28              | 19        |

### Tolerances

- a. Outside Diameter      +/- 0.75%  
b. Thickness                +/- 10%

### c. Length

Unless otherwise specified, length are in single random Length of 4 to 7 meters or double random Length of 7 to 14 meters

### Also Available:

Internal Bead Free & Screwed & Socketed  
Black & Galvanized Pipes

## Chemical Composition

| Steel Grade | % C   | % Mn (Max) | % P   | % S   | CE    |
|-------------|-------|------------|-------|-------|-------|
|             | (Max) |            | (Max) | (Max) | (Max) |
| Fe 330      | 0.16  | 1.2        | 0.04  | 0.04  | -     |
| Fe 410      | 0.2   | 1.3        | 0.04  | 0.04  | 0.45  |

## Mechanical Properties

| YST       | TS        | % EL  |
|-----------|-----------|-------|
| (MPa) Min | (MPa) Min | (Min) |
| 195       | 330       | 20    |
| 235       | 410       | 18    |

## STEEL TUBES FOR WATER WELLS (CASING PIPES) CONFORMING TO IS : 4270 / 2001

| N.B. of Pipe MM | Outside Diameter | Thickness | Nominal Weight Black Tubes Plain End |         |
|-----------------|------------------|-----------|--------------------------------------|---------|
|                 |                  |           | kg/m                                 | m/tonne |
| 100             | 114.3            | 5.4       | 14.5                                 | 69      |
| 125             | 141.3            | 5.4       | 18.1                                 | 55      |
|                 |                  | 7.1       | 23.5                                 | 43      |
| 150             | 168.3            | 5.4       | 21.6                                 | 46      |
|                 |                  | 7.1       | 28.2                                 | 35      |
| 175             | 193.7            | 6.4       | 29.6                                 | 34      |
|                 |                  | 8         | 36.6                                 | 27      |
| 200             | 219.1            | 6.4       | 33.6                                 | 30      |
|                 |                  | 8         | 41.6                                 | 24      |
| 225             | 244.5            | 7.1       | 41.6                                 | 24      |
|                 |                  | 9         | 52.3                                 | 19      |
| 250             | 273.1            | 8         | 52.3                                 | 19      |
|                 |                  | 10        | 64.9                                 | 15      |

### A. PHYSICAL PROPERTIES

| Grade | Y. S. (min) MPa (kg/mm <sup>2</sup> ) | T. S. (min) MPa (kg/mm <sup>2</sup> ) | % age Elongation |
|-------|---------------------------------------|---------------------------------------|------------------|
| Fe410 | 235                                   | 410                                   | 15               |
| Fe450 | 275                                   | 450                                   | 13               |

### B. TOLERANCE

|   |                        |         |
|---|------------------------|---------|
| 1 | Outside Diameter       | 1%      |
| 2 | <b>Thickness</b>       |         |
|   | Welded tube Up to      | 15%     |
|   | And including 406.4 MM | -12.50% |
|   | Over 406.4 MM outside  | 15%     |
|   | Diameter               | -10%    |
| 3 | <b>Weight</b>          | -8%     |
|   | Single Tube            | 10%     |

**EUROPEAN STANDARD FOR STEEL TUBES AND PIPES FOR ORDINARY SERVICES** PIPES CONFORMING TO EN : 10255

| Nominal Size |       | Class | Outside Diameter |       | Thick. (mm) | Weight<br>(Plain End) | Weight<br>(Socketed) | Pcs per<br>Bundle |
|--------------|-------|-------|------------------|-------|-------------|-----------------------|----------------------|-------------------|
| MM           | Inch  |       | Min              | Max   |             |                       |                      |                   |
| 15mm         | 1/2   | L1    | 21               | 21.7  | 2.3         | 1.08                  | 1.09                 | 169               |
| 20mm         | 3/4   | L1    | 26.4             | 27.1  | 2.3         | 1.39                  | 1.4                  | 127               |
| 25mm         | 1     | L1    | 33.2             | 34    | 2.9         | 2.2                   | 2.22                 | 91                |
| 32mm         | 1 1/4 | L1    | 41.9             | 42.7  | 2.9         | 2.82                  | 2.85                 | 61                |
| 40mm         | 1 1/2 | L1    | 47.8             | 48.6  | 2.9         | 3.24                  | 3.28                 | 61                |
| 50mm         | 2     | L1    | 59.6             | 60.7  | 3.2         | 4.49                  | 4.56                 | 37                |
| 65mm         | 2 1/2 | L1    | 75.2             | 76.3  | 3.2         | 5.73                  | 5.85                 | 24                |
| 80mm         | 3     | L1    | 87.9             | 89.4  | 3.6         | 7.55                  | 7.72                 | 19                |
| 100mm        | 4     | L1    | 113              | 114.9 | 4           | 10.8                  | 11.1                 | 14                |
| 15mm         | 1/2   | L2    | 21               | 21.4  | 2           | 0.947                 | 0.956                | 169               |
| 20mm         | 3/4   | L2    | 26.4             | 26.9  | 2.3         | 1.38                  | 1.39                 | 127               |
| 25mm         | 1     | L2    | 33.2             | 33.8  | 2.6         | 1.98                  | 2                    | 91                |
| 32mm         | 1 1/4 | L2    | 41.9             | 42.5  | 2.6         | 2.54                  | 2.57                 | 61                |
| 40mm         | 1 1/2 | L2    | 47.8             | 48.4  | 2.9         | 3.23                  | 3.27                 | 61                |
| 50mm         | 2     | L2    | 59.6             | 60.2  | 2.9         | 4.08                  | 4.15                 | 37                |
| 65mm         | 2 1/2 | L2    | 75.2             | 76    | 3.2         | 5.71                  | 5.83                 | 24                |
| 80mm         | 3     | L2    | 87.9             | 88.7  | 3.2         | 6.72                  | 6.89                 | 19                |
| 100mm        | 4     | L2    | 113              | 113.9 | 3.6         | 9.75                  | 10                   | 14                |
| 15mm         | 1/2   | L     | 21               | 21.7  | 2.3         | 1.08                  | 1.09                 | 169               |
| 20mm         | 3/4   | L     | 26.4             | 27.1  | 2.3         | 1.4                   | 1.41                 | 127               |
| 25mm         | 1     | L     | 33.2             | 34    | 2.9         | 2.2                   | 2.22                 | 91                |
| 32mm         | 1 1/4 | L     | 41.9             | 42.7  | 2.9         | 2.82                  | 2.85                 | 61                |
| 40mm         | 1 1/2 | L     | 47.8             | 48.6  | 2.9         | 3.25                  | 3.29                 | 61                |
| 50mm         | 2     | L     | 59.6             | 60.7  | 3.2         | 4.51                  | 4.58                 | 37                |
| 65mm         | 2 1/2 | L     | 75.2             | 76    | 3.2         | 5.75                  | 5.87                 | 24                |
| 80mm         | 3     | L     | 87.9             | 88.7  | 3.2         | 6.76                  | 6.93                 | 19                |
| 100mm        | 4     | L     | 113              | 113.9 | 3.6         | 9.83                  | 10.1                 | 14                |
| 125mm        | 5     | L     | 138.5            | 140.8 | 4.5         | 15                    | 15.5                 | 7                 |
| 150mm        | 6     | L     | 163.9            | 166.5 | 4.5         | 17.8                  | 18.4                 | 7                 |
| 15mm         | 1/2   | M     | 21               | 21.8  | 2.6         | 1.21                  | 1.22                 | 169               |
| 20mm         | 3/4   | M     | 26.5             | 27.3  | 2.6         | 1.56                  | 1.57                 | 127               |
| 25mm         | 1     | M     | 33.3             | 34.2  | 3.2         | 2.41                  | 2.43                 | 91                |
| 32mm         | 1 1/4 | M     | 42               | 42.9  | 3.2         | 3.1                   | 3.13                 | 61                |
| 40mm         | 1 1/2 | M     | 47.9             | 48.8  | 3.2         | 3.56                  | 3.6                  | 61                |
| 50mm         | 2     | M     | 59.7             | 60.8  | 3.6         | 5.03                  | 5.1                  | 37                |
| 65mm         | 2 1/2 | M     | 75.3             | 76.6  | 3.6         | 6.42                  | 6.54                 | 24                |
| 80mm         | 3     | M     | 88               | 89.5  | 4           | 8.36                  | 8.53                 | 19                |
| 100mm        | 4     | M     | 113.1            | 115   | 4.5         | 12.2                  | 12.5                 | 14                |
| 125mm        | 5     | M     | 138.5            | 140.8 | 5           | 16.6                  | 17.1                 | 7                 |
| 150mm        | 6     | M     | 163.9            | 166.5 | 5           | 19.8                  | 20.4                 | 7                 |
| 15mm         | 1/2   | H     | 21               | 21.8  | 3.2         | 1.44                  | 1.45                 | 169               |
| 20mm         | 3/4   | H     | 26.5             | 27.3  | 3.2         | 1.87                  | 1.88                 | 127               |
| 25mm         | 1     | H     | 33.3             | 34.2  | 4           | 2.93                  | 2.95                 | 91                |
| 32mm         | 1 1/4 | H     | 42               | 42.9  | 4           | 3.79                  | 3.82                 | 61                |
| 40mm         | 1 1/2 | H     | 47.9             | 48.8  | 4           | 4.37                  | 4.41                 | 61                |

| Nominal Size |       | Class | Outside Diameter |       | Thick. (mm) | Weight<br>(Plain End) | Weight<br>(Sockete) | Pcs per<br>Bundle |
|--------------|-------|-------|------------------|-------|-------------|-----------------------|---------------------|-------------------|
| MM           | Inch  |       | Min              | Max   |             |                       |                     |                   |
| 50mm         | 2     | H     | 59.7             | 60.8  | 4.5         | 6.19                  | 6.26                | 37                |
| 65mm         | 2 1/2 | H     | 75.3             | 76.6  | 4.5         | 7.93                  | 8.05                | 24                |
| 80mm         | 3     | H     | 88               | 89.5  | 5           | 10.3                  | 10.5                | 19                |
| 100mm        | 4     | H     | 113.1            | 115   | 5.4         | 14.5                  | 14.8                | 10                |
| 125mm        | 5     | H     | 138.5            | 140.8 | 5.4         | 17.9                  | 18.4                | 7                 |
| 150mm        | 6     | H     | 163.9            | 166.5 | 5.4         | 21.3                  | 21.9                | 7                 |

## 1. TOLERANCES (OUTSIDE DIAMETER AS PER ABOVE TABLE)

| Thickness                                                                   | Medium | Heavy | Light L | Light L1 | Light L2 |
|-----------------------------------------------------------------------------|--------|-------|---------|----------|----------|
|                                                                             | ±10%   | ±10%  | ±10%    | -8%      | -8%      |
| Weight : ±7.5% for M, H & L series (on lot) and +10%/-8% for L1 & L2 series |        |       |         |          |          |

## 2. MECHANICAL PROPERTIES

|                  |                   |
|------------------|-------------------|
| Yield Strength   | 195 MPa (Minimum) |
| Tensile Strength | 320 to 520 Mpa    |
| %Elongation      | 20% Minimum       |

## 3 CHEMICAL COMPOSITION

|             |             |
|-------------|-------------|
| Carbon      | 0.20 % Max  |
| Manganese   | 1.40 % Max  |
| Phosphorous | 0.035 % Max |
| Sulphur     | 0.030 % Max |

## SCAFFOLDING PIPES CONFORMING TO BS EN 39

|      |                        |                  |
|------|------------------------|------------------|
| Size | Outside diameter       | 48.3 mm          |
| Type | Wall thickness (in mm) | Weight in Kg/Mtr |
| 3    | 3.2                    | 3.56             |
| 4    | 4                      | 4.37             |

### 1. TOLERANCES ON DIMENSIONS

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| Characteristics      | Tolerances                                                  |
| External Dimensions  | ±0.50mm.                                                    |
| Thickness            | For -10%                                                    |
| Straightness         | 0.20% of total length                                       |
| Mass per unit length | Not less than 7.5% the specified mass on individual lengths |

### 2. MECHANICAL PROPERTIES

| Grade   | YS (MPa) Min | TS (MPa) Min | % EL (Min) |
|---------|--------------|--------------|------------|
| S235 GT | 235          | 340-520      | 24         |

### 3. CHEMICAL COMPOSITION (%) MAX

| C     | Si    | Mn    | P     | S     | Al    |
|-------|-------|-------|-------|-------|-------|
| (Max) | (Max) | (Max) | (Max) | (Max) | (Min) |
| 0.2   | 0.04  | 1.4   | 0.04  | 0.045 | 0.02  |

Flatteing Test 1. Flatten upto 75% of tube dia for weld test (Weld at 0°& 90° position)

## SCAFFOLDING PIPES CONFORMING TO BS EN 10219 (HIGH- GRADE)

|        |                        |                  |
|--------|------------------------|------------------|
| Size   | Outside diameter       | 48.3 mm          |
| Type   | Wall thickness (in mm) | Weight in Kg/Mtr |
| 1 1/2" | 3.2                    | 3.56             |

### 1. TOLERANCES ON DIMENSIONS

|                      |                                                                           |  |  |  |  |
|----------------------|---------------------------------------------------------------------------|--|--|--|--|
| Characteristics      | Tolerances                                                                |  |  |  |  |
| External Dimensions  | ±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm                    |  |  |  |  |
| Thickness            | For do ≤ 406.4 mm, T ≤ 5mm : ±10%, T > 5mm ± 0.5mm;                       |  |  |  |  |
|                      | For do > 406.4 mm: ±10% with a max of ±2 mm                               |  |  |  |  |
| Out-of-roundness     | 2% for hollow sections having a diameter to thickness ratio not exceeding |  |  |  |  |
| Straightness         | 0.20% of total length                                                     |  |  |  |  |
| Mass per unit length | ± 6% on individual delivered lengths                                      |  |  |  |  |

### 2. MECHANICAL PROPERTIES

|          | YS      | TS Min MPa |         | % EL  | Minimum impact energy J |     |      |
|----------|---------|------------|---------|-------|-------------------------|-----|------|
| Grade    | Min MPa |            |         | (Min) |                         |     |      |
|          |         | < 3        | ≥3 ≤40  | ≤ 40  | -20°C                   | 0°C | 20°C |
| S355 J0H | 355     | 510-680    | 470-630 | 20    | —                       | 27  | —    |

3. CHEMICAL COMPOSITION (%) Max

| Grade    | C     | Si    | Mn    | P     | S     | N     | CEV  |
|----------|-------|-------|-------|-------|-------|-------|------|
|          | (Max) | (Max) | (Max) | (Max) | (Max) | (Min) |      |
| S355 J0H | 0.22  | 0.55  | 1.6   | 0.035 | 0.035 | 0.009 | 0.45 |

EUROPEAN STANDARD FOR STEEL TUBES AND PIPES FOR STRUCTURAL PURPOSES  
PIPES CONFORMING TO EN : 10219-1&2 CIRCULAR HOLLOW SECTION

| SIZE OD (MM) | WALL THICKNESS (mm)           |      |      |      |      |      |      |      |      |      |      |
|--------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|
|              | 2                             | 2.5  | 3    | 4    | 5    | 6    | 6.3  | 8    | 10   | 12   | 12.5 |
|              | Mass per unit length (Kg/mtr) |      |      |      |      |      |      |      |      |      |      |
| 21.3         | 0.95                          | 1.16 | 1.35 |      |      |      |      |      |      |      |      |
| 26.9         | 1.23                          | 1.5  | 1.77 |      |      |      |      |      |      |      |      |
| 33.7         | 1.56                          | 1.92 | 2.27 |      |      |      |      |      |      |      |      |
| 42.4         | 1.99                          | 2.46 | 2.91 | 3.79 |      |      |      |      |      |      |      |
| 48.3         | 2.28                          | 2.82 | 3.35 | 4.37 | 5.34 |      |      |      |      |      |      |
| 60.3         | 2.88                          | 3.56 | 4.24 | 5.55 | 6.82 |      |      |      |      |      |      |
| 76.1         | 3.65                          | 4.54 | 5.41 | 7.11 | 8.77 | 10.4 | 10.8 |      |      |      |      |
| 88.9         | 4.29                          | 5.33 | 6.36 | 8.38 | 10.3 | 12.3 | 12.8 |      |      |      |      |
| 101.6        | 4.91                          | 6.11 | 7.29 | 9.63 | 11.9 | 14.1 | 14.8 |      |      |      |      |
| 114.3        |                               | 6.89 | 8.23 | 10.9 | 13.5 | 16   | 16.8 | 21   |      |      |      |
| 139.7        |                               |      | 10.1 | 13.4 | 16.6 | 19.8 | 20.7 | 26   | 32   |      |      |
| 168.3        |                               |      | 12.2 | 16.2 | 20.1 | 24   | 25.2 | 31.6 | 39   |      |      |
| 219.1        |                               |      |      | 21.2 | 26.4 | 31.5 | 33.1 | 41.6 | 51.6 | 61.3 | 63.7 |
| 244.5        |                               |      |      |      | 29.5 | 35.3 | 37   | 46.7 | 57.8 | 68.8 | 71.5 |
| 273          |                               |      |      |      | 33   | 39.5 | 41.4 | 52.3 | 64.9 | 77.2 | 80.3 |

1. TOLERANCES ON DIMENSIONS

|                      |                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------|
| Characteristics      | Tolerances                                                                                         |
| External Dimensions  | ±1%, with a minimum of ±0.5 mm and a maximum of ±10 mm                                             |
| Thickness            | For do ≤ 406.4 mm, T ≤ 5mm : ±10%, T > 5mm ± 0.5mm;<br>For do > 406.4 mm: ±10% with a max of ±2 mm |
| Out-of-roundness     | 2% for hollow sections having a diameter to thickness ratio not exceeding 100                      |
| Straightness         | 0.20% of total length                                                                              |
| Mass per unit length | ± 6% on individual delivered lengths                                                               |

2. MECHANICAL PROPERTIES

| Grade    | YS Min MPa | TS Min MPa |          | % EL (Min) | Minimum impact energy J |      |       |
|----------|------------|------------|----------|------------|-------------------------|------|-------|
|          |            | < 3        | ≥ 3 ≤ 40 |            | -20° C                  | 0° C | 20° C |
| S235 JRH | 235        | 360-510    | 360-510  | 24         | —                       | —    | 27    |
| S275 J0H | 275        | 430-580    | 410-560  | 20         | —                       | 27   | —     |
| S275 J2H |            |            |          |            | 27                      | —    | —     |
| S355 J0H | 235        | 510-680    | 470-630  | 20         | —                       | 27   | —     |
| S355 J2H |            |            |          |            | 27                      | —    | —     |
| S355 K2H |            |            |          |            | 40                      | —    | —     |

3. CHEMICAL COMPOSITION (%) MAX

| Grade    | C     | Si    | Mn    | P     | S     | N     | CEV   |
|----------|-------|-------|-------|-------|-------|-------|-------|
| S235 JRH | 0.170 | —     | 1.400 | 0.040 | 0.040 | 0.009 | 0.350 |
| S275 J0H | 0.200 | —     | 1.500 | 0.035 | 0.035 | 0.009 | 0.400 |
| S275 J2H | 0.200 | —     | 1.500 | 0.030 | 0.030 | —     | 0.400 |
| S355 J0H | 0.220 | 0.550 | 1.600 | 0.035 | 0.035 | 0.009 | 0.450 |
| S355 J2H | 0.220 | 0.550 | 1.600 | 0.030 | 0.030 | —     | 0.450 |
| S355 K2H | 0.220 | 0.550 | 1.600 | 0.030 | 0.030 | —     | 0.450 |

## ASTM PIPES

### PIPES CONFORMING TO ASTM A - 53 GR A & B

| NPS Designator | DN Designator | Outside Diameter |       | Schedule No. | Thickness |       | Mass of Plain end Pipe |         | Hydrostatic Test Pressure |             | Pieces/ bundle |
|----------------|---------------|------------------|-------|--------------|-----------|-------|------------------------|---------|---------------------------|-------------|----------------|
|                |               | Inch             | mm    |              | Inch      | mm    | lb/ft.                 | Kg/mtr. | Grade A-Mpa               | Grade B-Mpa |                |
| ½              | 15            | 0.84             | 21.3  | 40           | 0.109     | 2.77  | 0.85                   | 1.27    | 4.8                       | 4.8         | 120            |
| ¾              | 20            | 1.05             | 26.7  | 40           | 0.113     | 2.87  | 1.13                   | 1.69    | 4.8                       | 4.8         | 84             |
| 1              | 25            | 1.315            | 33.4  | 40           | 0.133     | 3.38  | 1.68                   | 2.5     | 4.8                       | 4.8         | 60             |
| 1¼             | 32            | 1.66             | 42.2  | 40           | 0.14      | 3.56  | 2.27                   | 3.39    | 8.3                       | 9           | 42             |
| 1½             | 40            | 1.9              | 48.3  | 40           | 0.145     | 3.68  | 2.72                   | 4.05    | 8.3                       | 9           | 36             |
| 2              | 50            | 2.375            | 60.3  | 40           | 0.154     | 3.91  | 3.66                   | 5.44    | 15.9                      | 17.2        | 26             |
| 2½             | 65            | 2.874            | 73    | 40           | 0.203     | 5.16  | 5.8                    | 8.63    | 17.2                      | 17.2        | 18             |
| 3              | 80            | 3.5              | 88.9  | 40           | 0.216     | 5.49  | 7.58                   | 11.29   | 15.3                      | 17.2        | 14             |
| 4              | 100           | 4.5              | 114.3 | 40           | 0.237     | 6.02  | 10.8                   | 16.07   | 13.1                      | 15.2        | 10             |
| 5              | 125           | 5.563            | 141.3 | 40           | 0.258     | 6.55  | 14.63                  | 21.77   | 11.5                      | 13.4        | 7              |
| 6              | 150           | 6.625            | 168.3 | 40           | 0.28      | 7.11  | 18.99                  | 28.26   | 10.5                      | 12.3        | 7              |
| 8              | 200           | 8.625            | 219.1 | 20           | 0.25      | 6.35  | 22.38                  | 33.31   | 7.2                       | 8.4         | ---            |
| 8              | 200           | 8.625            | 219.1 | 40           | 0.322     | 8.18  | 28.58                  | 42.55   | 9.2                       | 10.8        | ---            |
| 10             | 250           | 10.75            | 273.1 | 20           | 0.25      | 6.35  | 28.06                  | 41.75   | 5.8                       | 6.8         | ---            |
| 10             | 250           | 10.75            | 273.1 | 40           | 0.365     | 9.27  | 40.52                  | 60.29   | 8.4                       | 9.9         | ---            |
| 12             | 300           | 12.75            | 323.9 | 20           | 0.25      | 6.35  | 33.41                  | 49.71   | 4.9                       | 5.7         | ---            |
| 12             | 300           | 12.75            | 323.9 | 30           | 0.33      | 8.38  | 43.81                  | 65.18   | 6.4                       | 7.5         | ---            |
| 12             | 300           | 12.75            | 323.9 | STD          | 0.375     | 9.52  | 49.61                  | 73.78   | 7.3                       | 8.5         | ---            |
| 12             | 300           | 12.75            | 323.9 | 40           | 0.406     | 10.31 | 53.57                  | 79.7    | 7.9                       | 9.2         | ---            |
| 14             | 350           | 14               | 355.6 | 10           | 0.25      | 6.35  | 36.75                  | 54.69   | 4.4                       | 5.2         | ---            |
| 14             | 350           | 14               | 355.6 | 30           | 0.375     | 9.52  | 54.62                  | 81.25   | 6.6                       | 7.7         | ---            |
| 14             | 350           | 14               | 355.6 | 40           | 0.438     | 11.13 | 63.5                   | 94.55   | 7.8                       | 9           | ---            |
| 16             | 400           | 16               | 406.4 | 10           | 0.25      | 6.35  | 42.09                  | 62.64   | 3.9                       | 4.5         | ---            |
| 16             | 400           | 16               | 406.4 | 30           | 0.375     | 9.52  | 62.64                  | 93.17   | 5.8                       | 6.8         | ---            |
| 16             | 400           | 16               | 406.4 | 40           | 0.5       | 12.7  | 82.85                  | 123.3   | 7.7                       | 9           | ---            |

## 1. TOLERANCES ON DIMENSIONS

|                  |                                                   |
|------------------|---------------------------------------------------|
| Outside Diameter | Pipe size upto & including DN 40 +/- 0.4 mm of OD |
|                  | Pipe size DN 50 or larger +/- 1% of OD            |
| Thickness        | - 12.5% (max) / + Not specified                   |
| Weight           | +/- 10%                                           |

## 2. TESTING

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Online NDT            | For Pipes NPS 2 (DN 50) or larger                                    |
|                       | Weld seam of each pipe shall be tested by Eddy Currer                |
| Bend Test             | For pipe upto & including DN 50                                      |
|                       | Bending Angle 90°                                                    |
|                       | Bending Radius 12 times to the OD of tube (No cracks in body & weld) |
| Flattening (0° & 90°) | For Pipes over DN 50                                                 |
|                       | 1. Flatten upto 2/3 of OD for ductility of weld                      |
|                       | 2. Flatten upto 1/3 of OD for ductility of steel                     |
|                       | 3. Full flattening for testing of lamination or unsound material     |

## 3. MECHANICAL PROPERTIES

|                  |                  |                  |
|------------------|------------------|------------------|
|                  | Grade A          | Grade B          |
| Yield Strength   | 205 Mpa (Min)    | 240 Mpa (Min)    |
| Tensile Strength | 330 Mpa (Min)    | 415 Mpa (Min)    |
| Elongation       | As per ASTM A-53 | As per ASTM A-53 |

## 4. CHEMICAL COMPOSITION (MAXIMUM %

| Grade   | Carbon | Manganese | Phosphorus | Sulphur | Copper | Nickel | Chromium | Molybdenum | Vanadium |
|---------|--------|-----------|------------|---------|--------|--------|----------|------------|----------|
| Grade A | 0.25   | 0.95      | 0.05       | 0.045   | 0.4    | 0.4    | 0.4      | 0.15       | 0.08     |
| Grade B | 0.3    | 1.2       | 0.05       | 0.045   | 0.4    | 0.4    | 0.4      | 0.15       | 0.08     |

$Cu + Ni + Cr + Mb + V < 1\%$

## 5. GALVANIZING

|                                                 |                                              |
|-------------------------------------------------|----------------------------------------------|
| As per ASTM A-53 with test method ASTM A90/A90M |                                              |
| Min. of any surface of specimen                 | 0.400Kg/Mtr <sup>2</sup> (55 microns approx) |
| Average of one specimen                         | 0.490Kg/Mtr <sup>2</sup> (70 microns approx) |
| Average of two specimens                        | 0.550Kg/Mtr <sup>2</sup> (79 microns approx) |

## 6. MARKING/STENCILING

Online stenciling as per the standard & client requirements

## AUSTRALIAN STANDARD FOR STEEL TUBES AND TUBULARS FOR ORDINARY SERVICES PIPES CONFORMING TO AS : 1074

| Nominal Size |      | Class | Outside Diameter |       | Thick. (mm) | Weight<br>(Plain End)<br>(Kg/mtr.) | Weight<br>(Socketed)<br>(Kg/mtr.) | Pcs per<br>Bundle |
|--------------|------|-------|------------------|-------|-------------|------------------------------------|-----------------------------------|-------------------|
| MM           | Inch |       | Min              | Max   |             |                                    |                                   |                   |
| 15           | ½"   | L     | 21               | 21.4  | 2           | 0.947                              | 0.956                             | 217               |
| 20           | ¾"   | L     | 26.4             | 26.9  | 2.3         | 1.38                               | 1.39                              | 127               |
| 25           | 1"   | L     | 33.2             | 33.8  | 2.6         | 1.98                               | 2                                 | 91                |
| 32           | 1¼"  | L     | 41.9             | 42.5  | 2.6         | 2.54                               | 2.57                              | 61                |
| 40           | 1½"  | L     | 47.8             | 48.4  | 2.9         | 3.23                               | 3.27                              | 61                |
| 50           | 2"   | L     | 59.6             | 60.2  | 2.9         | 4.08                               | 4.15                              | 37                |
| 65           | 2½"  | L     | 75.2             | 76    | 3.2         | 5.71                               | 5.83                              | 37                |
| 80           | 3"   | L     | 87.9             | 88.7  | 3.2         | 6.72                               | 6.89                              | 19                |
| 100          | 4"   | L     | 113              | 113.9 | 3.6         | 9.75                               | 10                                | 19                |
| 15           | ½"   | M     | 21.1             | 21.7  | 2.6         | 1.21                               | 1.22                              | 217               |
| 20           | ¾"   | M     | 26.6             | 27.2  | 2.6         | 1.56                               | 1.57                              | 127               |
| 25           | 1"   | M     | 33.4             | 34.2  | 3.2         | 2.41                               | 2.43                              | 91                |
| 32           | 1¼"  | M     | 42.1             | 42.9  | 3.2         | 3.1                                | 3.13                              | 61                |
| 40           | 1½"  | M     | 48               | 48.8  | 3.2         | 3.57                               | 3.61                              | 61                |
| 50           | 2"   | M     | 59.8             | 60.8  | 3.6         | 5.03                               | 5.1                               | 37                |
| 65           | 2½"  | M     | 75.4             | 76.6  | 3.6         | 6.43                               | 6.55                              | 37                |
| 80           | 3"   | M     | 88.1             | 89.5  | 4           | 8.37                               | 8.54                              | 19                |
| 100          | 4"   | M     | 113.3            | 114.9 | 4.5         | 12.2                               | 12.5                              | 19                |
| 125          | 5"   | M     | 138.7            | 140.6 | 5           | 16.6                               | 17.1                              | 13                |
| 150          | 6"   | M     | 164.1            | 166.1 | 5           | 19.7                               | 20.3                              | 10                |
| 15           | ½"   | H     | 21.1             | 21.7  | 3.2         | 1.44                               | 1.45                              | 217               |
| 20           | ¾"   | H     | 26.6             | 27.2  | 3.2         | 1.87                               | 1.88                              | 127               |
| 25           | 1"   | H     | 33.4             | 34.2  | 4           | 2.94                               | 2.96                              | 91                |
| 32           | 1¼"  | H     | 42.1             | 42.9  | 4           | 3.8                                | 3.83                              | 61                |
| 40           | 1½"  | H     | 48               | 48.8  | 4           | 4.38                               | 4.42                              | 61                |
| 50           | 2"   | H     | 59.8             | 60.8  | 4.5         | 6.19                               | 6.26                              | 37                |
| 65           | 2½"  | H     | 75.4             | 76.6  | 4.5         | 7.93                               | 8.05                              | 37                |
| 80           | 3"   | H     | 88.1             | 89.5  | 5           | 10.3                               | 10.5                              | 19                |
| 100          | 4"   | H     | 113.3            | 114.9 | 5.4         | 14.5                               | 14.8                              | 19                |
| 125          | 5"   | H     | 138.7            | 140.6 | 5.4         | 17.9                               | 18.4                              | 13                |
| 150          | 6"   | H     | 164.1            | 166.1 | 5.4         | 21.3                               | 21.9                              | 10                |

## 1. TOLERANCES (OUTSIDE DIAMETER AS PER ABOVE TABLE)

| Thickness                             | Light      | Medium     | Heavy      |
|---------------------------------------|------------|------------|------------|
|                                       | -8%        | -10%       | -10%       |
|                                       | +unlimited | +unlimited | +unlimited |
| Weight : -8% & +10% (for single tube) |            |            |            |

## 2. MECHANICAL PROPERTIES

|                  |                      |
|------------------|----------------------|
| Yield Strength   | 195 MPa<br>(Minimum) |
| Tensile Strength | 320 to 460 Mpa       |
| %Elongation      | 20% Minimum          |

## 3. CHEMICAL COMPOSITION

|             |             |
|-------------|-------------|
| Carbon      | 0.40 % Max  |
| Phosphorous | 0.045 % Max |
| Sulphur     | 0.045 % Max |

|                |                               |  |                           |
|----------------|-------------------------------|--|---------------------------|
| Ductility Test | For Tubes upto & including 2" |  |                           |
| Black Tube     | Bending angle                 |  | 180°                      |
|                | Bending radius                |  | 6 times to the OD of Tube |
|                | Weld Position                 |  | 3 O'clock                 |

|                 |                |  |                           |  |
|-----------------|----------------|--|---------------------------|--|
| Galvanized Tube |                |  |                           |  |
|                 | Bending angle  |  | 90°                       |  |
|                 | Bending radius |  | 8 times to the OD of Tube |  |
|                 | Weld Position  |  | 3 O'clock                 |  |

|                     |                                                                                 |  |  |  |  |
|---------------------|---------------------------------------------------------------------------------|--|--|--|--|
| Ductility Test      | For Tubes above 2"                                                              |  |  |  |  |
|                     | 1. Flatten upto 75% of tube dia for weld test (Weld at 3 O'clock position)      |  |  |  |  |
|                     | 2. Flatten upto 60% of tube dia for raw material test                           |  |  |  |  |
| Leak Tightness Test | 100% Hydrotesting at 5 MPa or online eddy current testing or ultrasonic testing |  |  |  |  |

|                  |                  |
|------------------|------------------|
| Galvanizing Test | As per AS 1650   |
| Threading        | As per AS 1722-1 |



# Hot Rolled Coils

| PARAMETER           | REMARKS                                                                                                                                                                                       |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coil I.D.           | 490 to 510 mm                                                                                                                                                                                 |
| Coil O.D.           | 1000 to 1500 mm                                                                                                                                                                               |
| Thickness Range     | 1.20 to 8.00 mm                                                                                                                                                                               |
| Thickness Tolerance | 2.50 mm & above : (+) / (-) 0.05                                                                                                                                                              |
|                     | 2.10 mm to 2.49 mm : (+) / (-) 0.06                                                                                                                                                           |
|                     | 1.80 mm to 2.09 mm : (+) / (-) 0.07                                                                                                                                                           |
|                     | Below 1.80 mm : (+) / (-) 0.10                                                                                                                                                                |
| Width Range         | As Rolled : 150 mm to 520 mm , Slitted : 24 mm to 450 mm                                                                                                                                      |
| Width Tolerance     | As Rolled : (-) / (+) 6 mm , Slitted : (+) / (-) 0.50 mm                                                                                                                                      |
| Cut to Length (CTL) | Minimum : 1000 mm Maximum : 3000 mm                                                                                                                                                           |
| Camber              | As per BIS                                                                                                                                                                                    |
| Coil Condition      | The coils will be supplied in as rolled condition without any skin passing, oiling, annealing and normalizing. - Coil may be without tongue, but with fish tail. The edges will be mill edges |
| Packing             | 01/02 No. of Circumstantial bands and 01/02 no. of bands through the eye (As per requirement).                                                                                                |
| Marking             | Each coil will have following details marked with paint :-                                                                                                                                    |
|                     | 1. Coil number                                                                                                                                                                                |
|                     | 2. Coil Size:- Width x Thickness                                                                                                                                                              |

## IS 10748 / 2004 GRADES GR-1,2,3,4,5 & 6

| Specification | Grade | Chemical Composition |         |        |        |                                                       | Yield Strength | Ultimate Tensile Strength | Mechanical Properties |                           |
|---------------|-------|----------------------|---------|--------|--------|-------------------------------------------------------|----------------|---------------------------|-----------------------|---------------------------|
|               |       |                      |         |        |        |                                                       |                |                           | Elongation %          | Internal diameter of bend |
|               |       | C %max               | Mn %max | P %max | S %max | Si %max                                               | Mpa (Min)      | Mpa (Min)                 |                       |                           |
| IS:10748/2004 | GR-1  | 0.1                  | 0.5     | 0.04   | 0.04   | For semi killed Quality Si content shall be 0.08% max | 170            | 290                       | 30                    | T                         |
|               | GR-2  | 0.12                 | 0.6     | 0.04   | 0.04   |                                                       | 210            | 330                       | 28                    | 2T                        |
|               | GR-3  | 0.16                 | 1.2     | 0.04   | 0.04   |                                                       | 240            | 410                       | 25                    | 2T                        |
|               | GR-4  | 0.2                  | 1.3     | 0.04   | 0.04   |                                                       | 275            | 430                       | 20                    | 3T                        |
|               | GR-5  | 0.25                 | 1.3     | 0.04   | 0.04   |                                                       | 310            | 490                       | 15                    | 3T                        |
|               | GR-6  | 0.25                 | 1.5     | 0.04   | 0.04   |                                                       | 355            | 490                       | 15                    | 3T                        |

T = Normal Thickness of test piece.

## 1. PERMISSIBLE VARIATIONS FOR PRODUCT ANALYSIS

| Constituent | Variation Over Specified Limit, Percent Max |
|-------------|---------------------------------------------|
| Carbon      | 0.020                                       |
| Manganese   | 0.040                                       |
| Sulphur     | 0.005                                       |
| Phosphorus  | 0.005                                       |
| Silicon     | 0.005                                       |

### CARBON STEELS : IS:1079 / 2009

| Specification | Chemical Composition |                 |        |         |        |        |
|---------------|----------------------|-----------------|--------|---------|--------|--------|
|               | Quality              |                 | C %max | Mn %max | P %max | S %max |
|               | Grade                | Designation     |        |         |        |        |
| IS:1079/2009  | HR0                  | Ordinary        | 0.250  | 2.000   | 0.080  | 0.050  |
|               | HR1                  | Commercial      | 0.150  | 0.600   | 0.050  | 0.035  |
|               | HR2                  | General Purpose | 0.100  | 0.450   | 0.040  | 0.035  |
|               | HR3                  |                 | 0.080  | 0.400   | 0.035  | 0.030  |
|               | HR4                  |                 | 0.080  | 0.350   | 0.030  | 0.030  |

| Mechanical Properties    |                                            |                        |                                       |                        |
|--------------------------|--------------------------------------------|------------------------|---------------------------------------|------------------------|
| Tensile Strength Max Mpa | Percentage Elongation after Fracture A Min |                        |                                       |                        |
|                          | t≤3                                        |                        | t>3                                   |                        |
|                          | Gauge Length Lo = 80mm                     | Gauge Length Lo = 50mm | Gauge Length Lo = $5.65\sqrt{S_0}$ mm | Gauge Length Lo = 50mm |
|                          | *                                          | *                      | *                                     | *                      |
| 440                      | 23                                         | 24                     | 28                                    | 29                     |
| 420                      | 25                                         | 26                     | 30                                    | 31                     |
| 400                      | 28                                         | 29                     | 33                                    | 34                     |
| 380                      | 31                                         | 32                     | 36                                    | 37                     |

## 1. PERMISSIBLE VARIATIONS FOR PRODUCT ANALYSIS

| SL No. | Constituent | Percentage Limit of Constituent |  |  | Variation Over Specified Limit, Percent Max |
|--------|-------------|---------------------------------|--|--|---------------------------------------------|
| i)     | Carbon      | a) Up to and including 0.12     |  |  | 0.020                                       |
|        |             | b) Above 0.12                   |  |  | 0.030                                       |
| ii)    | Manganese   | a) Up to and including 0.50     |  |  | 0.030                                       |
|        |             | b) Above 0.50                   |  |  | 0.040                                       |
| iii)   | Sulphur     | -                               |  |  | 0.005                                       |
| iv)    | Phosphorus  | -                               |  |  | 0.005                                       |

## 2. PERMISSIBLE VARIATIONS FOR PRODUCT ANALYSIS

| SI No. | Constituent | Percentage Limit of Constituent | Variation Over Specified Limit Percentage,Max                      |
|--------|-------------|---------------------------------|--------------------------------------------------------------------|
| i)     | Carbon      | $\leq 0.15$                     | 0.020                                                              |
|        |             | $> 0.15$                        | 0.030                                                              |
| ii)    | Manganese   | $\leq 0.6$                      | 0.030                                                              |
|        |             | $> 0.60$ to $\leq 1.15$         | 0.040                                                              |
|        |             | $> 1.15$                        | 0.050                                                              |
| iii)   | Sulphur     | $\leq 0.05$                     | 0.005                                                              |
| iv)    | Phosphorus  | $\leq 0.05$                     | 0.005                                                              |
|        |             | $> 0.05$                        | 0.010                                                              |
| v)     | Silicon     | $\leq 0.6$                      | 0.030                                                              |
|        |             | $> 0.60$                        | 0.060                                                              |
| vi)    | Copper      | $\leq 0.35$                     | 0.030                                                              |
| Vii)   | Micro Alloy | -                               | Subject to mutual agreement between the purchaser and the supplier |

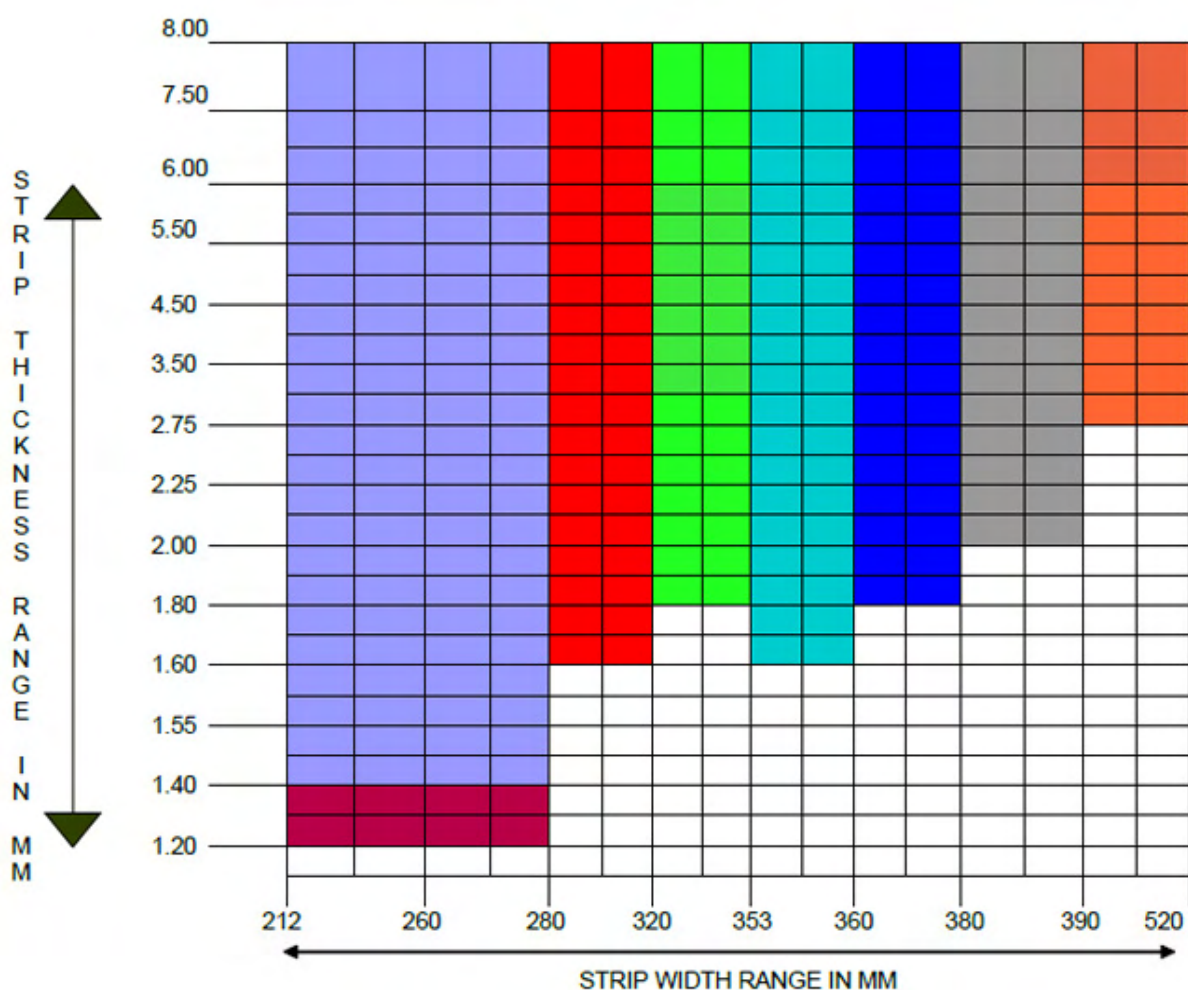
**IS:2062 / 2011**

| Specification | Grade | Chemical Composition |                      |         |        |        |         | Mechanical Properties          |                        |                                                         |                            |                    |    |
|---------------|-------|----------------------|----------------------|---------|--------|--------|---------|--------------------------------|------------------------|---------------------------------------------------------|----------------------------|--------------------|----|
|               |       | Quality              | Ladle Analysis, %Max |         |        |        |         | Tensile Strength Rm<br>Min Mpa | Yield Stress<br>(t<20) | Percentage Elongation A, at Gauge Length, L =5.65 S Min | Internal Bend Diameter Min | Charpy Impact test |    |
|               |       |                      | C %max               | Mn %max | S %max | P %max | Si %max |                                |                        |                                                         |                            |                    |    |
| IS:2062/2011  | E-250 | A                    | 0.23                 | 1.5     | 0.045  | 0.045  | 0.4     | 410                            | 250                    | 23                                                      | 2t                         | -                  | -  |
|               |       | BR                   | 0.22                 | 1.5     | 0.045  | 0.045  | 0.4     |                                |                        |                                                         |                            | RT                 | 27 |
|               |       | BO                   | 0.22                 | 1.5     | 0.045  | 0.045  | 0.4     |                                |                        |                                                         |                            | 0                  | 27 |
|               |       | C                    | 0.2                  | 1.5     | 0.04   | 0.04   | 0.4     |                                |                        |                                                         |                            | (-) 20             | 27 |
|               | E-300 | A                    | 0.2                  | 1.5     | 0.045  | 0.045  | 0.45    | 440                            | 300                    | 22                                                      | 2t                         | -                  | -  |
|               |       | BR                   | 0.2                  | 1.5     | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | RT                 | 27 |
|               |       | BO                   | 0.2                  | 1.5     | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | 0                  | 27 |
|               |       | C                    | 0.2                  | 1.5     | 0.04   | 0.04   | 0.45    |                                |                        |                                                         |                            | (-) 20             | 27 |
|               | E-350 | A                    | 0.2                  | 1.55    | 0.045  | 0.045  | 0.45    | 490                            | 350                    | 22                                                      | 2t                         | -                  | -  |
|               |       | BR                   | 0.2                  | 1.55    | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | RT                 | 27 |
|               |       | BO                   | 0.2                  | 1.55    | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | 0                  | 27 |
|               |       | C                    | 0.2                  | 1.55    | 0.04   | 0.04   | 0.45    |                                |                        |                                                         |                            | (-) 20             | 27 |
|               | E-410 | A                    | 0.2                  | 1.6     | 0.045  | 0.045  | 0.45    | 540                            | 410                    | 20                                                      | 2t                         | -                  | -  |
|               |       | BR                   | 0.2                  | 1.6     | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | RT                 | 25 |
|               |       | BO                   | 0.2                  | 1.6     | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | 0                  | 25 |
|               |       | C                    | 0.2                  | 1.6     | 0.04   | 0.04   | 0.45    |                                |                        |                                                         |                            | (-) 20             | 25 |
|               | E-450 | A                    | 0.22                 | 1.65    | 0.045  | 0.045  | 0.45    | 570                            | 450                    | 20                                                      | 2.5t                       | -                  | -  |
|               |       | BR                   | 0.22                 | 1.65    | 0.045  | 0.045  | 0.45    |                                |                        |                                                         |                            | RT                 | 20 |
|               | E-550 | A                    | 0.22                 | 1.65    | 0.02   | 0.025  | 0.5     | 650                            | 550                    | 12                                                      | 3.0t                       | -                  | -  |
|               |       | BR                   | 0.22                 | 1.65    | 0.02   | 0.025  | 0.5     |                                |                        |                                                         |                            | RT                 | 15 |
|               | E-600 | A                    | 0.22                 | 1.7     | 0.02   | 0.025  | 0.5     | 730                            | 600                    | 12                                                      | 3.5t                       | -                  | -  |
|               |       | BR                   | 0.22                 | 1.7     | 0.02   | 0.025  | 0.5     |                                |                        |                                                         |                            | RT                 | 15 |

## STAINLESS STEEL :

300/ 200 / 400 SERIES

| Specification   | Grade  | % Chemical Composition (Ladle) |          |           |             |             |         |         |         |                               |
|-----------------|--------|--------------------------------|----------|-----------|-------------|-------------|---------|---------|---------|-------------------------------|
|                 |        | C (Max)                        | Si (Max) | Mn        | Cr          | Ni          | P (Max) | S (Max) | N (Max) | Other Elements                |
| Stainless Steel | 301    | 0.15                           | 1        | 2.00 max  | 16.00-18.00 | 6.00-8.00   | 0.045   | 0.03    | 0.1     | -                             |
|                 | 301 L  | 0.03                           | 1        | 2.00 max  | 16.00-18.00 | 6.00-8.00   | 0.045   | 0.03    | 0.2     | -                             |
|                 | 304    | 0.07                           | 0.75     | 2.00 max  | 17.5- 19.5  | 8.00-10.50  | 0.045   | 0.03    | 0.1     | -                             |
|                 | 304 L  | 0.03                           | 0.75     | 2.00 max  | 17.5- 19.5  | 8.00-12.00  | 0.045   | 0.03    | 0.1     | -                             |
|                 | 310 S  | 0.08                           | 1.5      | 2.00 max  | 24.00-26.00 | 19.00-22.0  | 0.045   | 0.03    | -       | -                             |
|                 | 316    | 0.08                           | 0.75     | 2.00 max  | 16.00-18.00 | 10.00-14.00 | 0.045   | 0.03    | 0.1     | Mo2.0-3.0                     |
|                 | 316 L  | 0.03                           | 0.75     | 2.00 max  | 16.00-18.00 | 10.00-14.00 | 0.045   | 0.03    | 0.1     | Mo2.0-3.0                     |
|                 | 321    | 0.08                           | 0.75     | 2.00 max  | 17.00-19.00 | 9.00-12.00  | 0.045   | 0.03    | 0.1     | Ti=5x(C+N)<br>Min/0.70<br>max |
|                 | 201    | 0.15                           | 1        | 5.50-7.50 | 16.0-18.0   | 3.50-5.50   | 0.06    | 0.03    | 0.25    | -                             |
|                 | 204 CU | 0.15                           | 1        | 6.50-9.00 | 15.5- 17.5  | 1.50-3.50   | 0.06    | 0.03    | 0.25    | Cu 2.0-4.0                    |
|                 | 410 S  | 0.08                           | 1        | 1.00 max  | 11.50-13.50 | 0.60 max    | 0.04    | 0.03    | -       | -                             |
|                 | 420    | 0.15                           | 1        | 1.00 max  | 12.00-14.00 | 0.75 max    | 0.04    | 0.03    | -       | Mo 0.5 max                    |
|                 | 430    | 0.12                           | 1        | 1.00 max  | 16.00-18.00 | 0.75 max    | 0.04    | 0.03    | -       | -                             |



Note:- a) Above matrix is for as rolled coils.  
b) Slitted coils can be supplied in width of 24 mm and above.  
c) Final width & thickness combination to be mutually agreed.

**MEDIUM CARBON:**  
MC-30, 40, 45, 50, 55 & 60

| Specification                            | Grade | Chemical Composition |           |        |        |           |         |
|------------------------------------------|-------|----------------------|-----------|--------|--------|-----------|---------|
| Medium Carbon Steels (Strapping Quality) |       | C %max               | Mn %max   | P %max | S %max | Si %max   | Al %min |
|                                          | MC 30 | 0.26-0.35            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |
|                                          | MC 40 | 0.36-0.45            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |
|                                          | MC 45 | 0.41-0.50            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |
|                                          | MC 50 | 0.46-0.55            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |
|                                          | MC 55 | 0.51-0.60            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |
|                                          | MC 60 | 0.56-0.65            | 0.60-0.90 | 0.04   | 0.04   | 0.15-0.35 | 0.02    |



# Cycle & Heavy Duty Rims

## BICYCLE RIMS AND HEAVY DUTY RICKSHAW RIMS AVON BRAND

| S.NO | TYPES OF RIMS                           | SIZE OF RIMS ARIM BRANDs  | SPOKE HOLES |
|------|-----------------------------------------|---------------------------|-------------|
| 1    | "AVON" WESTWOOD TYPE "A"                | 28x1.1/2 14 G             | 32/40       |
| 2    |                                         | 26x1.1/2 14 G             | 32/40       |
| 3    |                                         | 24x1.1/2 14 G             | 32/40       |
| 4    | AVON ENDRICK TYPE "C-1"                 | 26x1.3/8 14 G             | 36/36       |
| 5    |                                         | 26x1.95 14 G              | 36/36       |
| 6    |                                         | 24x1.95 14 G              | 36/36       |
| 7    | "AVON" WESTRICK TYPE "B-1"              | 26x1.3/8 14 G             | 32/36/40H   |
| 8    | "AVON" MONTAGE TYPE                     | 26x2.125 14 G             | 36/36       |
| 9    | "AVON" H.D 1.400 KGS WASHER<br>WESTWOOD | 28x1.1/2 10 G WASHER TYPE | 40/40       |
| 10   |                                         | 28x1.1/2 12 G WASHER TYPE | 40/40       |
| 11   | "AVON" H.D 1.500 KGS PLAIN<br>WESTWOOD  | 28x1.1/2 10 G             | 40/40       |
| 12   |                                         | 28x1.1/2 12 G             | 32/32       |
| 13   |                                         | 28x1.1/2 12 G             | 40/40       |

### 1. ARIM BRAND

| S.NO | TYPES OF RIMS            | SIZE OF RIMS ARIM BRANDs  | SPOKE HOLES |
|------|--------------------------|---------------------------|-------------|
| 1    | "ARIM" WESTWOOD TYPE "A" | 28x1.1/2 14 G/ 12G        | 32/40       |
| 2    |                          | 26x1.1/2 14 G/ 12G        | 32/40       |
| 3    |                          | 24x1.1/2 14 G             | 32/40       |
| 4    |                          | 28x1.1/2 12 G WASHER TYPE | 40/40       |
| 5    |                          | 28x1.1/2 10 G WASHER TYPE | 40/40       |

# Sustainability

THE SYMBOL OF  
TRUST

At Avon Steel Industries, sustainability is at the core of our operations. We are committed to responsible manufacturing practices that emphasize environmental protection, energy efficiency, and resource conservation. By integrating advanced technologies and eco-friendly initiatives, we continuously strive to minimize our ecological footprint while maintaining superior production standards.

Our state-of-the-art Effluent Treatment Plant (ETP) operates on a Zero Liquid Discharge principle, ensuring that wastewater from our Galvanization Plant is treated and recycled with utmost efficiency. With a capacity to process 50 KLD of rinsing waste effluent and 1 KLD of chrome waste effluent, the system incorporates ultra-filtration and a two-stage reverse osmosis process to maximize water recovery. A multi-effect evaporator with a 20 KLD capacity, along with an agitated thin film dryer and a paddle dryer, further enhances the treatment process, reinforcing our commitment to water conservation and environmental compliance.

In our pursuit of sustainable energy solutions, we have invested in a 1506.06 KWp solar power plant, significantly reducing reliance on conventional energy sources. Strategically installed across our corporate office roof, tube mill facility, and varnish shed roof, this renewable energy system operates without battery storage, optimizing efficiency while reducing our carbon footprint. By harnessing the power of solar energy, we not only contribute to a cleaner environment but also achieve greater energy independence and operational cost savings.

At Avon Steel Industries, sustainability is not just a promise—it is a responsibility embedded in our way of doing business. Our proactive approach to eco-friendly manufacturing, responsible waste management, and renewable energy adoption reflects our dedication to creating a greener and more sustainable future for generations to come.



# Corporate Social Responsibility (CSR)

At Avon Steel Industries, we believe in giving back to society. Our CSR efforts focus on healthcare, education, women empowerment, and environmental sustainability to create a lasting impact.

**Healthcare:** S. Nihal Singh Pahwa Charitable Hospital (200 beds) provides affordable medical care, including specialized services, ICU, and diagnostics.

**Education & Skill Development:** We support schools, vocational training, and scholarships to empower youth.

**Women Empowerment & Welfare:** We contribute to safety programs, shelters, and livelihood initiatives.

**Environmental Responsibility:** Our efforts include tree plantation, water conservation, and waste management.

Our CSR Committee, led by our directors, ensures transparent execution, allocating at least 2% of net profits to social initiatives. At Avon Steel, we are committed to building a better future!





## HOT ROLLED COILS

(Carbon, Alloy & Stainless Steels)



## ERW STEEL TUBES

(IS: 1239, 1161, 3601, 4270, 4923)



## GI PIPES

(IS: 1239, 1161, 3601, 4270, 4923)



## CYCLE & HEAVY DUTY RIMS

(IS: 624)



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