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INDIA'S **No. 1**\*  
STEEL PIPES COMPANY



\*India's No. 1 by Market Share

CIRCULAR  
PRODUCT  
PROFILE



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## COMPANY OVERVIEW

APL Apollo Tubes Limited is the largest producer of Electric Resistance Welded (ERW) steel pipes and tubes in India with an annual capacity of more than 2.6 million tons. It caters extensively to the domestic region and exports to over 30 countries globally. The company's vast distribution network is spread across India, with warehouses and branch offices in various cities.

APL Apollo, believe in bringing change to meet the needs of an ever evolving economy by infusing superior cutting-edge technology and innovative solutions. Founded in 1986 in Delhi, it has catapulted to newer heights in the last three decades with newer products, improved quality, increased productivity and by benchmarking its entire product line to international standards. This has helped it to gain mind space of a large number of customers, thereby redefining the market space for steel pipes.

The organisation believes in measuring its success and pushing its limits through regular review and by generating feedback. Add to this, a customer-centric approach and best practices from across the globe enables the organisation to upscale its core business with creativity and purpose.

The Company's products are certified by reputed international agencies like SGS (France), CE (Europe), UL (USA) and many more. It has received the Recognised Export House status and is also ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 certified. Additionally, all its products are BIS - marked.



# OUR CONSTANT DRIVE FOR INNOVATION AND EYE FOR DETAIL HAS EARNED US MANY PRESTIGIOUS ACCREDITATIONS



CE EN 10219



CE EN 10255



ISO CERTIFICATE-45001-2018



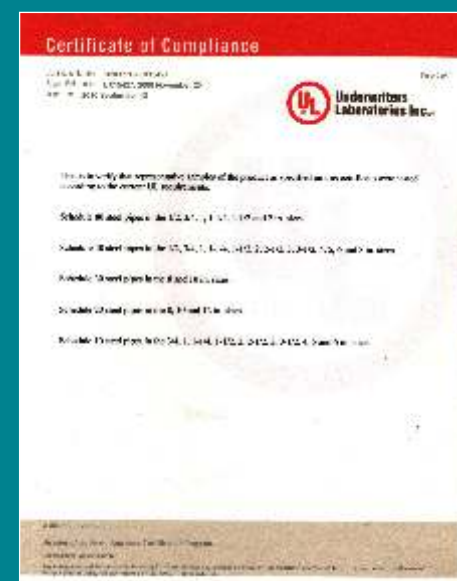
ISO CERTIFICATE-14001-2015



TWO STAR EXPORT HOUSE CERTIFICATE



ISO CERTIFICATE-9001-2015



UL CERTIFICATE



UL CERTIFICATE

## ROUND TUBES

Outside Diameter: 15.88mm - 355.6mm

Thickness Range: 0.6mm - 10mm

Length: 3.0 meter to 12.0 meter

## APPLICATIONS

- Liquid Transmission
- Idlers
- Mechanical and General Engineering
- Structural
- Water and sewage
- Water wells
- Fire fighting
- Piling
- Agriculture
- Sprinkler System
- Green House
- Fencing & many more

## PRODUCTION STANDARDS

- IS:1239(Part-I)/2004, BS:1387-1985
- DIN2439, IN2440, DIN2441, DIN2444,
- EN:10255:2004, EN:10240:1998,
- EN:10219:2006
- IS:9295-1983
- IS:3601-2006
- IS:1161-2014
- IS:3589/2001
- IS:4270:2001
- ASTM A53 GR A&B SCH 20/40/80
- ASTM A795
- ASTM A135
- BSEN 39:2001
- EN:10217-1
- AS:1074
- AS NZS:1163
- ASTM A252
- ASTM A500

## TESTS PERFORMED

- Hydrostatic Test
- Eddy Current Test
- Flattening/Flaring Test/Bend Test
- Chemical analysis
- Other tests as required by the relevant standard

NOTE: For details please refer specification sheet.

## FINISHING OPERATIONS

- Plain End
- Bevelled
- Threaded and Socketed
- Grooved
- Cut lengths

## SURFACE PROTECTION

- Black (self colored uncoated)
- Outside protective coating-oil/varnish/Lacquered
- Hot dip Galvanised
- Pre-Galvanised



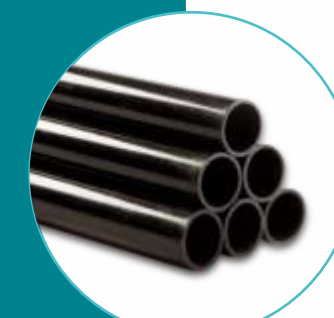
Black (Self colored uncoated)



Pre-Galvanised



Hot Dip Galvanised



Oiled/Varnish

## Technical Data of MS Black Round Tubes

Specification IS:1239 (Part-1) 2004 - DIN 2439, DIN 2440, DIN 2441  
(Equivalent BS : 1387 : 1985 / EN 10255 : 2004 / DIN 2444)

| NB and Series | Outside Diameter |       | Wall Thickness |     | Nominal Weight |               |                    |               |       |
|---------------|------------------|-------|----------------|-----|----------------|---------------|--------------------|---------------|-------|
|               | Min.             | Max   |                |     | Plain End      |               | Screwed & Socketed |               |       |
|               | mm               | mm    | mm             | SWG | Kg/M           | Meters/Tonnes | Kg/M               | Meters/Tonnes |       |
| 15            | L                | 21.0  | 21.4           | 2.0 | 14             | 0.95          | 1052               | 0.96          | 1046  |
|               | M                | 21.0  | 21.8           | 2.6 | 12             | 1.21          | 826                | 1.22          | 820   |
|               | H                | 21.0  | 21.8           | 3.2 | 10             | 1.44          | 694                | 1.45          | 690   |
| 20            | L                | 26.4  | 26.9           | 2.3 | 13             | 1.38          | 725                | 1.39          | 719   |
|               | M                | 26.5  | 27.3           | 2.6 | 12             | 1.56          | 641                | 1.57          | 637   |
|               | H                | 26.5  | 27.3           | 3.2 | 10             | 1.87          | 535                | 1.88          | 532   |
| 25            | L                | 33.2  | 33.8           | 2.6 | 12             | 1.98          | 505                | 2.00          | 500   |
|               | M                | 33.3  | 34.2           | 3.2 | 10             | 2.41          | 415                | 2.43          | 411.5 |
|               | H                | 33.3  | 34.2           | 4.0 | 8              | 2.93          | 341                | 2.95          | 339   |
| 32            | L                | 41.9  | 42.5           | 2.6 | 12             | 2.54          | 394                | 2.57          | 389   |
|               | M                | 42.0  | 42.9           | 3.2 | 10             | 3.10          | 322                | 3.13          | 319   |
|               | H                | 42.0  | 42.9           | 4.0 | 8              | 3.79          | 264                | 3.82          | 262   |
| 40            | L                | 47.8  | 48.4           | 2.9 | 11             | 3.23          | 310                | 3.27          | 306   |
|               | M                | 47.8  | 48.8           | 3.2 | 10             | 3.56          | 281                | 3.60          | 278   |
|               | H                | 47.9  | 48.8           | 4.0 | 8              | 4.37          | 229                | 4.41          | 227   |
| 50            | L                | 59.6  | 60.2           | 2.9 | 11             | 4.08          | 245                | 4.15          | 241   |
|               | M                | 59.7  | 60.8           | 3.6 | 9              | 5.03          | 199                | 5.10          | 196   |
|               | H                | 59.7  | 60.8           | 4.5 | 7              | 6.19          | 161                | 6.26          | 160   |
| 65            | L                | 75.2  | 76.0           | 3.2 | 10             | 5.71          | 175                | 5.83          | 171.5 |
|               | M                | 75.3  | 76.6           | 3.6 | 9              | 6.42          | 156                | 6.54          | 153   |
|               | H                | 75.3  | 76.6           | 4.5 | 7              | 7.93          | 126                | 8.05          | 124   |
| 80            | L                | 87.9  | 88.7           | 3.2 | 10             | 6.72          | 149                | 6.89          | 145   |
|               | M                | 88.0  | 89.5           | 4.0 | 8              | 8.36          | 120                | 8.53          | 117   |
|               | H                | 88.0  | 89.5           | 4.8 | 6              | 9.90          | 101                | 10.10         | 96    |
| 100           | L                | 113.0 | 113.9          | 3.6 | 9              | 9.75          | 102                | 10.00         | 100   |
|               | M                | 113.1 | 115.0          | 4.5 | 7              | 12.2          | 82                 | 12.50         | 80    |
|               | H                | 113.1 | 115.0          | 5.4 | 5              | 14.5          | 69                 | 14.80         | 67.5  |
| 125           | M                | 138.5 | 140.8          | 4.8 | 6              | 15.9          | 63                 | 16.40         | 61    |
|               | H                | 138.5 | 140.8          | 5.4 | 5              | 17.9          | 56                 | 18.40         | 54    |
| 150           | M                | 163.9 | 166.5          | 4.8 | 6              | 18.9          | 53                 | 19.50         | 51    |
|               | H                | 163.9 | 166.5          | 5.4 | 5              | 21.3          | 47                 | 21.90         | 46    |

Thickness & Mass are applicable for Black & Galvanised Steel Tubes as per clause 8.1.1 of IS : 1239 (Part-1) 2004

This specification conforms to CE Mark conferred by Det Norske Veritas, Netherlands.

### Tolerance

| A - Thickness           | Tolerance          | B- Weight   | Tolerance  | Length Tolerance   |
|-------------------------|--------------------|---|------------|--|
| 1. Light Tubes          | + not limited -8%  | 1. Single Tube (Light Series)   | +10% -8%   | Unless otherwise Specified 4 to 7 mtrs.<br>Can also be supplied in Fix Lengths ±5cm. |
| 2. Medium & Heavy Tubes | + not limited -10% | 2. Single Tube (Medium & Heavy Series)                                    | ±10%       |  |
|                         |                    | 3. For quantities per load of 10 tonnes minimum (Light Series)            | +7.5% - 5% |  |
|                         |                    | 4. For quantities per load of 10 tonnes minimum (Medium and Heavy Series) | ±7.5%      |  |

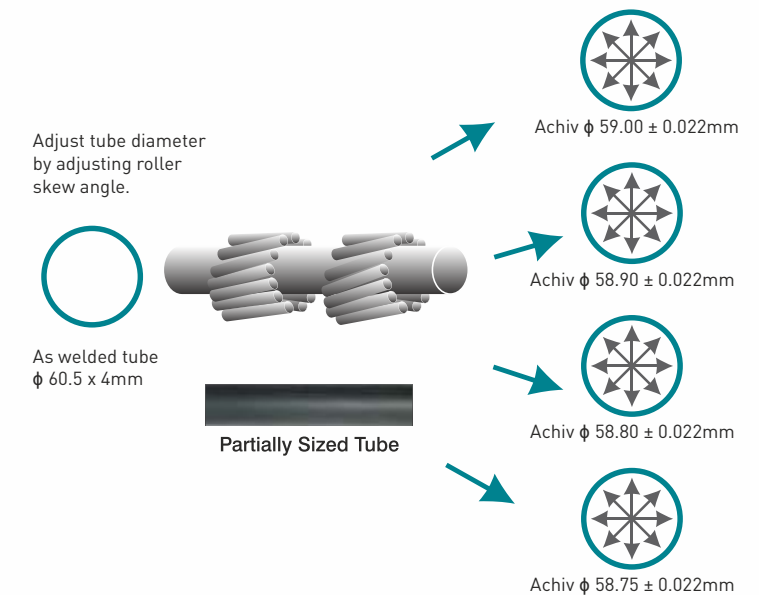
## ERW Steel tubes for idlers for Belt conveyors as per IS 9295 - 1983 Dimension and Nominal Masses

| Outside Diameter | Thickness | Mass    | Meters |
|------------------|-----------|---------|--------|
| mm               | mm        | Kg./mtr | Tonne  |
| 63.50            | 3.65      | 5.39    | 186    |
|                  | 4.05      | 5.94    | 168    |
|                  | 4.50      | 6.55    | 153    |
|                  | 4.85      | 7.01    | 143    |
| 76.10            | 5.40      | 7.74    | 143    |
|                  | 6.30      | 8.89    | 129    |
|                  | 3.65      | 6.52    | 153    |
|                  | 4.05      | 7.20    | 139    |
| 88.90            | 4.50      | 9.37    | 107    |
|                  | 4.85      | 10.05   | 99     |
|                  | 5.40      | 11.12   | 90     |
|                  | 6.30      | 12.83   | 78     |
| 101.60           | 4.05      | 9.74    | 103    |
|                  | 4.50      | 10.78   | 93     |
|                  | 4.85      | 11.57   | 86     |
|                  | 5.40      | 12.19   | 78     |
| 114.30           | 4.85      | 13.09   | 76     |
|                  | 5.40      | 14.50   | 69     |
|                  | 6.30      | 13.59   | 53     |
|                  | 4.50      | 14.61   | 74     |
| 127.0            | 4.85      | 16.19   | 68     |
|                  | 5.40      | 18.75   | 62     |
|                  | 6.30      | 15.00   | 53     |
|                  | 4.50      | 14.30   | 69.9   |
| 133.0            | 4.85      | 15.33   | 65.2   |
|                  | 5.40      | 16.99   | 58.8   |
|                  | 6.30      | 15.00   | 67     |
|                  | 4.85      | 16.13   | 62     |
| 139.70           | 5.40      | 17.89   | 56     |
|                  | 6.30      | 20.73   | 48     |
|                  | 4.50      | 16.41   | 61     |
|                  | 4.85      | 17.65   | 57     |
| 152.40           | 5.40      | 19.58   | 51     |
|                  | 6.30      | 22.70   | 44     |
|                  | 4.50      | 17.15   | 58     |
|                  | 5.40      | 18.44   | 49     |
| 159.00           | 4.85      | 20.46   | 42     |
|                  | 6.30      | 23.72   | 49     |
|                  | 4.50      | 17.82   | 56     |
|                  | 4.85      | 19.17   | 52     |
| 165.10           | 5.40      | 21.27   | 47     |
|                  | 6.30      | 24.67   | 41     |
|                  | 4.50      | 18.18   | 55     |
|                  | 4.85      | 19.55   | 51     |
| 168.30           | 5.40      | 21.69   | 46     |
|                  | 6.30      | 25.69   | 40     |
|                  | 4.50      | 25.08   | 40     |
|                  | 6.30      | 29.12   | 40     |
| 193.70           | 5.40      | 25.08   | 40     |
|                  | 6.30      | 29.12   | 40     |
| 219.10           | 5.40      | 28.46   | 34     |
|                  | 6.30      | 33.06   | 34     |

|                                      |                             |
|--------------------------------------|-----------------------------|
| a. Outside diameter                  | ± 0.8%                      |
| b. Ovality below 168.3mm             | 0.5mm                       |
| c. Ovality including 168.3mm & above | 1.0mm                       |
| d. Weight kg/mtr                     |                             |
| - Single tube                        | ±10%                        |
| e. For truck load of 10 tonnes       | ±7.5%                       |
| f. Thickness                         | ±10%                        |
| g. Grade                             |                             |
| - ERW grade                          | YST 210 & YST 240 & YST 310 |

### Advantages of RSM Technology

- In between Non-Standard Diameter possible online**  
In between Non-Standard Diameter there can be adjustment without change of tooling. Diameter accuracy and roundness achieved with Rotary sizing technology is of very high standard as compared to conventional sizing mills.
- Surface Finish Improves**  
Tooling is adjustable and can manufacture all sizes within its operating range with improved dimensional accuracy. The surface finish of incoming strip is improved by 30%. Cold work is reduced & energy savings are considerable.

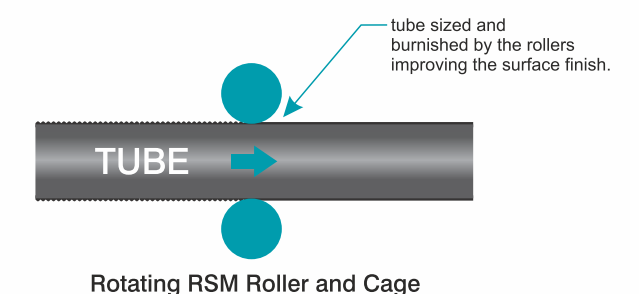


- Even and Low Residual Stress**  
Typically two cages are used in RSM which are cum rotating. This is required to eliminate any torsion load which may be induced into the tube by the process. This results in even reduction on full surface of tube. Sizing the tube in only 2 passes keeps the residual stress low thereby preserving more of the material elongation test tube mill manipulation.

Tubes that are processed through RSM have no significant change in residual stress in the traverse direction. In the longitudinal direction, there is a large reduction in the surface residual tensile stress.

### END USES

- Idler Tubes for Conveyors
- Propeller Shaft Tubes
- Bobbin Tubes for Textile Industry
- High Precision Diameter
- High Rotational Application





**ERW steel tube for water & sewage purpose conforming to IS : 3589/2001**

| N. B size | Outside Diameter | Wall thickness | Plain end |        |
|-----------|------------------|----------------|-----------|--------|
|           |                  |                | Mass      | Meters |
| mm        | mm               | mm             | Kg./mtr   | Tonne  |
| 150       | 168.3            | 2.60           | 10.60     | 94     |
|           |                  | 3.20           | 13.00     | 77     |
|           |                  | 4.00           | 16.20     | 62     |
|           |                  | 4.50           | 18.20     | 55     |
|           |                  | 5.00           | 20.10     | 50     |
|           |                  | 6.30           | 25.20     | 40     |
| 175       | 193.7            | 2.60           | 12.30     | 81     |
|           |                  | 3.60           | 16.90     | 59     |
|           |                  | 4.50           | 21.00     | 48     |
|           |                  | 6.30           | 29.10     | 34     |
| 200       | 219.1            | 2.60           | 23.80     | 72     |
|           |                  | 3.60           | 33.10     | 52     |
|           |                  | 4.50           | 23.80     | 42     |
|           |                  | 6.30           | 33.10     | 30     |
| 250       | 273              | 3.60           | 23.90     | 42     |
|           |                  | 4.00           | 26.50     | 38     |
|           |                  | 5.00           | 33.90     | 30     |
|           |                  | 6.30           | 41.40     | 24     |
|           |                  | 7.10           | 46.57     | 21     |
|           |                  | 8.00           | 52.30     | 19     |
|           |                  | 10.00          | 64.90     | 15     |
|           |                  | 10.00          | 64.90     | 15     |
| 300       | 323.9            | 4.00           | 31.60     | 32     |
|           |                  | 5.00           | 35.40     | 28     |
|           |                  | 5.60           | 44.00     | 23     |
|           |                  | 7.10           | 55.50     | 18     |
|           |                  | 7.10           | 55.50     | 18     |
| 350       | 355.6            | 5.60           | 48.33     | 21     |
|           |                  | 6.40           | 55.11     | 18     |
|           |                  | 7.10           | 61.02     | 16     |
|           |                  | 7.90           | 67.74     | 15     |
|           |                  | 8.70           | 74.42     | 13     |
|           |                  | 9.50           | 81.08     | 12     |
|           |                  | 9.50           | 81.08     | 12     |

**Tolerance**

|   |          |
|---|----------|
| A. Outside diameter of pipe   | ±0.75%   |
| B. Ovality  | =Max. 1% |
| C. Thickness  | ±10%     |
| D. Length   |          |
| Unless other specified, length are in single random length of 4 to 7 meter. |          |
| E. Mass per truck load of 10 tonnes of above                                | +7.5%    |

**Physical Properties**

| Grade  | T.S. Mpa MIN | Y.S. Mpa MIN | % age Elongation of MIN |
|--------|--------------|--------------|-------------------------|
| Fe 330 | 330          | 195          | 20                      |
| Fe 410 | 410          | 235          | 18                      |
| Fe 450 | 450          | 275          | 15                      |

Note: these are preferred OD & thickness. Other sizes not included may be supplied as specified by purchaser.

**ERW steel tube for water walls conforming to IS : 4270/ 2001 plain end casing pipes / screwed and socketed casing pipes g**

| N. B size | Outside Diameter | Wall thickness | Nominal weight |         | Socket | Socket Length (min) |
|-----------|------------------|----------------|----------------|---------|--------|---------------------|
|           |                  |                | Kg/m           | m/tonne |        |                     |
| mm        | mm               | mm             | Kg/m           | m/tonne | mm     | mm                  |
| 100       | 114.3            | 5.0            | 13.48          | 74      | 130    | 144.3               |
|           |                  | 5.4            | 14.5           | 69      | 157    | 120.6               |
|           |                  | 5.4            | 18.1           | 55      | 184    | 127                 |
| 125       | 141.3            | 5.0            | 16.8           | 59      |        |                     |
|           |                  | 5.4            | 23.5           | 42.5    |        |                     |
|           |                  | 7.1            | 23.5           | 42.5    |        |                     |
| 150       | 168.3            | 5.0            | 20.13          | 50      | 211.16 | 152.4               |
|           |                  | 5.4            | 21.6           | 46      |        |                     |
|           |                  | 7.1            | 28.2           | 35.5    | 237    | 152.4               |
| 175       | 193.7            | 5.4            | 25.1           | 40      |        |                     |
|           |                  | 6.4            | 29.6           | 34      | 291    | 177.8               |
|           |                  | 8.0            | 36.6           | 27      |        |                     |
| 200       | 193.7            | 5.4            | 28.46          | 35      | 346    | 177.8               |
|           |                  | 6.4            | 29.6           | 34      | 291    | 177.8               |
|           |                  | 8.0            | 36.6           | 27      |        |                     |
| 250       | 219.1            | 5.4            | 28.46          | 35      | 346    | 177.8               |
|           |                  | 8.0            | 33.6           | 30      |        |                     |
|           |                  | 10.0           | 41.6           | 24      |        |                     |
| 300       | 273.1            | 7.1            | 46.57          | 21      |        |                     |
|           |                  | 8.0            | 52.3           | 19      |        |                     |
|           |                  | 10.0           | 64.9           | 15      |        |                     |
| 350       | 273.1            | 7.1            | 55.47          | 18      |        |                     |
|           |                  | 8.0            | 62.3           | 16      |        |                     |
|           |                  | 10.0           | 77.4           | 13      |        |                     |
|           |                  | 5.6            | 48.33          | 21      |        |                     |
|           |                  | 6.4            | 55.11          | 18      |        |                     |
|           |                  | 7.1            | 61.02          | 16      |        |                     |
|           |                  | 7.9            | 67.74          | 15      |        |                     |
| 355.6     | 355.6            | 5.6            | 48.33          | 21      |        |                     |
|           |                  | 6.4            | 55.11          | 18      |        |                     |
|           |                  | 7.1            | 61.02          | 16      |        |                     |
|           |                  | 7.9            | 67.74          | 15      |        |                     |
|           |                  | 8.7            | 74.42          | 13      |        |                     |

**Tolerance**

|                               |             |
|-------------------------------|-------------|
| a. Outside diameter of pipe   | ±1%         |
| b. Thickness Up to 406.4mm OD | (+)-15%     |
|                               | (-)-12.5%   |
| c. Weight                     | (+)-10%     |
| - Single tube                 | (-)-8%      |
| d. Length                     |             |
| Unless otherwise specified    | 4 to 7 mtrs |

**Physical Properties**

| Grade  | Y.S. (min) Mpa MIN | T.S. (min) Mpa MIN | % age MIN. Elongation on 5.65/so=G1. |
|--------|--------------------|--------------------|--------------------------------------|
| Fe 410 | 235                | 410                | 15%                                  |
| Fe 450 | 275                | 450                | 13%                                  |



**Steel tubes for Structural purposes conforming to IS:1161-2014**

| NB  | OD    | Thk | Mass  | Area of Cross-Section | Internal Volume    | Surface            |                    | Moment of Inertia  | Modulus of Section | Radius of Gyration | Square of Radius of Gyration |
|-----|-------|-----|-------|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|------------------------------|
|     |       |     |       |                       |                    | External           | Internal           |                    |                    |                    |                              |
| mm  | mm    | mm  | kg/m  | cm <sup>2</sup>       | cm <sup>3</sup> /m | cm <sup>2</sup> /m | cm <sup>3</sup> /m | cm <sup>4</sup> /m | cm <sup>3</sup>    | cm                 | cm <sup>2</sup>              |
| (1) | (2)   | (3) | (4)   | (5)                   | (6)                | (7)                | (8)                | (9)                | (10)               | (11)               | (12)                         |
| 15  | 21.3  | 2.0 | 0.952 | 1.21                  | 235                | 669                | 543                | 0.57               | 0.54               | 0.69               | 0.47                         |
|     |       | 2.6 | 1.20  | 1.53                  | 204                | 669                | 506                | 0.68               | 0.64               | 0.67               | 0.45                         |
|     |       | 3.2 | 1.43  | 1.82                  | 174                | 669                | 468                | 0.77               | 0.72               | 0.65               | 0.42                         |
| 20  | 26.9  | 2.3 | 1.40  | 1.78                  | 391                | 845                | 701                | 1.36               | 1.01               | 0.87               | 0.76                         |
|     |       | 2.6 | 1.56  | 1.98                  | 370                | 845                | 682                | 1.48               | 1.10               | 0.86               | 0.75                         |
|     |       | 3.2 | 1.87  | 2.38                  | 330                | 845                | 644                | 1.70               | 1.27               | 0.85               | 0.71                         |
| 25  | 33.7  | 2.6 | 1.99  | 2.54                  | 638                | 11159              | 895                | 3.09               | 1.84               | 1.10               | 1.22                         |
|     |       | 3.2 | 2.41  | 3.07                  | 585                | 1059               | 858                | 3.60               | 2.14               | 1.08               | 1.18                         |
|     |       | 4.0 | 2.93  | 3.73                  | 519                | 1059               | 807                | 4.19               | 2.49               | 1.06               | 1.12                         |
| 32  | 42.4  | 2.6 | 2.55  | 3.25                  | 1087               | 1332               | 1169               | 6.46               | 3.05               | 1.41               | 1.99                         |
|     |       | 3.2 | 3.00  | 3.94                  | 1018               | 1332               | 1131               | 7.62               | 3.59               | 1.39               | 1.93                         |
|     |       | 4.0 | 3.79  | 4.83                  | 929                | 1332               | 1081               | 8.99               | 4.24               | 1.36               | 1.86                         |
| 40  | 48.3  | 2.9 | 3.25  | 4.14                  | 1419               | 1517               | 1335               | 10.70              | 4.43               | 1.61               | 2.59                         |
|     |       | 3.2 | 3.56  | 4.53                  | 1379               | 1517               | 1316               | 11.59              | 4.80               | 1.60               | 2.56                         |
|     |       | 4.0 | 4.37  | 5.57                  | 1276               | 1517               | 1266               | 13.77              | 5.70               | 1.57               | 2.47                         |
| 50  | 60.3  | 2.9 | 4.11  | 5.23                  | 2333               | 1894               | 1712               | 21.59              | 7.16               | 2.03               | 4.13                         |
|     |       | 3.6 | 5.03  | 6.41                  | 2215               | 1894               | 1668               | 25.87              | 8.58               | 2.01               | 4.03                         |
|     |       | 4.5 | 6.19  | 7.89                  | 2067               | 1894               | 1612               | 30.90              | 10.25              | 1.98               | 3.92                         |
| 65  | 76.1  | 2.9 | 5.24  | 6.67                  | 3882               | 2391               | 2209               | 44.74              | 11.76              | 2.59               | 6.71                         |
|     |       | 3.6 | 6.44  | 8.20                  | 3728               | 2391               | 2165               | 54.01              | 14.19              | 2.57               | 6.59                         |
|     |       | 4.5 | 7.95  | 10.12                 | 3536               | 2391               | 2108               | 65.12              | 17.11              | 2.54               | 6.43                         |
| 80  | 88.9  | 3.2 | 6.76  | 8.62                  | 5346               | 2793               | 2592               | 79.21              | 17.82              | 3.03               | 9.19                         |
|     |       | 4.0 | 8.38  | 10.67                 | 5140               | 2793               | 2542               | 96.34              | 21.67              | 3.00               | 9.03                         |
|     |       | 4.8 | 9.96  | 12.68                 | 4939               | 2793               | 2491               | 112.49             | 25.31              | 2.98               | 8.87                         |
| 90  | 101.6 | 3.6 | 8.70  | 11.08                 | 6999               | 3192               | 2966               | 133.24             | 26.23              | 3.47               | 12.02                        |
|     |       | 4.0 | 9.63  | 12.26                 | 6881               | 3192               | 2941               | 146.28             | 28.8               | 3.45               | 11.93                        |
|     |       | 4.8 | 11.46 | 14.60                 | 6648               | 3192               | 2890               | 171.39             | 33.74              | 3.43               | 11.74                        |
| 100 | 114.3 | 3.6 | 9.83  | 12.52                 | 9009               | 3591               | 3365               | 191.98             | 33.59              | 4.33               | 15.33                        |
|     |       | 4.5 | 12.19 | 15.52                 | 8709               | 3591               | 3308               | 234.32             | 41.00              | 4.32               | 15.10                        |
|     |       | 5.4 | 14.5  | 18.47                 | 8413               | 3591               | 3252               | 274.54             | 48.04              | 4.3                | 14.86                        |
| 110 | 127   | 4.5 | 13.59 | 17.32                 | 10936              | 3990               | 3707               | 325.29             | 51.23              | 4.33               | 18.78                        |
|     |       | 4.8 | 14.47 | 18.43                 | 10825              | 3990               | 3688               | 344.50             | 54.25              | 4.32               | 18.69                        |
|     |       | 5.4 | 16.19 | 20.63                 | 10605              | 3990               | 3651               | 382.04             | 60.16              | 4.3                | 18.52                        |
| 125 | 139.7 | 4.5 | 15.00 | 19.11                 | 13417              | 4389               | 4106               | 437.20             | 62.59              | 4.78               | 22.87                        |
|     |       | 4.8 | 15.97 | 20.34                 | 13295              | 4389               | 4087               | 463.33             | 66.33              | 4.77               | 22.78                        |
|     |       | 5.4 | 17.89 | 22.78                 | 13050              | 4389               | 4050               | 514.50             | 73.66              | 4.75               | 22.58                        |
| 135 | 152.4 | 4.5 | 16.41 | 20.91                 | 16151              | 4788               | 4505               | 572.24             | 75.10              | 5.23               | 27.37                        |
|     |       | 4.8 | 17.47 | 22.26                 | 16016              | 4788               | 4486               | 606.76             | 79.63              | 5.22               | 27.26                        |
|     |       | 5.4 | 19.58 | 24.94                 | 15748              | 4788               | 4448               | 674.51             | 88.52              | 5.20               | 27.05                        |
| 150 | 165.1 | 4.5 | 17.82 | 22.70                 | 19138              | 5187               | 4904               | 732.57             | 88.74              | 5.68               | 32.27                        |
|     |       | 4.8 | 18.98 | 24.17                 | 18991              | 5187               | 4885               | 777.13             | 94.14              | 5.67               | 32.15                        |
|     |       | 5.4 | 21.27 | 27.09                 | 18699              | 5187               | 4847               | 864.70             | 104.75             | 5.65               | 31.92                        |
| 150 | 165.1 | 5.9 | 23.20 | 29.50                 | 18465              | 5189               | 4818               | 970.00             | 113.40             | 5.63               | 31.72                        |
|     |       | 6.3 | 24.67 | 31.43                 | 18265              | 5187               | 4791               | 992.28             | 120.20             | 5.62               | 31.57                        |
|     |       | 4.5 | 18.18 | 23.16                 | 19931              | 5287               | 5005               | 777.22             | 92.36              | 5.79               | 33.56                        |
| 150 | 168.3 | 4.8 | 19.35 | 24.66                 | 19781              | 5287               | 4986               | 824.57             | 97.99              | 5.78               | 33.44                        |
|     |       | 5.4 | 21.69 | 27.64                 | 19483              | 5287               | 4948               | 917.69             | 109.05             | 5.76               | 33.21                        |
|     |       | 6.3 | 25.17 | 32.06                 | 19040              | 5287               | 4891               | 1053.42            | 125.18             | 5.73               | 32.85                        |
| 175 | 193.7 | 4.8 | 22.36 | 28.49                 | 26619              | 6085               | 5784               | 1271.39            | 131.27             | 6.68               | 44.63                        |
|     |       | 5.4 | 25.08 | 31.94                 | 26273              | 6085               | 5746               | 1416.97            | 146.31             | 6.66               | 44.36                        |
|     |       | 5.9 | 27.33 | 34.81                 | 25987              | 6085               | 5715               | 1536.13            | 158.61             | 6.64               | 44.13                        |
| 175 | 193.7 | 6.3 | 29.12 | 37.09                 | 25759              | 6085               | 5689               | 1630.05            | 168.31             | 6.63               | 43.95                        |

## Steel tubes for Structural purposes conforming to IS:1161-2014

| NB     | OD     | Thk    | Mass     | Area of Cross-Section | Internal Volume        | Surface                |                        | Moment of Inertia      | Modulus of Section   | Radius of Gyration | Square of Radius of Gyration |
|--------|--------|--------|----------|-----------------------|------------------------|------------------------|------------------------|------------------------|----------------------|--------------------|------------------------------|
|        |        |        |          |                       |                        | External               | Internal               |                        |                      |                    |                              |
| mm (1) | mm (2) | mm (3) | kg/m (4) | cm <sup>2</sup> (5)   | cm <sup>3</sup> /m (6) | cm <sup>2</sup> /m (7) | cm <sup>3</sup> /m (8) | cm <sup>4</sup> /m (9) | cm <sup>3</sup> (10) | cm (11)            | cm <sup>2</sup> (12)         |
| 200    | 219.1  | 4.8    | 25.37    | 32.32                 | 34471                  | 6883                   | 6582                   | 1856.03                | 169.42               | 7.58               | 57.43                        |
|        | 219.1  | 5.6    | 29.49    | 37.56                 | 33947                  | 6883                   | 6531                   | 2141.61                | 195.49               | 7.55               | 57.02                        |
|        | 219.1  | 5.9    | 31.02    | 39.52                 | 33751                  | 6883                   | 6513                   | 2247.01                | 205.11               | 7.54               | 56.86                        |
|        | 219.1  | 6.3    | 33.06    | 42.12                 | 33491                  | 6883                   | 6487                   | 2386.14                | 217.81               | 7.53               | 56.65                        |
|        | 219.1  | 8.0    | 41.65    | 53.06                 | 32397                  | 6883                   | 6381                   | 2959.63                | 270.16               | 7.47               | 55.78                        |
|        | 219.1  | 10.0   | 51.57    | 65.69                 | 31134                  | 6883                   | 6255                   | 3598.44                | 328.47               | 7.40               | 54.78                        |
| 250    | 273.0  | 5.9    | 38.86    | 49.51                 | 53584                  | 8577                   | 8206                   | 4417.18                | 323.60               | 9.45               | 89.22                        |
|        | 273.0  | 6.3    | 41.44    | 52.79                 | 53256                  | 8577                   | 8181                   | 4695.82                | 344.02               | 9.43               | 88.96                        |
|        | 273.0  | 8.0    | 52.28    | 66.60                 | 51875                  | 8577                   | 8074                   | 5851.71                | 428.70               | 9.37               | 87.86                        |
|        | 273.0  | 10     | 64.86    | 82.62                 | 50273                  | 8577                   | 7948                   | 7154.09                | 524.11               | 9.31               | 86.59                        |
| 300    | 323.9  | 6.3    | 49.34    | 62.86                 | 76111                  | 10176                  | 9780                   | 7928.90                | 489.59               | 11.23              | 126.14                       |
|        | 323.9  | 8.0    | 62.32    | 79.39                 | 74458                  | 10176                  | 9673                   | 9910.08                | 611.92               | 11.17              | 124.82                       |
|        | 323.9  | 10.0   | 77.41    | 98.61                 | 72536                  | 10176                  | 9547                   | 12158.34               | 750.75               | 11.10              | 123.29                       |
| 350    | 355.6  | 8.0    | 68.58    | 87.36                 | 90579                  | 11172                  | 10669                  | 13201.37               | 742.48               | 12.29              | 151.11                       |
|        | 355.6  | 10.0   | 85.23    | 108.57                | 88457                  | 11172                  | 10543                  | 16223.50               | 912.46               | 12.22              | 149.42                       |

\*254 mm OD is available on demand.

### Tensile Properties

| Grade    | Y.S. (min)<br>Mpa | T.S. (min)<br>Mpa | % age<br>Elongation<br>on |
|----------|-------------------|-------------------|---------------------------|
| YST- 210 | 210               | 330               | 20                        |
| YST- 240 | 240               | 410               | 17                        |
| YST- 310 | 310               | 450               | 14                        |
| YST- 355 | 355               | 490               | 10                        |

### Weight

|             |       |
|-------------|-------|
| Single Tube | ±10%  |
| 10 ton lot  | ±7.5% |

### Tolerance

### Tolerance

|  |
|--|
| 1. On outside diameter up to & including 48.3= +0.4mm/-0.8mm |
| 2. Over 48.3mm=+/-1%   |

### Thickness

|              |      |
|--------------|------|
| For all size | ±10% |
| Welded tubes | ±10% |

### Tolerance

APL Apollo Tubes Limited offers a broad range of high quality Scaffolding Components. The product range includes SCAFFOLD TUBES as per EN- 39. Scaffolding Components includes cuplock scaffolding, wedgelock scaffolding & support tubes, fittings (couplers) and framework components and accessories as well as a vast range of other components.

Tube Scaffoldings are widely used for supporting men and material, tools and tackles during construction, alteration demolition and maintenance work because of their several advantages over conventional type of timber bamboo scaffolding.

We offer Scaffolding Tubes which also include complete range of components that are strong, durable and economical. These items are ideally suited for wide application in construction and building structures.

### Scaffolding Tubes

| Size   |      | Thickness |     | Ovality |     | Weight |      |
|--------|------|-----------|-----|---------|-----|--------|------|
| Inches | mm   | Inches    | mm  | Inches  | mm  | Inches | mm   |
| 1½     | 48.3 | 0.126     | 3.2 | 0.02    | 0.5 | 2.392  | 3.56 |
| 1½     | 48.3 | 0.157     | 4.0 | 0.02    | 0.5 | 2.937  | 4.37 |

### Tolerance

| Outside Diameter | Thickness | Weight               |
|------------------|-----------|----------------------|
| 0.5              | ±/-10%    | ±7.5% On Single Tube |

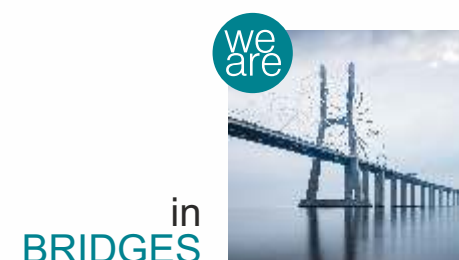
STEEL GRADE : S235JRH  
 MECHANICAL PROPERTIES  
 YIELD STRENGTH : 235 MPa MIN  
 TENSILE STRENGTH : 340 / 520 MPA

CHEMICAL COMPOSITION  
 CARBON : 0.20% Max  
 SILICON : 0.05% Max  
 MANGANESE : 0.40% Max  
 PHOSPHOROUS : 0.40% Max  
 SULPHUR : 0.45% Max  
 ALUMINIUM : 0.02% Max

END FINISH : SQUARE CUT  
 STRAIGHTNESS : 1MM IN 600MM  
 FLATTENING TEST : TWO STAGES  
 FLATTEN UPTO 75% OF TUBE DIA FOR WELD  
 FLATTEN UPTO 60° OF TUBE DIA FOR MATERIAL  
 BEND TEST ALSO AVAILABLE

ZINC COATING : 45 MICRONS MINIMUM OUTSIDE

MARKING : EN 39 APL APOLLO TUBES -3.2/4.0  
 DELIVERY CONDITION : a) AS ROLLED CONDITION (WITHOUT PROTECTION)  
 b) HOT DIP GALVANISED



Technical data of IS: 3601 2006 Tubes for Mechanical & General Engg. Purpose

| N.B size |       | Approx O.D (mm) | Thicknes mm | Wt.kg/mtr | Meters per tonnes |
|----------|-------|-----------------|-------------|-----------|-------------------|
| Mm       | In    |                 |             |           |                   |
| 15       | ½"    | 21.3            | 1.8         | 0.86      | 1155              |
|          |       |                 | 2.0         | 0.95      | 1050              |
|          |       |                 | 2.6         | 1.20      | 833               |
|          |       |                 | 3.2         | 1.43      | 699               |
|          |       |                 | 4.0         | 1.71      | 585               |
| 20       | ¾"    | 26.9            | 1.8         | 1.11      | 901               |
|          |       |                 | 2.0         | 1.23      | 813               |
|          |       |                 | 2.3         | 1.40      | 714               |
|          |       |                 | 2.6         | 1.56      | 641               |
|          |       |                 | 3.2         | 1.87      | 535               |
| 25       | 1"    | 33.7            | 2.0         | 1.56      | 641               |
|          |       |                 | 2.3         | 1.78      | 562               |
|          |       |                 | 2.6         | 1.99      | 503               |
|          |       |                 | 3.2         | 2.41      | 415               |
|          |       |                 | 4.0         | 2.93      | 341               |
| 32       | 1.25" | 42.4            | 2.3         | 2.27      | 441               |
|          |       |                 | 2.6         | 2.55      | 392               |
|          |       |                 | 3.2         | 3.09      | 324               |
|          |       |                 | 3.6         | 3.44      | 291               |
|          |       |                 | 4.0         | 3.79      | 264               |
| 40       | 1.5"  | 48.3            | 2.3         | 2.61      | 383               |
|          |       |                 | 2.6         | 2.93      | 341               |
|          |       |                 | 2.9         | 3.25      | 308               |
|          |       |                 | 3.2         | 3.56      | 281               |
|          |       |                 | 4.0         | 4.37      | 229               |
| 50       | 2"    | 60.3            | 4.9         | 5.23      | 191               |
|          |       |                 | 5.0         | 5.34      | 187               |
|          |       |                 | 5.6         | 5.90      | 170               |
|          |       |                 | 5.9         | 6.16      | 162               |
|          |       |                 | 2.3         | 3.29      | 304               |
| 65       | 2.5"  | 76.1            | 2.6         | 3.70      | 270               |
|          |       |                 | 2.9         | 4.11      | 243               |
|          |       |                 | 3.2         | 4.51      | 222               |
|          |       |                 | 3.6         | 5.03      | 199               |
|          |       |                 | 4.0         | 5.55      | 180               |
| 80       | 3"    | 88.9            | 4.5         | 6.19      | 162               |
|          |       |                 | 5.0         | 6.82      | 147               |
|          |       |                 | 5.6         | 7.55      | 133               |
|          |       |                 | 6.3         | 8.39      | 119               |
|          |       |                 | 2.6         | 5.24      | 191               |
| 65       | 2.5"  | 76.1            | 3.2         | 5.75      | 174               |
|          |       |                 | 3.6         | 6.44      | 155               |
|          |       |                 | 4.0         | 7.11      | 141               |
|          |       |                 | 4.5         | 7.95      | 126               |
|          |       |                 | 5.0         | 8.77      | 114               |
| 80       | 3"    | 88.9            | 5.4         | 9.42      | 106               |
|          |       |                 | 6.3         | 10.80     | 93                |
|          |       |                 | 7.1         | 12.10     | 83                |
|          |       |                 | 2.9         | 6.15      | 163               |
|          |       |                 | 3.2         | 6.76      | 148               |
| 40       | 1.5"  | 48.3            | 4.0         | 8.38      | 119               |
|          |       |                 | 5.0         | 10.30     | 97                |
|          |       |                 | 5.4         | 11.10     | 90                |
|          |       |                 | 5.6         | 11.50     | 87                |
|          |       |                 | 6.3         | 12.80     | 78                |

Grade: ERW-WP- 100

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Technical Data of Pipes Conforming to ASTM A-53 Gr. A&B Sch. 20/40/80

| Nominal Bore |      | Outside Diameter |        | Schedule | Wall Thickness |       | Weight of Pipes Plain End |        | No. of Pcs per Bundle |
|--------------|------|------------------|--------|----------|----------------|-------|---------------------------|--------|-----------------------|
| Mm           | Inch | Mm               | Inch   |          | Mm             | Inch  | Kg/Mtr.                   | Lbs/Ft |                       |
| 15           | ½"   | 21.3             | 0.84   | 40       | 2.77           | 0.109 | 1.27                      | 0.85   | 120                   |
|              |      |                  |        | 80       | 3.73           | 0.147 | 1.62                      | 1.09   |                       |
| 20           | ¾"   | 26.7             | 1.05   | 40       | 2.87           | 0.113 | 1.69                      | 1.13   | 90                    |
|              |      |                  |        | 80       | 3.91           | 0.154 | 2.2                       | 1.48   |                       |
| 25           | 1"   | 33.4             | 1.315  | 40       | 3.38           | 0.133 | 2.5                       | 1.68   | 60                    |
|              |      |                  |        | 80       | 4.55           | 0.179 | 3.24                      | 2.17   |                       |
| 32           | 1 ¼" | 42.2             | 1.66   | 40       | 3.56           | 0.14  | 3.39                      | 2.27   | 42                    |
|              |      |                  |        | 80       | 4.85           | 0.191 | 4.47                      | 3      |                       |
| 40           | 1 ½" | 48.3             | 1.9    | 40       | 3.68           | 0.145 | 4.05                      | 2.72   | 36                    |
|              |      |                  |        | 80       | 5.08           | 0.2   | 5.41                      | 3.63   |                       |
| 50           | 2"   | 60.3             | 2.375  | 40       | 3.91           | 0.154 | 5.44                      | 3.66   | 26                    |
|              |      |                  |        | 80       | 5.54           | 0.218 | 7.48                      | 5.03   |                       |
| 65           | 2 ½" | 73               | 2.875  | 40       | 5.16           | 0.203 | 8.63                      | 5.8    | 18                    |
|              |      |                  |        | 80       | 7.01           | 0.276 | 11.41                     | 7.67   |                       |
| 80           | 3"   | 88.9             | 3.5    | 40       | 5.49           | 0.216 | 11.29                     | 7.58   | 14                    |
|              |      |                  |        | 80       | 7.62           | 0.3   | 15.27                     | 10.26  |                       |
| 90           | 3 ½" | 101.6            | 4      | 40       | 5.74           | 0.226 | 13.57                     | 9.12   | 12                    |
|              |      |                  |        | 80       | 8.08           | 0.318 | 18.63                     | 12.52  |                       |
| 100          | 4"   | 114.3            | 4.5    | 40       | 6.02           | 0.237 | 16.07                     | 10.8   | 10                    |
|              |      |                  |        | 80       | 8.56           | 0.337 | 22.32                     | 15     |                       |
| 125          | 5"   | 141.3            | 5.56   | 40       | 6.55           | 0.258 | 21.77                     | 14.63  | 8                     |
|              |      |                  |        | 40       | 7.11           | 0.278 | 28.26                     | 18.99  |                       |
| 150          | 6"   | 168.3            | 6.625  | 40       | 7.11           | 0.278 | 28.26                     | 18.99  | 7                     |
|              |      |                  |        | 20       | 6.35           | 0.25  | 33.31                     | 22.38  |                       |
| 200          | 8"   | 219.1            | 8.625  | 20       | 6.35           | 0.25  | 33.31                     | 22.38  | 5                     |
|              |      |                  |        | 30       | 7.04           | 0.277 | 36.31                     | 24.72  |                       |
| 250          | 10"  | 273              | 10.748 | 40       | 8.18           | 0.322 | 42.55                     | 28.58  | 3                     |
|              |      |                  |        | 20       | 6.35           | 0.25  | 41.75                     | 28.06  |                       |
| 300          | 12"  | 323.8            | 12.748 | 30       | 7.8            | 0.307 | 51.01                     | 34.27  | 3                     |
|              |      |                  |        | 40       | 9.27           | 0.365 | 60.29                     | 40.52  |                       |
| 350          | 14"  | 355.6            | 14     | 20       | 6.35           | 0.25  | 49.71                     | 33.41  | 3                     |
|              |      |                  |        | 30       | 8.38           | 0.33  | 65.18                     | 43.1   |                       |
| 350          | 14"  | 355.6            | 14     | STD      | 9.52           | 0.375 | 73.78                     | 49.61  | 3                     |
|              |      |                  |        | 40       | 10.31          | 0.406 | 79.70                     | 53.57  |                       |
| 350          | 14"  | 355.6            | 14     | 10       | 6.35           | 0.25  | 54.69                     | 36.75  | 3                     |
|              |      |                  |        | 20       | 7.92           | 0.312 | 67.9                      | 45.65  |                       |
| 350          | 14"  | 355.6            | 14     | 30       | 9.52           | 0.375 | 81.25                     | 54.62  | 3                     |

Chemical Properties

Composition, Max%

|         | Carbon | Manganese | Phosphorus | Sulphur | Copper | Nickel | Chromium A | Molybdenum A | Vanadium A |
|---------|--------|-----------|------------|---------|--------|--------|------------|--------------|------------|
| 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       |

Tolerance

|                  |  |  |
|------------------|--|--|
| Outside Diameter | Pipe Size upto & including Dn40<br>Pipe Size DN 50 or longer | ±0.4mm<br>+1-1%<br>Thickness -12.5max<br>Weight ±10% |
|------------------|--|--|

Mechanical Properties

|                  | Grade A                         | Grade B     |
|------------------|---------------------------------|-------------|
| Yield Strength   | 205Mpa(min)                     | 240Mpa(min) |
| Tensile Strength | 330Mpa(min)                     | 415Mpa(min) |
| Elongation%      | As per ATSM A-%53 table 4.1 4.2 |             |

\*This specification conform to UL certification conferred by underwriters laboratories, USA. ASTM A53 SCH.40 pipes are approved by Dubai, Sharjah & Abu Dhabi civil defence & also from Qatar civil defence.

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## Technical Data of Pipes conforming to ASTM A252

| OUTSIDE DIAMETER |       | DIAMETER TOLERANCE (mm) (Inch) |                      | STANDARD THICKNESS |        | WEIGHT   |         |
|------------------|-------|--------------------------------|----------------------|--------------------|--------|----------|---------|
| (Inch)           | (mm)  | (Min)                          | (Max)                | (mm)               | (Inch) | (Kg/mtr) | (lb/ft) |
| 8 3/4"           | 219.1 | 216.91<br>(8.539")             | 221.29<br>(8.712")   | 4.37               | 0.172  | 23.13    | 15.54   |
|                  |       |                                |                      | 4.78               | 0.188  | 25.24    | 16.96   |
|                  |       |                                |                      | 5.16               | 0.203  | 27.20    | 18.28   |
|                  |       |                                |                      | 5.56               | 0.219  | 29.29    | 19.68   |
|                  |       |                                |                      | 6.35               | 0.250  | 33.31    | 22.38   |
|                  |       |                                |                      | 7.04               | 0.277  | 36.79    | 24.72   |
|                  |       |                                |                      | 7.92               | 0.312  | 41.27    | 27.73   |
|                  |       |                                |                      | 8.18               | 0.322  | 42.54    | 28.58   |
|                  |       |                                |                      | 4.17               | 0.164  | 27.62    | 18.56   |
|                  |       |                                |                      | 4.37               | 0.172  | 28.94    | 19.45   |
| 10 3/4"          | 273.0 | 270.27<br>(10.640")            | 275.73<br>(10.855")  | 4.55               | 0.179  | 30.10    | 20.22   |
|                  |       |                                |                      | 4.78               | 0.188  | 31.59    | 21.22   |
|                  |       |                                |                      | 5.16               | 0.203  | 34.06    | 22.88   |
|                  |       |                                |                      | 5.56               | 0.219  | 36.69    | 24.65   |
|                  |       |                                |                      | 5.84               | 0.230  | 38.49    | 25.86   |
|                  |       |                                |                      | 6.35               | 0.250  | 41.75    | 28.06   |
|                  |       |                                |                      | 7.09               | 0.279  | 46.47    | 31.22   |
|                  |       |                                |                      | 7.80               | 0.307  | 51.00    | 34.27   |
|                  |       |                                |                      | 8.74               | 0.344  | 56.94    | 38.26   |
|                  |       |                                |                      | 9.27               | 0.365  | 60.29    | 40.51   |
| 12 3/4"          | 323.8 | 320.56<br>(12.620")            | 327.04<br>(12.875")  | 4.78               | 0.188  | 37.57    | 25.24   |
|                  |       |                                |                      | 5.16               | 0.203  | 40.52    | 27.22   |
|                  |       |                                |                      | 5.56               | 0.219  | 43.65    | 29.33   |
|                  |       |                                |                      | 6.35               | 0.250  | 49.71    | 33.40   |
|                  |       |                                |                      | 7.14               | 0.281  | 55.74    | 37.45   |
|                  |       |                                |                      | 7.92               | 0.312  | 61.73    | 41.48   |
|                  |       |                                |                      | 8.38               | 0.330  | 65.20    | 43.81   |
|                  |       |                                |                      | 8.74               | 0.344  | 67.89    | 45.61   |
|                  |       |                                |                      | 9.52               | 0.375  | 73.78    | 49.61   |
|                  |       |                                |                      | 10.31              | 0.406  | 79.73    | 53.52   |
| 14"              | 355.6 | 352.04<br>(13.859")            | 359.156<br>(14.140") | 4.78               | 0.188  | 41.31    | 27.76   |
|                  |       |                                |                      | 5.16               | 0.203  | 44.56    | 29.94   |
|                  |       |                                |                      | 5.56               | 0.219  | 48.20    | 32.26   |
|                  |       |                                |                      | 5.84               | 0.230  | 50.39    | 33.86   |
|                  |       |                                |                      | 6.35               | 0.250  | 54.69    | 36.75   |
|                  |       |                                |                      | 7.14               | 0.281  | 61.33    | 41.21   |
|                  |       |                                |                      | 7.92               | 0.312  | 67.94    | 45.65   |
|                  |       |                                |                      | 8.74               | 0.344  | 74.74    | 50.22   |
|                  |       |                                |                      | 9.52               | 0.375  | 81.25    | 54.62   |

Chemical Properties: Phosphorus = 0.050% (Max.)

### Mechanical Properties

|                        | Grade 1 | Grade 2 | Grade 3 |
|------------------------|---------|---------|---------|
| Tensile Strength (Mpa) | 345     | 415     | 455     |
| Yield Strength (Mpa)   | 205     | 240     | 310     |
| % Elongation in (50mm) | 30      | 25      | 20      |
| *Deduction             | 1.50    | 1.25    | 1.00    |

### Technical Details

| Characteristics       | Tolerances & Technical details   |
|-----------------------|--|
| Outside Diameter (OD) | For Round Pipes ± 1 % of OD  |
| Thickness             | -12.5% of specific wall thickness.   |
| Weight                | For each tube – 5 % & + 15% of standard weight (Calculated Weight)   |
| Length                | Pipe shall be furnished in single random length, double random length or in uniform length as per the customer requirement.  |
| Straightness          | The finished pipe shall be reasonably straight.  |
| End                   | Pipe shall be finished with Square cut (plain End) of Bevel End (30* - 0/+5*)  |
| Surface Protection    | Black & Galvanized coating as per Customer requirement   |
| Marking (Stencilling) | APL APOLLO TUBES, Specification designation, Grade, Outside diameter, Thickness, Process of manufacturing & Heat No." on pipe and any thin specific as per the customer requirement. |

## ASTM A-795\* (Black & Galvanised Steel Pipes for Fire Protection)

| Nominal Bore |       | Outside Diameter |       | SCH-10         |       |                  |       | No. of piece per Bundle | SCH 40/30*     |       |                  |       | No. of piece per Bundle |
|--------------|-------|------------------|-------|----------------|-------|------------------|-------|-------------------------|----------------|-------|------------------|-------|-------------------------|
| Mm           | Inch  | Mm               | Inch  | Wall Thickness |       | Weight Plain End |       |                         | Wall Thickness |       | Weight Plain End |       |                         |
| Mm           | Inch  | Mm               | Inch  | Mm             | Inch  | Mm               | Inch  | Mm                      | Inch           | Mm    | Inch             | Mm    | Inch                    |
| 20           | 3/4   | 26.7             | 1.050 | 2.11           | 0.083 | 1.28             | 0.96  | 90                      | 2.87           | 0.113 | 1.69             | 1.13  | 90                      |
| 25           | 1     | 33.4             | 1.315 | 2.77           | 0.109 | 2.09             | 1.41  | 90                      | 3.38           | 0.133 | 2.50             | 1.68  | 60                      |
| 32           | 1 1/4 | 42.2             | 1.660 | 2.77           | 0.109 | 2.69             | 1.81  | 61                      | 3.56           | 0.14  | 3.39             | 2.27  | 42                      |
| 40           | 1 1/2 | 48.3             | 1.900 | 2.77           | 0.109 | 3.11             | 2.09  | 61                      | 3.68           | 0.145 | 4.05             | 2.72  | 36                      |
| 50           | 2     | 60.3             | 2.375 | 2.77           | 0.109 | 3.93             | 2.64  | 37                      | 3.91           | 0.154 | 5.45             | 3.66  | 26                      |
| 65           | 2 1/2 | 73.0             | 2.875 | 3.05           | 0.120 | 5.26             | 3.53  | 29                      | 5.16           | 0.205 | 8.68             | 5.80  | 18                      |
| 80           | 3     | 88.9             | 3.500 | 3.05           | 0.120 | 6.46             | 4.34  | 24                      | 6.49           | 0.216 | 11.29            | 7.58  | 14                      |
| 90           | 3 1/2 | 101.6            | 4.000 | 3.05           | 0.120 | 7.41             | 4.98  | 21                      | 5.74           | 0.226 | 13.58            | 9.12  | 12                      |
| 100          | 4     | 114.3            | 4.500 | 3.05           | 0.120 | 8.37             | 5.62  | 19                      | 6.02           | 0.237 | 16.09            | 10.8  | 10                      |
| 125          | 5     | 141.3            | 5.563 | 3.4            | 0.134 | 11.58            | 7.78  | 10                      | 6.55           | 0.258 | 21.79            | 14.63 | 8                       |
| 150          | 6     | 168.3            | 6.625 | 3.4            | 0.134 | 13.85            | 9.30  | 10                      | 7.11           | 0.280 | 28.29            | 18.99 | 7                       |
| 200          | 8     | 219.1            | 8.625 | 4.78           | 0.188 | 25.26            | 16.96 | 5                       | 7.04*          | 0.277 | 36.82            | 24.72 | 5                       |

\*The specification conforms to UL conferred by underwriters laboratories USA

### ASTM A-135 GRADE A&B (Black and Galvanised Steel Pipe)

| Nominal Bore |       | Outside Diameter |       | SCH-10         |       |                  |      | No. of piece per Bundle |
|--------------|-------|------------------|-------|----------------|-------|------------------|------|-------------------------|
| Mm           | Inch  | Mm               | Inch  | Wall Thickness |       | Weight Plain End |      |                         |
| Mm           | Inch  | Mm               | Inch  | Mm             | Inch  | Mm               | Inch |                         |
| 20           | 3/4   | 26.7             | 1.050 | 2.11           | 0.083 | 1.28             | 0.96 | 90                      |
| 25           | 1     | 33.4             | 1.315 | 2.77           | 0.109 | 2.09             | 1.41 | 90                      |
| 32           | 1 1/4 | 42.2             | 1.66  | 2.77           | 0.109 | 2.69             | 1.81 | 61                      |
| 40           | 1 1/2 | 48.3             | 1.900 | 2.77           | 0.109 | 3.11             | 2.09 | 61                      |
| 50           | 2     | 60.3             | 2.375 | 2.77           | 0.109 | 3.93             | 2.64 | 37                      |
| 65           | 2 1/2 | 73.0             | 2.875 | 3.05           | 0.120 | 5.26             | 3.53 | 29                      |
| 80           | 3     | 88.9             | 3.500 | 3.05           | 0.120 | 6.46             | 4.34 | 24                      |
| 90           | 3 1/2 | 101.6            | 4.000 | 3.05           | 0.120 | 7.41             | 4.98 | 21                      |
| 100          | 4     | 114.3            | 4.500 | 3.05           | 0.120 | 8.37             | 5.62 | 19                      |
| 125          | 5     | 141.3            | 5.563 | 3.40           | 0.134 | 11.58            | 7.78 | 14                      |

### Tolerance

|                  |   |   |
|------------------|---|---|
| Outside Diameter | Pipe Size upto & including DN 40<br>Pipe Size DN 50 or longer | + 1-0.4mm<br>+1=1%<br>Thickness -12.5(max)<br>Weight +10% |
|------------------|---|---|

### Mechanical Properties

|                  | Grade A     | Grade B     | Carbon  | Manganese | Phosphorus | Sulphur |
|------------------|-------------|-------------|---------|-----------|------------|---------|
| Yield Strength   | 205Mpa(min) | 240Mpa(min) | Grade A | 0.25      | 0.05       | 0.35    |
| Tensile Strength | 330Mpa(min) | 415Mpa(min) | Grade B | 0.3       | 1.2        | 0.35    |
| Elongation %     | 35          | 30          |         |           |            |         |

### Galvanising

|                 |                                   |
|-----------------|-----------------------------------|
| Minimum Average | 0.49 0kg/Sq Mtr<br>0.550kg/Sq Mtr |
|-----------------|-----------------------------------|





# APL APOLLO'S MANUFACTURING FACILITY

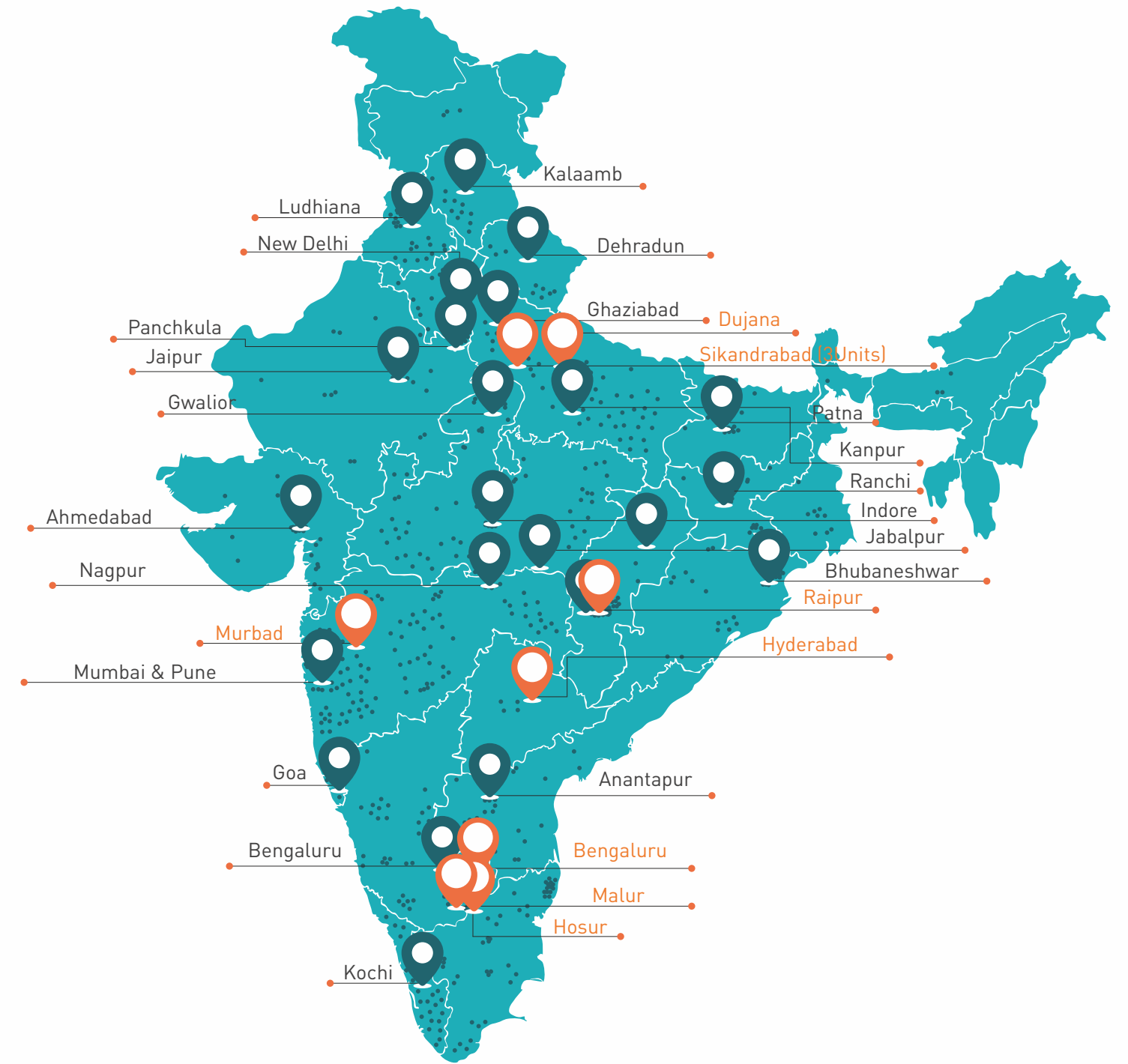









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