## ADTO GROUP

ADTO Group


**CHANGSHA XIANGJIA METAL MATERIAL TRADING CO., LTD.**

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**Pipe Mill Add.1:** Lijiapu Industrial Area, Cangzhou City, Hebei Province, P.R.C.
**Pipe Mill Add.2:** No.88, Jin Shan Lu, Xinan Industrial Park Qianqiao Town, Huishan District Wuxi City, Jiangsu People's Republic of China
**Pipe Fitting Mill Add:** Industry Zone Of Yanshan County Hebei Province City, Hebei Province, P.R.C.


元拓建材
ADTO

# STEEL PIPE
## PRODUCT MANUAL

THE WORLD-CLASS ONE-STOP SOLUTION PROVIDER OF PIPING MATERIALS!

元拓建材 ADTO | 工程设备材料（方案）提供商
Building Materials and Equipment Solutions Provider

厂家直供，品质保障，为您创造更多价值
Factory Direct Supply; Quality Guaranteed; Create More Value for You

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ADTO GROUP

Steel Pipe Product Manual

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ADTO GROUP



# COMPANY PROFILE >>

ADTO Group, a company based in China, has built its reputation on being a trusted supplier for all steel pipe and pipe fittings in the world since 1998. Integrated with design, manufacturing, project management and sales of steel products, it's headquarters is located in the beautiful city of Changsha in southern China. ADTO Group has been one of the ‘China Top 500 Private Enterprises’ and ‘China Top 100 Steel Corporation’.

Changsha Xiangjia Metal Materical Co., Ltd. As an exporting gateway under ADTO Group, we have over 20 years of piping materials making experience and insight into Oil & Gas, Water, Mining, Marine and infrastructure. Our philosophy and commitment focuses on one-stop service for piping materials and pipe fittings, helping our 1000+ business partners including contractors and resellers all over the world to have a better solution, ensuring high quality whilst saving precious time.

Indeed, ADTO is renowned internationally as one of the foremost experts in making piping materials. Combining advanced manufacturing with 10+ overseas branches & offices (Philippines, Indonesia, Vietnam, Myanmar, Cambodia, Thailand, Dubai, Egypt and Nigeria, etc), ADTO has a reputation for serving all its business partners from more than 100 countries and regions better and faster.



# EQUIPMENTS AND WORKSHOP

## EQUIPMENTS FOR SEAMLESS STEEL PIPES

Rotating Furnace

Piercing Mill

Hot Rolling Mill

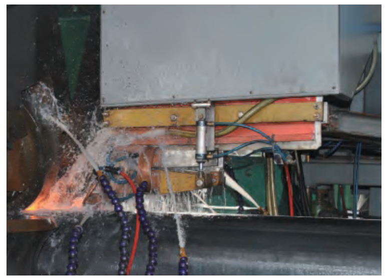
Sizing Machine

Straightener

Cooling Bed

## EQUIPMENTS FOR WELDED STEEL PIPES

1.Straight Row Roller Forming Machine



2.High Frequency Solid State Welder

3.JCOE Production Line

4.Longitudinal Submerged Arc Welding

5.On-Line Super Spiral Accumulator

6.Spiral Welded Pipe Forming Machine

## EQUIPMENTS AND WORKSHOP

7.Spiral Submerged Arc Welding

8.On-Line Weld Seam Annealing

9.Electric Bevelling Machine

### EQUIPMENTS FOR TEST AND INSPECTION

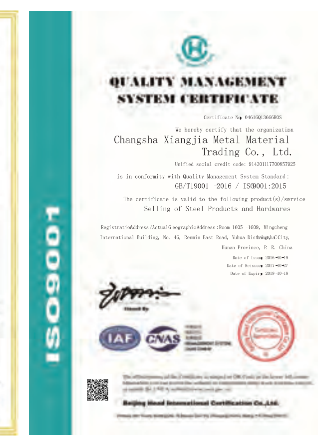
1.Hydraulic Testing Equipment
2.X-ray Inspection Equipment
3.Ultrasonic Testing Equipment
4.Eddy Current Testing Equipment
5.Magnetic Particle Inspection

**OTHER TESTING**

1.Impact Testing Machine
2.Universal Testing Machine
3.Hardness Tester
4.Metallographic Analyzer
5.Spectrograph



## CERTIFICATES AND HONOR



## LINE PIPE

**Standard:** GB/T9711-2011,API 5L,ISO3183-2007

**Uses:** Conveying of gas, water and oil in petroleum and natural gas industries



**Specifications of Seamless Steel Pipe**

| DN | NPS | OD | ANSI/ASME B36.10M | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MM | INCH | MM | SCH10 | SCH20 | SCH30 | STD | SCH40 | SCH60 | XS | SCH80 | SCH100 | SCH120 | SCH140 | SCH160 | XXS |
| 6 | 1/8" | 10.3 | | | | 1.73 | 1.73 | | 2.41 | 2.41 | | | | | |
| 8 | 1/4" | 13.7 | | | | 2.24 | 2.24 | | 3.02 | 3.02 | | | | | |
| 10 | 3/8" | 17.1 | | | | 2.31 | 2.31 | | 3.2 | 3.2 | | | | | |
| 15 | 1/2" | 21.3 | 2.11 | | 2.41 | 2.77 | 2.77 | | 3.73 | 3.73 | | | | 4.78 | 7.47 |
| 20 | 3/4" | 26.7 | 2.11 | | 2.41 | 2.87 | 2.87 | | 3.91 | 3.91 | | | | 5.56 | 7.82 |
| 25 | 1" | 33.4 | 2.77 | | 2.9 | 3.38 | 3.38 | | 4.55 | 4.55 | | | | 6.35 | 9.09 |
| 32 | 1-1/4" | 42.2 | 2.77 | | 2.97 | 3.56 | 3.56 | | 4.85 | 4.85 | | | | 6.35 | 9.7 |
| 40 | 1-1/2" | 48.3 | 2.77 | | 3.18 | 3.68 | 3.68 | | 5.08 | 5.08 | | | | 7.14 | 10.15 |
| 50 | 2" | 60.3 | 2.77 | | 3.18 | 3.91 | 3.91 | | 5.54 | 5.54 | | | | 8.74 | 11.07 |
| 65 | 2-1/2" | 73 | 3.05 | | 4.78 | 5.16 | 5.16 | | 7.01 | 7.01 | | | | 9.53 | 14.02 |
| 80 | 3" | 88.9 | 3.05 | | 4.78 | 5.49 | 5.49 | | 7.62 | 7.62 | | | | 11.13 | 15.25 |
| 90 | 3-1/2" | 101.6 | 3.05 | | 4.78 | 5.74 | 5.74 | | 8.08 | 8.08 | | | | | |
| 100 | 4" | 114.3 | 3.05 | | 4.78 | 6.02 | 6.02 | | 8.56 | 8.56 | | 11.13 | | 13.49 | 17.12 |
| 125 | 5" | 141.3 | 3.4 | | | 6.55 | 6.55 | | 9.53 | 9.53 | | 12.7 | | 15.88 | 19.05 |
| 150 | 6" | 168.3 | 3.4 | | | 7.11 | 7.11 | | 10.97 | 10.97 | | 14.27 | | 18.26 | 21.95 |
| 200 | 8" | 219.1 | 3.76 | 6.35 | 7.04 | 8.18 | 8.18 | 10.31 | 12.7 | 12.7 | 15.09 | 18.26 | 20.62 | 23.01 | 22.23 |
| 250 | 10" | 273 | 4.19 | 6.35 | 7.8 | 9.27 | 9.27 | 12.7 | 12.7 | 15.09 | 18.26 | 21.44 | 25.4 | 28.58 | 25.4 |
| 300 | 12" | 323.8 | 4.57 | 6.35 | 8.38 | 9.53 | 10.31 | 14.27 | 12.7 | 17.48 | 21.44 | 25.4 | 28.58 | 33.32 | 25.4 |
| 350 | 14" | 355.6 | 6.35 | 7.92 | 9.53 | 9.53 | 11.13 | 15.09 | 12.7 | 19.05 | 23.83 | 27.79 | 31.75 | 35.71 | |
| 400 | 16" | 406.4 | 6.35 | 7.92 | 9.53 | 9.53 | 12.7 | 16.66 | 12.7 | 21.44 | 26.19 | 30.96 | 36.53 | 40.19 | |
| 450 | 18" | 457.2 | 6.35 | 7.92 | 11.13 | 9.53 | 14.27 | 19.05 | 12.7 | 23.83 | 39.36 | 34.93 | 39.67 | 45.24 | |
| 500 | 20" | 508 | 6.35 | 9.53 | 12.7 | 9.53 | 15.09 | 20.62 | 12.7 | 26.19 | 32.54 | 38.1 | 44.45 | 50.01 | |
| 550 | 22" | 558.8 | 6.35 | 9.53 | 12.7 | 9.53 | | 22.23 | 12.7 | 28.58 | 34.93 | 41.28 | 47.63 | 53.98 | |
| 600 | 24" | 609.6 | 6.35 | 9.53 | 14.27 | 9.53 | 17.48 | 24.61 | 12.7 | 30.96 | 38.89 | 46.02 | 52.37 | 59.54 | |
| 650 | 26" | 660.4 | 7.92 | 12.7 | | 9.53 | | | 12.7 | | | | | | |
| 700 | 28" | 711.2 | 7.92 | 12.7 | 15.88 | 9.53 | | | 12.7 | | | | | | |
| 750 | 30" | 762 | 7.92 | 12.7 | 15.88 | 9.53 | | | 12.7 | | | | | | |
| 800 | 32" | 812.8 | 7.92 | 12.7 | 15.88 | 9.53 | 17.48 | | 12.7 | | | | | | |
| 850 | 34" | 863.6 | 7.92 | 12.7 | 15.88 | 9.53 | 17.48 | | 12.7 | | | | | | |
| 900 | 36" | 914.4 | 7.92 | 12.7 | 15.88 | 9.53 | 19.05 | | 12.7 | | | | | | |
| 950 | 38" | 965.2 | | | | 9.53 | | | 12.7 | | | | | | |
| 1000 | 40" | 1016 | | | | 9.53 | | | 12.7 | | | | | | |
| 1050 | 42" | 1066.8 | | | | 9.53 | | | 12.7 | | | | | | |
| 1100 | 44" | 1117.6 | | | | 9.53 | | | 12.7 | | | | | | |
| 1150 | 46" | 1168.4 | | | | 9.53 | | | 12.7 | | | | | | |
| 1200 | 48" | 1219.2 | | | | 9.53 | | | 12.7 | | | | | | |

- Tolerances on dimensions:

| Standard | Outside Diameter Tolerance | | Wall Thickness Tolerance |
|---|---|---|---|
| API SPEC 5L | D<60.3 mm | +0.41mm/-0.40mm | +15.0%/-12.5% |
| | D>60.3 mm | +0.75%/-0.40mm | |





- Chemical composition

| Class | Grade | C≤ | Mn≤ | P≤ | S≤ | V≤ | Nb≤ | Ti≤ |
|---|---|---|---|---|---|---|---|---|
| PSL1 | L245/B | 0.28 | 1.20 | 0.030 | 0.030 | - | - | - |
| | L290/X42 | 0.28 | 1.30 | 0.030 | 0.030 | - | - | - |
| | L320/X46 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| | L360/X52 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| | L390/X56 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| | L415/X60 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| | L450/X65 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| | L485/X70 | 0.28 | 1.40 | 0.030 | 0.030 | - | - | - |
| PSL2 | L245N/BN | 0.24 | 1.20 | 0.025 | 0.015 | - | - | 0.04 |
| | L290N/X42N | 0.24 | 1.30 | 0.025 | 0.015 | 0.06 | 0.05 | 0.04 |
| | L320N/X46N | 0.24 | 1.40 | 0.025 | 0.015 | 0.07 | 0.05 | 0.04 |
| | L360N/X52N | 0.24 | 1.40 | 0.025 | 0.015 | 0.10 | 0.05 | 0.04 |
| | L390N/X56N | 0.24 | 1.40 | 0.025 | 0.015 | 0.10 | 0.05 | 0.04 |
| | L415N/X60N | 0.24 | 1.40 | 0.025 | 0.015 | 0.10 | 0.05 | 0.04 |
| | L450Q/X65Q | 0.18 | 1.70 | 0.025 | 0.015 | – | – | – |
| | L485Q/X70Q | 0.18 | 1.80 | 0.025 | 0.015 | – | – | – |

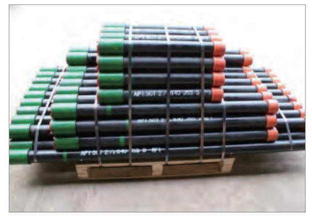
- Mechanical properties

| Standard | Grade | Yield strength (Mpa) | | Tensile strength(Mpa) | | Elongation(%) |
|---|---|---|---|---|---|---|
| | | min | max | min | max | min |
| GB/T9711<br>API 5L<br>ISO3183 | PSL1 | | | | | |
| | L245/B | 245 | | 415 | | $A_f = c\frac{A_{XC}^{0.2}}{U^{0.9}}$ |
| | L290/X42 | 290 | | 415 | | |
| | L320/X46 | 320 | | 435 | | |
| | L360/X52 | 360 | | 460 | | |
| | L390/X56 | 390 | | 490 | | |
| | L415/X60 | 415 | | 520 | | |
| | L450/X65 | 450 | | 535 | | |
| | PLS2 | | | | | |
| | L245N/BN | 245 | 450 | 415 | 760 | $A_f = c\frac{A_{XC}^{0.2}}{U^{0.9}}$ |
| | L290N/X42N | 290 | 495 | 415 | 760 | |
| | L320N/X46N | 320 | 525 | 435 | 760 | |
| | L360N/X52N | 360 | 530 | 460 | 760 | |
| | L390N/X56N | 390 | 545 | 490 | 760 | |
| | L415N/X60N | 415 | 565 | 520 | 760 | |
| | L450Q/X65Q | 450 | 600 | 535 | 760 | |

## OCTG PRODUCTS

**Standard:** API SPEC 5CT, API SPEC 5B, ISO 11960
**Uses:** Tubing is used to extrading petroleum and natural gas from a well; Casing serves as wall of a well



- Chemical Composition (%);

| Grade | C | | Mn | | Mo | | Cr | | Ni | Cu | P | S | Si |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | min | max | min | max | min | max | min | max | max | max | max | max | max |
| J55 | - | - | - | - | - | - | - | - | - | - | 0.030 | 0.030 | - |
| K55 | - | - | - | - | - | - | - | - | - | - | 0.030 | 0.030 | - |
| N80 | - | - | - | - | - | - | - | - | - | - | 0.030 | 0.030 | - |
| L80-1 | - | 0.43 | - | 1.90 | - | - | - | - | 0.25 | 0.35 | 0.030 | 0.030 | 0.45 |
| C90-1 | - | 0.35 | - | 1.00 | 0.25 | 0.75 | - | 1.20 | 0.99 | - | 0.020 | 0.010 | - |
| C90-2 | - | 0.50 | - | 1.90 | - | N.L. | - | N.L. | 0.99 | - | 0.030 | 0.010 | - |
| C95 | - | 0.45 | - | 1.90 | - | - | - | - | - | - | 0.030 | 0.030 | 0.045 |
| T95-1 | - | 0.35 | - | 1.20 | 0.25 | 0.85 | 0.40 | 1.50 | 0.99 | - | 0.030 | 0.010 | - |
| T95-2 | - | 0.5 | - | 1.90 | - | - | - | - | - | - | 0.030 | 0.010 | - |
| P110 | - | - | - | - | - | - | - | - | - | - | 0.030 | 0.030 | - |

- Mechanical Properties:

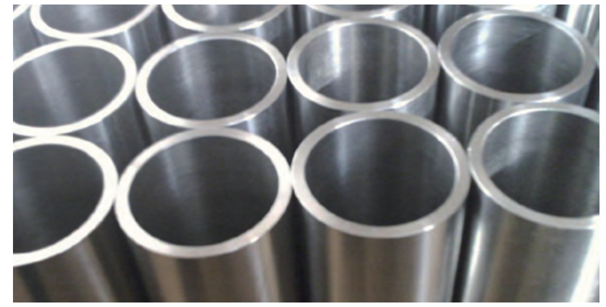
| Grade | Yield Strength | | | | Tensile Strength | | Hardness | | Allowable Hardness Variation |
|---|---|---|---|---|---|---|---|---|---|
| | min | | max | | min | | max | | |
| | Psi | Mpa | Psi | Mpa | Psi | Mpa | HRC | HBW | HRC |
| J55 | 55,000 | 379 | 80,000 | 552 | 75,000 | 517 | - | - | - |
| K55 | 55,000 | 379 | 80,000 | 552 | 95,000 | 655 | - | - | - |
| N80 | 80,000 | 552 | 110,000 | 758 | 100,000 | 689 | - | - | - |
| L80-1 | 80,000 | 552 | 95,000 | 655 | 95,000 | 655 | 23 | 241 | - |
| C90 | 90,000 | 621 | 105,000 | 724 | 100,000 | 689 | 25.4 | 255 | 3.0 |
| C95 | 95,000 | 655 | 110,000 | 758 | 105,000 | 724 | - | - | - |
| T95 | 95,000 | 655 | 110,000 | 758 | 125,000 | 724 | 25.4 | 255 | 3.0 |
| P110 | 110,000 | 758 | 140,000 | 965 | 100,000 | 862 | - | - | - |





## STRUCTURAL AND MECHANICAL TUBE

**Standard:** ASTM A519, EN 10297, EN 10210, DIN 1629, GB/T 8162, JIS G3445
**Uses:** For manufacture of pipeline, vessels, equipment, pipe fittings and steel structures




- Mechanical Properties:

| Standard | Grade | Tansile Strength | Yield Strength Not less than | | Elongation Not less than |
|---|---|---|---|---|---|
| | | | ≤16mm | ＞16-30mm | |
| GB/T 8162 | 10 | ≥335 | 205 | 195 | 24 |
| | 20 | ≥390 | 245 | "235 | 20 |
| | 35 | ≥510 | 305 | 295 | 17 |
| | 45 | ≥590 | 335 | 325 | 14 |
| | Q345 | ≥490 | 325 | 315 | 21 |
| DIN 1629 | - | - | ≤16mm | >16mm | - |
| | St37.0 | 350-480 | 235 | 225 | 25 |
| | St44.0 | 420-550 | 275 | 265 | 21 |
| | St55 | 540-645 | 295 | 285 | 17 |
| | St52.0 | 500-650 | 355 | 345 | 21 |

- Chemical Composition(%)

| Standard | Grade | C | Si | Mn | P | S | Cr | Ni | Cu | V |
|---|---|---|---|---|---|---|---|---|---|---|
| GB/T 8162 | 10 | 0.07-0,13 | 0.17-0.37 | 0.35-0.65 | ≤0.025 | ≤0.020 | ≤0.15 | ≤0.30 | ≤0.25 | - |
| | 20 | 0.17-0.23 | 0.17-0.37 | 0.35-0.65 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.30 | ≤0.25 | - |
| | 35 | 0.32-0.39 | 0.17-0.37 | 0.50-0.80 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.30 | ≤0.25 | - |
| | 45 | 0.42-0,50 | 0.17-0.37 | 0.50-0.80 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.30 | ≤0.25 | - |
| | Q345A | ≤0.20 | ≤0.55 | 1.00-1.60 | ≤0.025 | ≤0.020 | ≤0.30 | ≤0.30 | ≤0.30 | - |
| | Q345B | ≤0.20 | ≤0.55 | 1.00-1.60 | ≤0.025 | ≤0.020 | ≤0.30 | ≤0.30 | ≤0.30 | - |
| | Q345C | ≤0.20 | ≤0.55 | 1.00-1.60 | ≤0.025 | ≤0.020 | ≤0.30 | ≤0.30 | ≤0.30 | 0.02-0.15 |
| | Q345D | ≤0.18 | ≤0.55 | 1.00-1.60 | ≤0.025 | ≤0.020 | ≤0.30 | ≤0.30 | ≤0.30 | 0.02-0.15 |
| | Q345E | ≤0.18 | ≤0.55 | 1.00-1.60 | ≤0.025 | ≤0.020 | ≤0.30 | ≤0.30 | ≤0.30 | 0.02-0.15 |
| DIN 1629 | St37.0 | ≤0.17 | 0.17-0.37 | 0.35-0.65 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.25 | ≤0.25 | - |
| | St44.0 | ≤0.21 | 0.17-0.37 | 0.50-0.80 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.25 | ≤0.25 | - |
| | St55 | 0.33-0.41 | 0.17-0.37 | 0.50-0.80 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.25 | ≤0.25 | - |
| | St52,0 | ≤0.22 | ≤0.55 | ≤1.60 | ≤0.025 | ≤0.020 | ≤0.25 | ≤0.25 | ≤0.25 | - |

## FLUID PIPE

**Standard:** GB/T 8163 China National Standard

ASTM A 53M Standard of American Society for Testing & Materials
ASTM A 106 Standard of American Society for Testing & Materials

**Uses:** For conveyance of petroluem, gas and conveyance of other fluid

- Mechanical Properties:

| Standard | Grade | Tansile Strength | Yield Strength Not less than | | Elongation Not less than |
|---|---|---|---|---|---|
| | | | ≤16mm | >16mm | |
| GB/T 8163 | 10 | 335-475 | ⩾205 | ⩾195 | ⩾24 |
| | 20 | 410-550 | ⩾245 | ⩾235 | ⩾20 |
| | 0295 | 430-610 | ⩾295 | ⩾285 | ⩾22 |
| | Q345 | 490-665 | ⩾325 | ⩾315 | ⩾21 |
| | A | ⩾330 | ⩾205 | | See Table 3 of ASTM A 53 |
| DIN 1629 | B | ⩾415 | ⩾240 | | |
| | A | ⩾330 | ⩾205 | | See Table 4 of ASTM A 106 |
| | B | ⩾415 | ⩾240 | | |
| | c | ⩾485 | ⩾275 | | |

- Chemical Composition(%)

| Standard | Grade | C | Si | Mn | P | S | Ni | Cr | Cu | Mo | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GB/T 8163 | 10 | 0.07-0.13 | 0.07-0.37 | 0.35-0.65 | ⩽0.035 | ⩽0.035 | ⩽0.30 | ⩽0.15 | ⩽0.25 | - | - |
| | 20 | 0.07-0.23 | 0.17-0,37 | 0.35-0.65 | ⩽0.035 | ⩽0.035 | ⩽0.30 | ⩽0.25 | ⩽0.25 | - | - |
| | Q295A | ⩽0.16 | ⩽0,55 | 0.80-1.50 | ⩽0.045 | ⩽0.045 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | - |
| | Q295B | ⩽0.16 | ⩽0,55 | 0,80-1.50 | ⩽0.040 | ⩽0.040 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | - |
| | Q345A | ⩽0.20 | ⩽0,55 | 1,00-1.60 | ⩽0.045 | ⩽0.045 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | - |
| | Q345B | ⩽0.20 | ⩽0,55 | 1.00-1.60 | ⩽0.040 | ⩽0.040 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | - |
| | Q345C | ⩽0.20 | ⩽0,55 | 1.00-1.60 | ⩽0.035 | ⩽0.035 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | 0.02-0,15 |
| | Q345D | ⩽0.18 | ⩽0,55 | 1.00-1.60 | ⩽0.030 | ⩽0.030 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | 0.02-0.15 |
| | Q345E | ⩽0.18 | ⩽0.5 | 1.00-1.60 | ⩽0.025 | ⩽0.025 | ⩽0.30 | ⩽0.30 | ⩽0.30 | - | 0.02-0.15 |
| ASTM A53M | A | ⩽0.25 | - | ⩽0.95 | ⩽0.05 | ⩽0.045 | ⩽0.40 | ⩽0.40 | ⩽0.40 | ⩽0.15 | ⩽0.08 |
| | B | ⩽0.30 | - | ⩽1.20 | ⩽0.05 | ⩽0.045 | ⩽0.40 | ⩽0.40 | ⩽0.40 | ⩽0.15 | ⩽0.08 |
| ASTM A106 | A | ⩽0.25 | ⩾0.10 | 0.27-0.93 | ⩽0.035 | ⩽0.035 | ⩽0.40 | ⩽0.40 | ⩽0.40 | ⩽0.15 | ⩽0.08 |
| | B | ⩽0.30 | ⩾0.10 | 0,29-1,06 | ⩽0.035 | ⩽0.035 | ⩽0.40 | ⩽0.40 | ⩽0.40 | ⩽0.15 | ⩽0.08 |
| | C | ⩽0.35 | ⩾0.10 | 0,29-1.06 | ⩽0,035 | ⩽0.035 | ⩽0.40 | ⩽0.40 | ⩽0.40 | ⩽0.15 | ⩽0.08 |

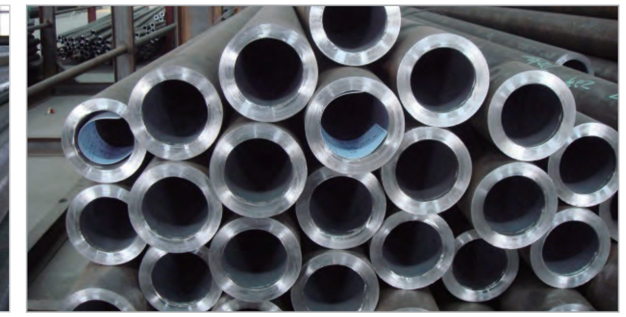




## BOILER TUBE

**Standard:** ASME SA-106, ASTM A179, ASME SA-192M, ASME SA-209M, ASME SA-210M, ASME SA-213M, ASTM A312, ASME SA 333, ASME SA 335, DIN 17175, **EN10216-1,EN10216-1 (TC1,TC2)**, GB 3087, GB 5310, JIS G3461-G3462, JIS G3454-G3456

**Uses:** For manufacture wall panel, economizer,reheater,superheater and steam pipeline of boilers.



Tolerances on Dimensions:

- Outside Diameter Tolerance:

| Standard | Outside Diameter(mm) | Tolerance |
|---|---|---|
| DIN 17175 | ⩽100 | ±0.75%(min ±0.5mm) |
| | >100 | ± 0.90% |
| GB3087 | ⩽180 | 1.0%(min ±0.5mm) |
| GB 5310 | 50 | ±0.5mm |
| | >50 | ±1.0% |
| ASME SA-192M ASME SA-209M ASME SA-210M ASME SA-213M JIS G 3461 | 101.6 | ±0.4,-0.8mm |
| | >101.6-190.5 | +0.4,-1.2mm |
| ASME SA-106 | 48.3 | ±0.4mm |
| | ?48.3-114.3 | ±0.79mm |
| | >114.3 | +1.5, - 0.79mm |
| EN10216-1 & EN10216-2 | ⩽219.1 | ±1% or ±0.5mm whichever is the greater |
| | >219.1 | |

- Wall Thickness Tolerance:

| Standard | Outside Diameter da | Wall Thickness S | Tolerance |
|---|---|---|---|
| DIN 17175 | ⩽130 | S⩽2Sn | +15%,-10% |
| | | 2 Sn<S⩽4Sn | +12.5%,-10% |
| | | S>4Sn | ±9% |
| | >130 | S⩽0.05da | +17.5%,-12.5% |
| | | 0.05da<S⩽0.11da | ±12.5% |
| | | S>0.11da | 10% |
| GB3087 | | 3.0 -20 | +15%,-12.5%(min.+0.45mm,-0.35mm) |
| | | >20 | ±12.5% |
| GB 5310 | | <3.5 | ‘+15%，-10%(min.+0.48,-0.32mm) |
| | | 3.5 -20 | +15%,-10% |
| | | >20 | ±10% |
| ASME SA-192M ASME SA-209M ASME SA-210M ASME SA-213M JIS G 3461 | | 2.41-3.8 | +35%,-0% |
| | | >3.8-4.6 | +33%,-0% |
| | | >4.6 | +28%,-0% |
| ASME SA-106 | | | ±12.5% |
| EN10216-1 & EN10216-2 | T/D Ratio | ⩽0.025 | ±20% |
| | T/D Ratio | >0.025, ⩽0.050 | ±15% |
| | T/D Ratio | >0.050, ⩽0.10 | ±12.5% |
| | T/D Ratio | >0.10 | ±10% |

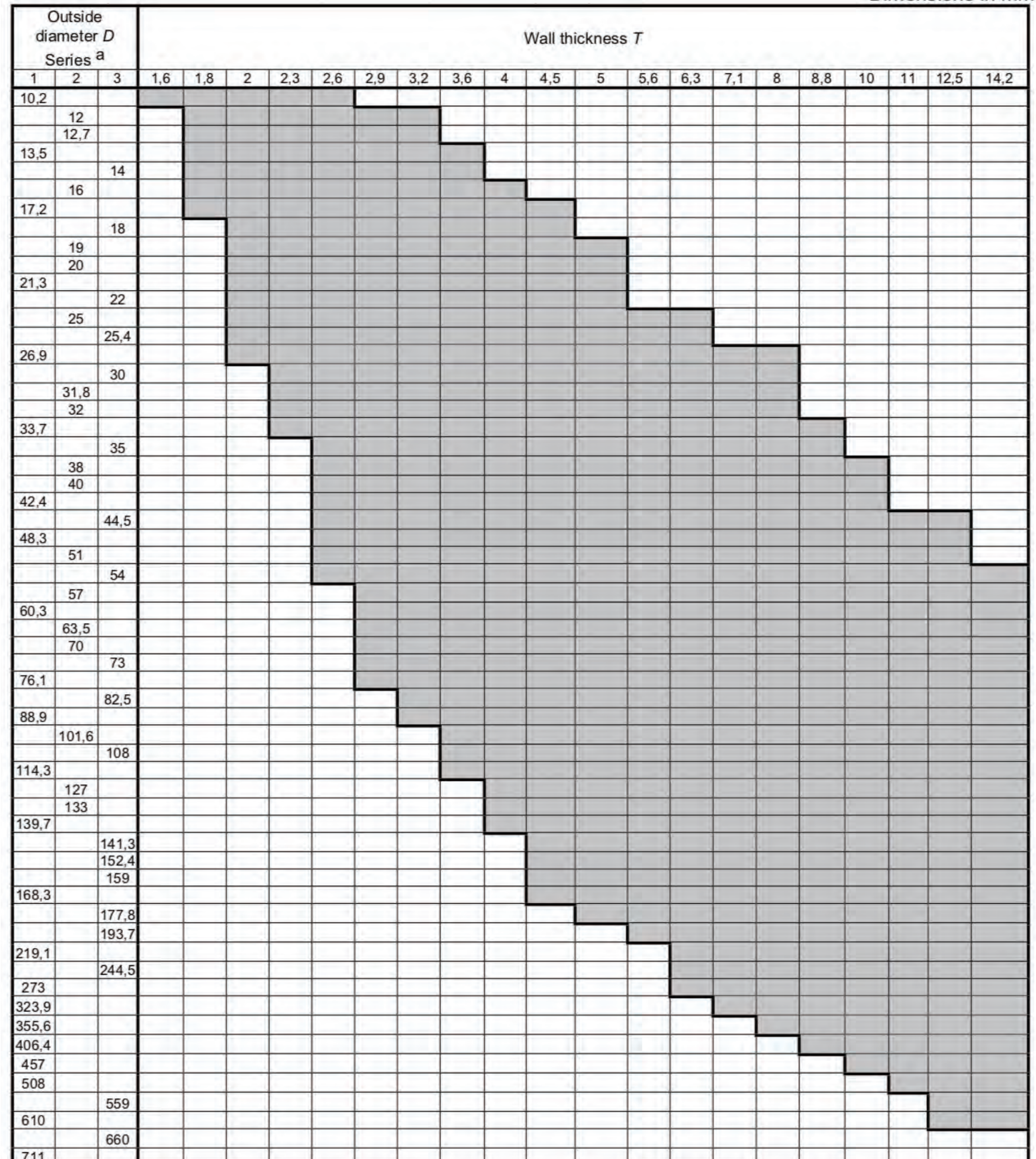
- Mechanical properties:

| Standard | Grade | Tensile Strength(Mpa) | Yield Point not less than(Mpa) | Elongation not less than (%) | Impact not less than(J) |
|---|---|---|---|---|---|
| GB 3087 | 10 | 335-475 | 195 | 24 | |
| | 20 | 410-550 | 245 / 225 | 20 | |
| DIN 17175 | | | ≤16mm / >16mm | | |
| | St35.8 | 360-480 | 235 / 225 | 25 | |
| | St45.8 | 410-530 | 255 / 245 | 21 | |
| | 15Mo3 | 450-600 | 270 | 22 | |
| | 13CrMo44 | 440-590 | 270 | 22 | |
| | 10CrMo910 | 450-600 | 280 | 20 | |
| | 14MoV63 | 460-610 | 320 | 20 | 55 |
| | 12Cr1MoV | 470-640 | 255 | 21 | 41 |
| GB 5310 | 20G | 410-550 | 245 | 24 | 35 |
| | 20MnG | ≥415 | 240 | 22 | 35 |
| | 25MnG | ≥485 | 275 | 20 | 35 |
| | 15MoG | 450-600 | 270 | 22 | 35 |
| | 20MoG | ≥415 | 220 | 22 | 35 |
| | 12CrMoG | 410-560 | 205 | 21 | 35 |
| | 15CrMoG | 440-640 | 235 | 21 | 35 |
| | 12Cr2MoG | 450-600 | 280 | 20 | 35 |
| | 15Cr1MoG | 470-640 | 255 | 21 | 35 |
| | 12CrMoWVTib | 540-735 | 345 | 18 | |
| | 10Cr9Mo1VNb | ≥585 | 415 | 20 | |
| ASME SA-192M | SA-192 | ≥325 | 180 | See Table | |
| ASME SA-106M | SA-106B | ≥415 | 240 | | |
| | SA-106C | ≥485 | 275 | | |
| ASME SA-210M | SA-210A1 | ≥415 | 255 | | |
| | SA-210C | ≥485 | 275 | | |
| ASME SA-209M | SA-209Tla | ≥415 | 220 | | |
| ASME SA-213M | SA-213T2 | ≥415 | 205 | | |
| | SA-213T11 | ≥415 | 205 | | |
| | SA-213T12 | ≥415 | 220 | | |
| | SA-213T22 | ≥415 | 205 | | |
| | SA-213T23 | ≥510 | 400 | | |
| | SA-213T91 | ≥585 | 415 | | |
| JIS G3461 | STB340 | ≥340 | 175 | | |
| | STB410 | ≥410 | 255 | | |
| EN10216-1 | P235TR1 | 360-500 | 235 | 23 | |
| | P235TR2 | 360-500 | 235 | 23 | 27(0°C) |
| | P265TR1 | 410-570 | 265 | 21 | |
| | P265TR2 | 410-570 | 265 | 21 | 27(0°C) |
| EN10216-2 | P235GH | 360-500 | 235 | 23 | 27(0°C) |
| | P265GH | 410-570 | 265 | 21 | 27(0°C) |
| | 16Mo3 | 450-600 | 280 | 20 | 27(20°C) |





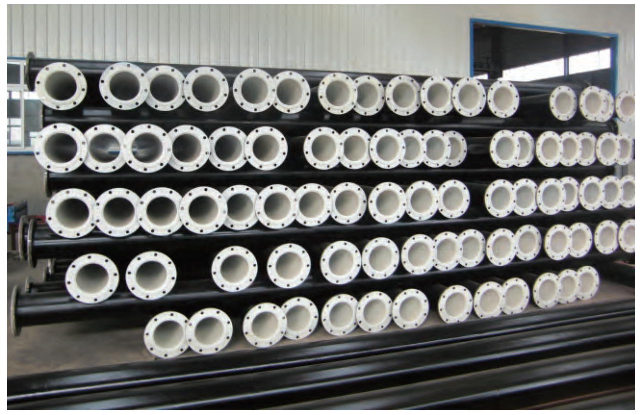
Dimensions in mm




a Series 1 = diameters for which all the accessories needed for the construction of piping system are standardized
Series 2 = diameters for which not all the accessories are standardized
Series 3 = diameters for special application for which very few standardized accessories exist

## ERW PIPE

ERW Pipe: Electric Resistance Welded steel tube used in oil drilling and machinery manufacturing, etc.
Steel Grade: Q235, Q345, S235JR, S275JR, S355JR, S355J2H, GR. A, GR. B, GR. C, GR. D, STK400, STK500, A, B, X42, X46, X52, X56, X60, X65, X70
Standard: GB/T3091-2001 , BS1387-1985, DIN EN10025, EN10219, JIS G3444:2004, ASTM A53, API 5L



ERW Pipe Welded With Flanges,Epoxy Coated

Welded Pipe

• BS1387:1985 ERW PIPE

| DN | A | | | B | | | C | | |
|---|---|---|---|---|---|---|---|---|---|
| | Outer Diameter | | Wall Thickness | Outer Diameter | | Wall Thickness | Outer Diameter | | Wall Thickness |
| | Max | Min | | Max | Min | | Max | Min | |
| | 21.4 | 21.0 | 2.0 | 21.7 | 21.1 | 2.6 | 21.7 | 21.1 | 3.2 |
| 15 | 26.9 | 26.4 | 2.3 | 27.2 | 26.6 | 2.6 | 27.2 | 26.6 | 3.2 |
| 20 | 33.8 | 33.2 | 2.6 | 34.2 | 33.4 | 3.2 | 34.2 | 33.4 | 4.0 |
| 25 | 42.5 | 41.9 | 2.6 | 42.9 | 42.1 | 3.2 | 42.9 | 42.1 | 4.0 |
| 32 | 48.4 | 47.8 | 2.9 | 48.8 | 48.0 | 3.2 | 48.8 | 18.0 | 4.0 |
| 40 | 60.2 | 59.6 | 2.9 | 60.8 | 59.8 | 3.6 | 60.8 | 59.8 | 4.5 |
| 50 | 76.0 | 75.2 | 3.2 | 76.6 | 75.4 | 3.6 | 76.6 | 75.4 | 4.5 |
| 65 | 88.7 | 87.9 | 3.2 | 89.5 | 88.1 | 4.0 | 89.5 | 88.1 | 5.0 |
| 80 | 113.9 | 113.0 | 3.6 | 114.9 | 113.1 | 4.5 | 114.9 | 113.3 | 5.4 |
| 100 | | | | 140.6 | 138.7 | 5.0 | 140.6 | 138.7 | 5.4 |
| 125 | | | | 166.1 | 164.1 | 5.0 | 166.1 | 164.1 | 5.4 |
| 150 | | | | | | | | | |

• JISG3444:2004 STK 400/500 STRUCTURAL CARBON STEEL PIPE

| Outer Diameter (mm) | Wall Thickness (mm) | Outer Diameter (mm) | Wall Thickness (mm) | Outer Diameter (mm) | Wall Thickness (mm) |
|---|---|---|---|---|---|
| 21.7 | 2.0 | 60.5 | 2.3-4.0 | 139.8 | 3.6-6.0 |
| 27.2 | 2.0-2.3 | 76.3 | 2.8-4.0 | 165.2 | 4.5-7.1 |
| 34.0 | 2.3 | 89.1 | 2.8-3.2 | 190.7 | 4.5-8.2 |
| 42.7 | 2.3-2.5 | 101.6 | 3.2-5.0 | | |
| 48.6 | 2.3-3.2 | 114.3 | 3.2-4.5 | | |





## HOT DIPPED GALVANIZED PIPE / PRE-GALVANIZED PIPE

Steel Grade: Q195, Q235, Q345, S235JR, S275JR, S355JR, GR.A, GR.B, GR.C, GR.D, STK400, STK500
Standard: GB/T3091-2001, BS1387-1985, DIN EN10025, EN10219, JIS G3444: 2004, ASTM A53, BS-EN10255-2004
Surface Finish: hot dipped galvanized, electro galvanized, black, painted, threaded, socket, engraved, Groove.
Pre-galvanized pipe: outer diameter: 19mm-100mm; thickness 1mm-2.3mm; zinc coating : 80-120g/m2

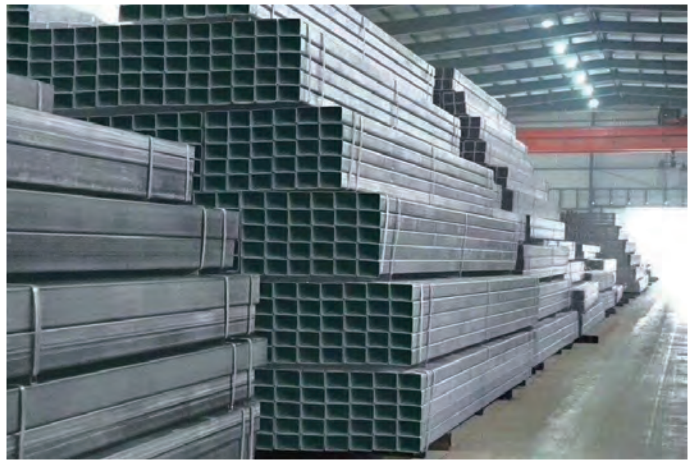
Hot Dipped Galvanized Pipe

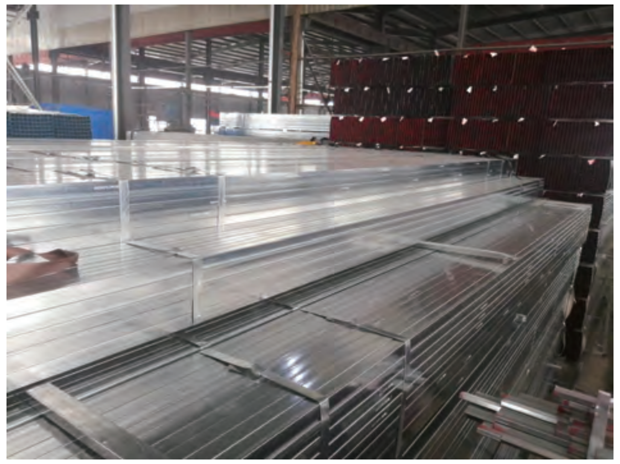
Pre-Galvanized Pipe

| Outer Diameter | | Wall Thickness | Length |
|---|---|---|---|
| Inch | mm | mm | m |
| 1/2'' | 21.3 | 0.6-3.0 | 0.3-12 |
| 3/4” | 26.9 | 0.6-3.0 | 0.3-12 |
| 1', | 33.4 | 1.0-3.0 | 0.3-12 |
| 1-1/4'' | 42.3 | 1.0-4.0 | 0.3-12 |
| 1-1/2', | 48.3 | 1.0-4.0 | 0.3-12 |
| 2', | 60.3 | 1.5-4.0 | 0.3-12 |
| 2-1/2', | 76.1 | 1.5-4.0 | 0.3-12 |
| 3', | 88.9 | 1.5-9.5 | 0.3-12 |
| 4，， | 114.3 | 2.0-9.5 | 0.3-12 |
| 5，， | 141.3 | 3.0-9.5 | 0.3-12 |
| 6，， | 168.3 | 3.0-12.0 | 1.0-12 |
| 8，， | 219.1 | 3.2-12.0 | 1.0-12 |
| 10，， | 273 | 3.2-12.0 | 1.0-12 |
| 12，， | 323.8 | 6.0-15.0 | 1.0-12 |
| 14，， | 355.6 | 8.0-15.0 | 1.0-12 |
| 16，， | 406.4 | 8.0-20.0 | 1.0-12 |

## SQUARE/RECTANGULAR TUBE (HOLLOW SECTION)

Square/Rectangular Tube is applicable to frame for civil construction, furniture and etc. We can supply the products according to following standards: GB/T6728-2002, ASTM A500, JIS G3466, En10210, EN10219





Pre-galvanized Hollow Section

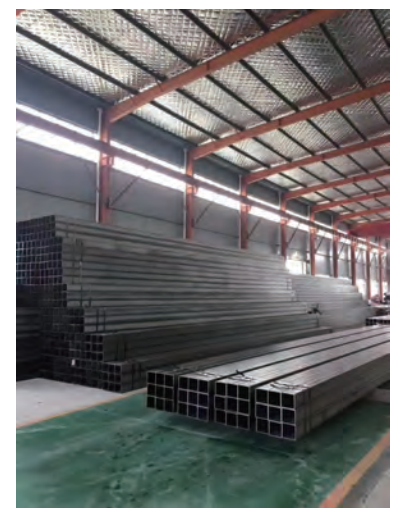
| Size (mm) | Thickness (mm) | Length (m) | Size (mm) | Thickness (mm) | Length (m) |
|---|---|---|---|---|---|
| 12.7x12.7 | 0.7-1.2 | 5-12 | 19x25 | 0.7-2.0 | 5-12 |
| 16x16 | 0.7-1.2 | 5-12 | 20x40 | 0.7-1.6 | 5-12 |
| 19x19 | 0.7-1.2 | 5-12 | 27x47 | 0.7-1.6 | 5-12 |
| 20x20 | 0.7-1.5 | 5-12 | 30x40 | 0.7-1.6 | 5-12 |
| 22x22 | 0.7-1.5 | 5-12 | 25x50 | 0.7-1.8 | 5-12 |
| 25x25 | 0.7-1.5 | 5-12 | 30x50 | 0.7-2.0 | 5-12 |
| 29x29 | 0.7-1.7 | 5-12 | 37x57 | 0.7-2.0 | 5-12 |
| 30x30 | 0.7-1.7 | 5-12 | 37x77 | 0.7-2.0 | 5-12 |
| 32x32 | 0.7-1.7 | 5-12 | 38x75 | 0.7-2.0 | 5-12 |
| 35x35 | 0.7-1.7 | 5-12 | 40x60 | 0.7-2.0 | 5-12 |
| 37x37 | 0.7-1.7 | 5-12 | 50x75 | 0.7-2.0 | 5-12 |
| 38x38 | 0.7-1.7 | 5-12 | 40x80 | 0.7-2.0 | 5-12 |
| 40x40 | 0.7-1.7 | 5-12 | 50x100 | 0.85-2.0 | 5-12 |
| 45x45 | 0.7-1.7 | 5-12 | 25x75 | 0.9-2.0 | 5-12 |
| 50x50 | 0.7-2.0 | 5-12 | 50x150 | 1.3-2.2 | 5-12 |
| 60x60 | 0.7-2.0 | 5-12 | 80x80 | 0.7-2.0 | 5-12 |
| 75x75 | 0.7-2.0 | 5-12 | 100x100 | 0.7-2.0 | 5-12 |





### • Square tube

| Size (mm) | Thickness (mm) | Size (mm) | Thickness (mm) |
|---|---|---|---|
| 20x20 | 1.5-2.75 | 75x75 | 1.5-5.75 |
| 20x30 | 1.5-2.75 | 80x80 | 1.5-5.75 |
| 25x25 | 1.5-2.75 | 50x100 | 1.5-5.75 |
| 30x30 | 1.5-3.0 | 60x100 | 1.5-5.75 |
| 20x40 | 1.5-3.0 | 80x100 | 1.5-5.75 |
| 30x40 | 1.5-3.0 | 60x120 | 1.5-5.75 |
| 25x50 | 1.5-4.0 | 40x100 | 1.5-5.75 |
| 30x60 | 1.5-4.0 | 80x120 | 1.7-6.0 |
| 30x50 | 1.5-4.75 | 100x100 | 1.7-6.0 |
| 40x40 | 1.5-4.75 | 80x140 | 2.5-6.0 |
| 40x50 | 1.5-4.75 | 120x120 | 2.5-6.0 |
| 40x60 | 1.5-4.75 | 80x160 | 2.5-6.0 |
| 50x50 | 1.5-4.75 | 75x150 | 2.5-6.0 |
| 40x80 | 1.5-5.75 | 100x150 | 2.5-6.0 |
| 50x70 | 1.5-5.75 | 150x150 | 2.5-6.0 |
| 50x80 | 1.5-5.75 | 140x140 | 2.5-6.0 |
| 60x80 | 1.5-5.75 | 200x100 | 2.5-6.0 |
| 60x90 | 1.5-5.75 | 200x200 | 3.5-10.0 |
| 60x60 | 1.5-5.75 | 200x300 | 4.5-11.75 |
| 70x70 | 1.5-5.75 | 200x400 | 4.5-11.75 |



### • Pre-galvanized round pipe

| Size (mm) | Thickness (mm) |
|---|---|
| 16 | 0.7-1.2 |
| 20 | 0.8-2.2 |
| 22 | 0.8-2.2 |
| 25 | 0.8-2.2 |
| 25.4 | 0.8-2.2 |
| 32 | 0.8-2.2 |
| 33.4 | 0.8-2.2 |
| 38 | 1.0-2.2 |
| 40 | 1.0-2.2 |
| 42 | 1.0-2.3 |
| 47 | 1.0-2.3 |
| 48 | 1.0-2.3 |
| 59 | 1.0-2.3 |
| 60.3 | 1.0-2.3 |
| 75 | 1.0-2.3 |
| 87 | 1.0-2.3 |
| 112 | 1.0-2.3 |

## LSAW STEEL PIPE

**LSAW steel pipe Structural Pipes and Low-pressure liquid transportation pipes**

**Standard:** ASTM A139(Grade-A-E) ASTM A252(Grade 1-3) JIS G3444(STK290-540) GB/T3091(Q215-345)

**OD:** 508-1422MM

**WT:** 6-40MM

**Length:** 6-12M

**Uses:** as low-pressure liquid transportation pipes and different types of load bearing structure units as well as other purposes. We can also supply with other sizes according to clients requirements.

• Chemical Component, Mechanical Propertiest

| Standard | Grade | Chemical Composition(max)% | | | | | Mechanical Propeties | |
|---|---|---|---|---|---|---|---|---|
| | | C | Si | Mn | S | P | Yield Strength(Mpa) | Tensile strength(Mpa) |
| GB/T 700-2006 | A | 0.22 | 1.4 | 0.35 | 0.050 | 0.045 | 235 | 370 |
| | B | 0.20 | 1.4 | 0.35 | 0.045 | 0.045 | 235 | 370 |
| | C | 0.17 | 1.4 | 0.35 | 0.040 | 0.04 | 235 | 370 |
| | D | 0.17 | 1.4 | 0.35 | 0.035 | 0.035 | 235 | 370 |
| GB/T 1591-2009 | A | 0.20 | 1.7 | 0.5 | 0.035 | 0.035 | 345 | 470 |
| | B | 0.20 | 1.7 | 0.5 | 0.030 | 0.03 | 345 | 470 |
| | C | 0.20 | 1.7 | 0.5 | 0.030 | 0.03 | 345 | 470 |
| BS EN10025 | S235JR | 0.17 | 1.4 | - | 0.035 | 0.035 | 235 | 360 |
| | S275JR | 0.21 | 1.5 | - | 0.035 | 0.035 | 275 | 410 |
| | S355JR | 0.24 | 1.6 | - | 0.035 | 0.035 | 355 | 470 |
| DIN 17100 | ST37-2 | 0.20 | - | - | 0.050 | 0.050 | 225 | 340 |
| | ST44-2 | 0.21 | - | | 0.050 | 0.050 | 365 | 410 |
| | ST52-3 | 0.20 | 1.6 | 0.55 | 0.040 | 0.040 | 345 | 490 |
| JIS G3101 | SS400 | - | - | - | 0.500 | 0.500 | 235 | 400 |
| | SS490 | - | - | - | 0.500 | 0.500 | 275 | 490 |
| API 5L PSL1 | A | 0.22 | 0.9 | - | 0.030 | 0.03 | 210 | 335 |
| | B | 0.26 | 1.2 | - | 0.030 | 0.03 | 245 | 415 |
| | X42 | 0.26 | 1.3 | - | 0.030 | 0.03 | 290 | 415 |
| | X46 | 0.26 | 1.4 | - | 0.030 | 0.03 | 310 | 435 |
| | X52 | 0.26 | 1.4 | - | 0.030 | 0.03 | 360 | 460 |
| | X56 | 0.26 | 1.1 | - | 0.030 | 0.03 | 390 | 460 |
| | X60 | 0.26 | 1.4 | - | 0.030 | 0.03 | 415 | 520 |
| | X65 | 0.26 | 1.45 | - | 0.030 | 0.03 | 450 | 535 |
| | X70 | 0.26 | 1.65 | - | 0.030 | 0.03 | 585 | 570 |





## SSAW STEEL PIPE

Spiral Welded Pipe is widely applied to the transportation for various of liquid and powdery solid, such as petroleum, natural gas, chemical, heat supply, gas supply, bittern, ore pulp, coal powder and etc. It also can be used as structural tube, engineering tube and the piling tube.

| Standard | Grade |
|---|---|
| GB/T9711.1 | L175, L210, L245, L290, L320, L360, L390, L415, L450, L485, L555 |
| GB/T9711.2 | L245NB, L245MB, L290NB, L290MB, L360NB, L360MB, L360QB, L415NB, L415MB, L415QB, L450MB, L450QB, L485MB, L485QB, L555MB, L555QB |
| SY/T5037 | Q235B, Q345B |
| SY/T5040 | Q235B, Q345B |
| API5L | A, B, X42, X46, X52, X56, X60, X65, X70, X80 |
| EN10219&EN10217 | S235JR , S235JR+N , S235JR-G2 , S355J2 , S355J0, S355J2, P265GH, P235TR1/TR2, P265TR1/TR2 etc |

| Outer Diameter (mm) | Wall Thickness (mm) | Length (m) | Outer Diameter (mm) | Wall Thickness (mm) | Length (m) |
|---|---|---|---|---|---|
| 219 | 6 - 8 | 1 - 1 2 | 1016 | 8 - 2 3 | 1 - 1 2 |
| 273 | 6 - 1 0 | 1 - 1 2 | 1020 | 8 - 2 3 | 1 - 1 2 |
| 325 | 6 - 1 4 | 1 - 1 2 | 1220 | 8 - 2 3 | 1 - 1 2 |
| 377 | 6 - 1 4 | 1 - 1 2 | 1420 | 1 0 - 2 3 | 1 - 1 2 |
| 426 | 6 - 1 6 | 1 - 1 2 | 1620 | 1 0 - 2 3 | 1 - 1 2 |
| 478 | 6 - 1 6 | 1 - 1 2 | 1820 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 508 | 6 - 1 8 | 1 - 1 2 | 2020 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 529 | 6 - 1 8 | 1 - 1 2 | 2200 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 610 | 6 - 1 9 | 1 - 1 2 | 2420 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 630 | 6 - 1 9 | 1 - 1 2 | 2620 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 720 | 6 - 2 2 | 1 - 1 2 | 2820 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 820 | 7 - 2 2 | 1 - 1 2 | 3000 | 1 0 - 2 5 . 4 | 1 - 1 2 |
| 920 | 8 - 2 3 | 1 - 1 2 | | | |

## ANTI-CORROSION PROCESSING ABOUT PIPELINE 3PE/PP

**STANDARD:**
External coating refer to NF A49-710,DIN30670,CAN CSA21,CAN CSA20,SY/T0143,SY/T0315 and other country's external anti-corrosion standards;
Internal coating refer to NF A49-709,API RP 5L2,SY/T0457 and other country's external anti-corrosion standards.

**APPLICATION:**
The external coating is mainly used for anti-corrosion protection for liquid pipes before burying, and internal drag-reducing coating is mainly used for reduce the investment and maintenance costs.

**Inner corrosion protection of steel pipes**
We offer inside corrosion protection for DN100~700mm steel pipes. We coat inner wall of treated steel pipe with red oxide anticorrosive paint, bicomponent liquid epoxy paint or other paint designated by clients by means of centrifugal coating.

**Outer corrosion protection of steel pipes**

1. ( FBE ) Single-layer FBE coating
Characterized by excellent corrosion-proof performance, insulatibity and relatively long service life, epoxy powder coating is one of the most advanced outer anticorrosive coating of pipeline, there are normal type and strengthened type, thickness: normal type:300~400μm;strengthened type:400~500μm.

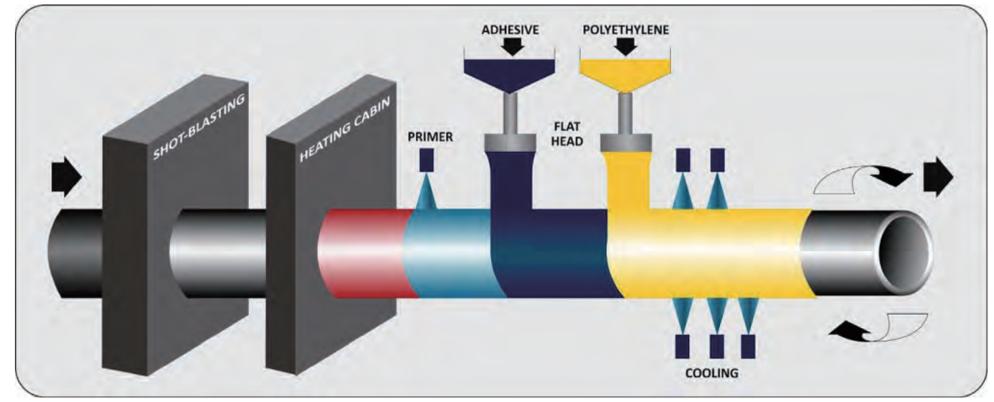
2. ( 2FBE ) Two-layer FBE coating
Two-layer epoxy powder coating is a compound coating structure composed of anticorrosive epoxy powder floor layer and mechanical damage resistant epoxy powder surface layer. There are normal type and strengthened type. Thickness: total thickness of normal type: ≥620μm;total thickness of strengthened type: ≥800μm.

3. ( 2PE/2PP ) Two-layer PE/PP cocating
Two-layer PE/PP coating is characterized by excellent corrosion-proof performance,insulatibity, relatively long service life and mechanical damage resistance. There are normal type and strengthened type. The thickness varies with the specification shift of steel pipe; Min thickness of normal type:1.8mm, min thickness of strengthened type:2.5mm.

4. ( 3PE/3PP ) Three-layer PE/PP cocating
Three-layer PE/PP coating is characterized by excellent corrosion-proof performance, ,insulatibity, relatively long service life and mechanical damage resistance.it is widely used in coating for all kinds of major pipeline engineering. There are normal type and strengthened type. The thickness varies with the specification shift of steel pipe: Min thickness of normal type:1.8mm, min thickness of strengthened type:2.5mm.








• Thickness of 2PE/2PP/3PE/3PP External Coating

| Norminal Diameter DN | Epoxy Coating/μm | Adhesive Coating/μm | Minimum Thickness of PE/PP Coating/mm | |
|---|---|---|---|---|
| | | | Common | Enhanced |
| DN⩽100 | ⩾120 | ⩾170 | 1.80 | 2.50 |
| 100<DN⩽250 | | | 2.00 | 2.70 |
| 250<DN<500 | | | 2.20 | 2.90 |
| 500⩽DN<800 | | | 2.50 | 3.20 |
| DN⩾800 | | | 3.00 | 3.70 |

• Tickness of Two-Layer External FBE Coating

| Coating Level | The Minimum Thickness/μm | |
|---|---|---|
| | Bottom Layer | Enhanced |
| Normal Level | 250 | 370 |
| Reinforce Level | 300 | 500 |

• Thickness of Single-Layer External FBE Coating

| Coating Level | The Minimum Thickness/μm |
|---|---|
| Normal Level | 300 |
| Reinforce Level | 400 |

• Thickness of Internal FBE Coating

| Pipe Operation Requirements | The Minimum Thickness/μm | |
|---|---|---|
| Drap Reduction Pipeline | ⩾50 | |
| Anti-corrosion Pipeline | Normal Level | ⩾250 |
| | Reinforce Level | ⩾350 |

• Thickness of Liquid Epoxy Internal Coating

| Anti-corrosion Level | Thickness of Dry Film/μm |
|---|---|
| Normal Level | ⩾200 |
| Reinforce Level | ⩾300 |
| Extra-reinforce Level | ⩾450 |

## FLANGES

| | |
|---|---|
| **Specification:** | GB/T 9112, GB/T 9125, GB/T 13402,<br>ASME B 16.5, ASME B 16.47, ASME B 16.48, ASME B 16.36,<br>API 590, API 605,<br>EN 1092, EN 1759,<br>BS 1560, BS 4504,<br>ISO 7005,<br>JIS B 2220. |
| **Steel Grade:** | 20#, 25#, 35#,<br>16Mn, 20MnMo, 20MnMoNb, 15CrMo, 35CrMo, 12Cr1MoV, 14Cr1MoV,<br>12Cr2Mo, 11Cr5Mo,   A105, A181, A350, A727, A182, A522, A707, A694. |
| **Outer Diameter:** | IF Flange: 3/8''~80'';<br>BW Flange: 3/8''~160'';<br>SO Flange: 3/8''~40'';<br>PL Flange: 3/8''~80'';<br>TH Flange: 3/8''~40'';<br>SW Flange: 3/8''~30'';<br>BL Flange: 3/8''~80''. |
| **Nominal Pressure:** | IF Flange: PN2.5bar~ PN400bar, CLASS150~CLASS2500;<br>BW Flange: PN2.5bar~ PN400bar, CLASS150~CLASS2500;<br>SO Flange: PN6bar~ PN100bar, CLASS150~CLASS1500;<br>PL Flange: PN2.5bar~ PN100bar;<br>TH Flange: PN6bar~ PN100bar, CLASS150~CLASS1500;<br>SW Flange: PN210bar~ PN100bar, CLASS150~CLASS1500;<br>BL Flange: PN2.5bar~ PN100bar, CLASS150~CLASS1500. |
| **Connection Type:** | IF, SO, WN, PL, TH, SW, BL, BL(S), PJ/SE, PJ/PR |
| **Surface Type:** | IF Flange: FF, RF, MFM, TG, RJ;<br>BW Flange: FF, RF, MFM, TG, RJ;<br>SO Flange: FF, RF, MFM, TG, RJ;<br>PL Flange: FF, RF;<br>TH Flange: FF, RF;<br>SW Flange: RF, MFM, TG, RJ;<br>BL Flange: FF, RF, MFM, TG, RJ |





## TYPE OF FLANGE

PLATE FLANGE

THREADED FLANGE

SLIP-ON FLANGE

SOCKET WELDING FLANGE

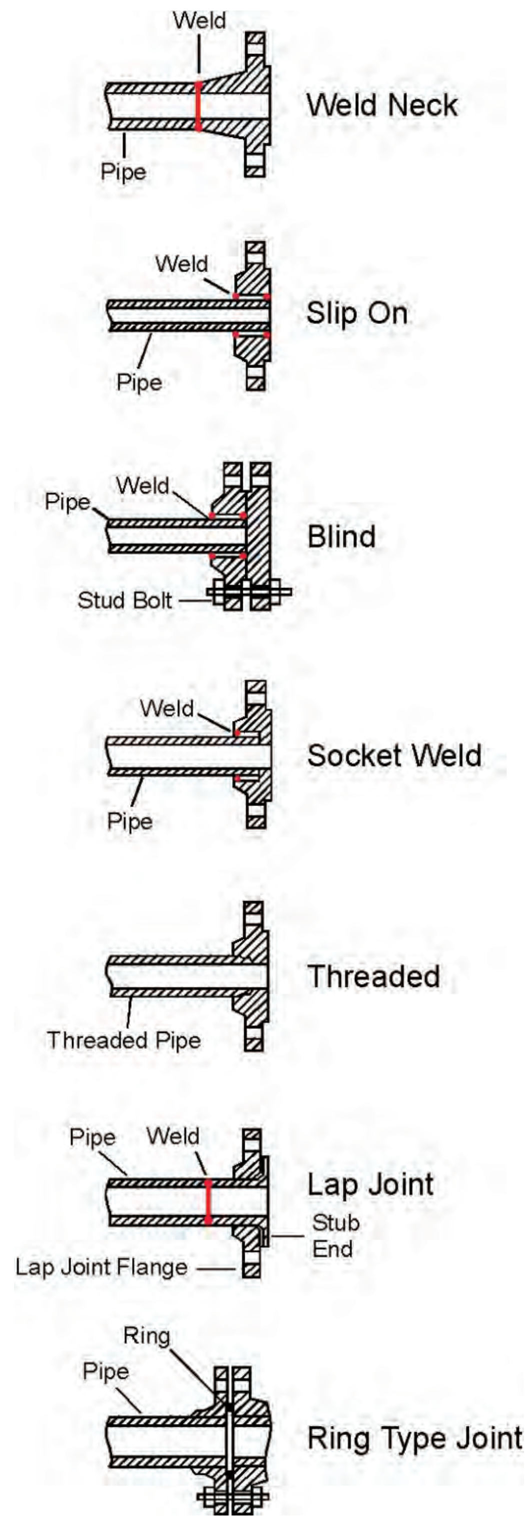
LAP JOINT FLANGE

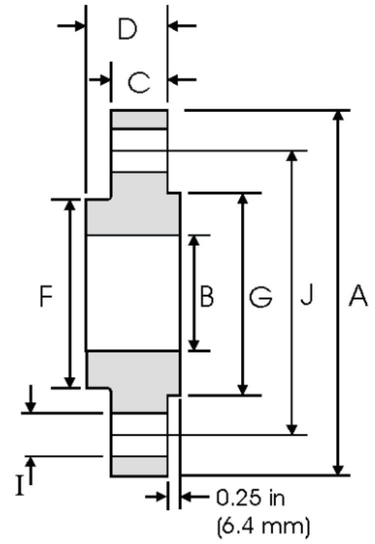
BLIND FLANGE

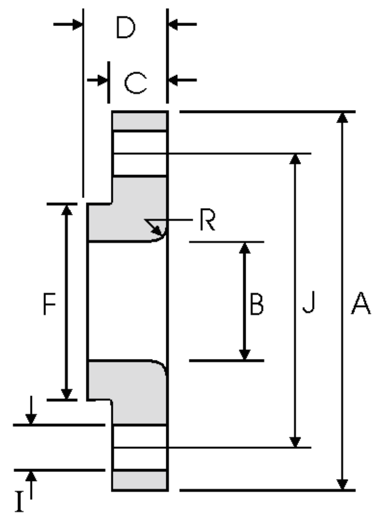
WELDING NECK FLANGE

SPECIAL FLANGE

CARBON STEEL FLANGE






FLANGES AND PIPE FITTINGS

## PIPE FITTINGS

| Pipe Fittings | Butt Welding Fittings | Forged Fittings |
|---|---|---|
| **Specification:** | GB/T 12459, GB/T 13401, GB/T 10752,<br>ASME B 16.9, ASME B 16.49, ASME B 16.25,<br>EN 10253, **ENI0216-1,ENI0216-1（TC-1）**<br>DIN 2605, DIN 2606, DIN 2615, DIN 2616, DIN 2617,<br>BS 1640, BS 1965,<br>GOST 17375, GOST 17376, GOST 17378, GOST 17379,<br>ISO 3419, ISO 5251,<br>JIS B 2311, JIS B 2312, JIS B 2313 | GB/T 14383, GB/T 19326,<br>ASME B 16.11,<br>BS 3799,<br>JIS B 2316 |
| **Steel Grade:** | 10#, 20#, P235 TR1, P235TR2, P235GH, P265GH, 16Mo3<br>20G, 20MnG, 09MnV,<br>Q295, Q245R, Q195, Q215, Q235, Q275, Q345,<br>Q345R, Q370R,<br>16Mn, 12CrMo, 15CrMo, 1Cr5Mo, 12Cr2Mo, 12CrMoG,<br>15CrMoG, 12Cr2MoG, 12Cr1MoVG, 15MoG, 20MoG,<br>18MnMoNbR, 13MnNiMoR, 15CrMoR, 14Cr1MoR,<br>12Cr2Mo1R, 12Cr1MoVR,<br>A234 WPB, A234 WPC, A234 WP, A420 WPL,<br>A860 WPHY, A758 | 20#, 25#, 35#,<br>16Mn, 20MnMo, 20MnMoNb, 15CrMo, 35CrMo,<br>12Cr1MoV, 14Cr1MoV, 12Cr2Mo, 11Cr5Mo,<br>A105, A181, A350, A727, A182, A522, A707, A694 |
| **Outer Diameter:** | Elbow: 1/2''~60'';<br>Bend: 1/2~60'';<br>Tee/Cross: 1/2''~60'';<br>Reducer: 1/2''~60'';<br>Cap/Lap: 1/2''~60'' | Forged Elbow: 1/8''~4'';<br>Forged Tee/Cross: 1/8''~4'';<br>Forged Coupling/Cap: 1/8''~4'';<br>Forged Nipolet:<br>socket weldolet: 1/8''~4'';<br>threadolet: 1/8''~4'';<br>Weldolet: 1/8''~24'' |
| **Wall Thickness/ Nominal Pressure:** | Elbow/Bend/Tee/Cross/Reducer<br>/Cap/Lap/: 4mm~200mm | Forged Elbow:<br>socket welding-CLASS 3000, CLASS 6000,<br>CLASS 9000,<br>thread-CLASS 2000, CLASS 3000, CLASS 6000;<br>Forged Tee/Cross:<br>socket welding-CLASS 3000, CLASS 6000,<br>CLASS 9000,<br>thread-CLASS 2000, CLASS 3000, CLASS 6000;<br>Forged Coupling/Cap:<br>socket welding-CLASS 3000, CLASS 6000,<br>CLASS 9000,<br>thread-CLASS 3000, CLASS 6000;<br>Forged Nipolet:<br>socket weldolet-CLASS 3000, CLASS 6000;<br>threadolet-CLASS 3000, CLASS 6000;<br>weldolet-SCH XS, SCH 160 |
| **Type:** | Elbow Bending Radius: **R=1D ; 1.5D ; 2D ; 2.5D ; 3D ; 4D ; 5D ~ 10D;**<br>Elbow Angle: 30°, 45°, 60°, 90°, 180°;<br>Bend Bending Radius: R=3D~10D;<br>Bend Angle: 0°~180°;<br>Tee: straight tee/reducing tee;<br>Reducer: concentric/eccentric | Angle of Forged Elbow: 45°,90° |

## 1.Application Fields

### Oil & Gas

Refineries

Petrochemical Plants

Offshore Facilities

Pipelines

### Power/Alternative Energy

Thermal and Hydroelectric Power

Waste-to-Energy Plants

Transmission Lines

Substations

### Water Supply Sewage

Dams

Transmission Pipelines

Irrigation Canals

Pumping Stations

### Industrial Process

Steel Mills

Pharmaceutical Plants

Chemical Plants

Mining

## 2.Engineering Application



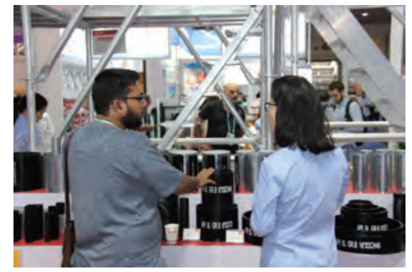



## 1.Exhibition


The 22nd VietBuild, Vietnam-2019


The 125th Canton Fair in Guangzhou-2019


The 125th Canton Fair in Guangzhou-2019


The 124th Caonton Fair in Guanzhou-2018


BIG 5 International Building & Construction Show-2018


Conbuild Indonesia Fair 2018

## 2.Client Base

## 3.Marketing Network

With more than 5000 clients all around the world, our annual sales reaches to 100,000 tons and our markets spread to Middle East, South East of Asia, Europe, South America, Africa and Australia.