



# STEEL PIPE AND TUBE

STANDARD : ASTM, AS/NZ, BS, EN, JIS, TIS



Intertek

ISO 9001



014



ISO 14001



- Steel Pipes for Fire Sprinkler System
- Steel Pipes for Ordinary Purposes and Piping System
- Structural Steel Hollow Sections
- Steel Tubes for Conveyor Rollers

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# ABOUT TPP

## Thai Premium Pipe Company Limited (TPP)

45 Moo 2 Chaimongkol, Muang Samut Sakhon, Samut Sakhon province, 74000, Thailand

Established since 2002 | Business : Manufacturing ERW steel pipes

💰 Registered capital : 400 million THB

👤 Employees : 260

🌀 Production capacity : 100,000 MT per year

✉ Email : [contact@thaipremiumpipe.com](mailto:contact@thaipremiumpipe.com)

**PRODUCTION CAPACITY : 9,000 MT PER MONTH**



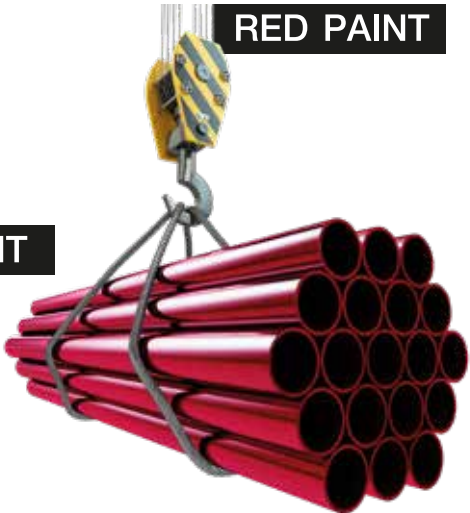


# PRODUCTS & SERVICES

SPECIFICATION		HOLLOW STRUCTURAL SECTIONS	PIPING SYSTEM
ASTM	American Society for Testing and Materials	ASTM A500	ASTM A795, A53
AS	Australian Standards	AS1163	AS1074
BS	British Standards	BS1139	BS1387
EN	European Standards	BS EN10219	BS EN10255
JIS	Japanese Industrial Standards	JIS G3444, JIS G3466	JIS G3452, G3454
TIS	Thai Industrial Standards	TIS107	

## CONNECTIONS

- PLAIN ENDS
- THREADED ENDS
- GROOVED ENDS
- BEVELED ENDS



# CERTIFICATIONS



ISO 9001 : 2015

Quality Management System



ISO 14001 : 2015

Environmental Management System



Underwriters laboratories Inc.

Metallic Sprinkler Pipe



FM Approvals

Steel Pipe for Automatic Fire Sprinkler Systems



Thai Industrial Standards Certification

Hollow Structural Steel Sections



Authorized Economic Operator (AEO)

By Thai Customs Department of Thailand



ISO 17025 : 2017

Certificate of Laboratory Accreditation  
General Requirements for the Competence  
of Testing and Calibration Laboratories





## QUALITY

Thai Premium Pipe Company Limited emphasizes on Total Quality Management System. To enhance its ability to conduct a business, we normally implement quality management system (ISO 9001) and encourage employees in all level to participate in total quality management system.

We are all committed to customer satisfaction, collective responsibility, continuous improvement and on-time delivery. Satisfying customers is priority one.

### THE FOLLOWING ARE OUR GUIDELINES TO ACCOMPLISH OUR GOAL :

- Strictly comply with product standards, customer requirements and federal regulation.
- Increase customer satisfaction and confidence in the quality of the product and services.
- Always improve performance and increase effectiveness in the workplace.
- Continually improve the management system (ISO) and the effectiveness of the quality management.
- Encourage everyone in the organization to participate in development of total quality management system.

## INSPECTION PROCESS

### RAW MATERIAL PROPERTY TESTING

- The testing takes place at TPP lab certified with ISO/IEC 17025
- Tensile properties
- Elongation analysis
- Mill Test Certificate available on request

### Nondestructive inspection

- Straightness of pipe
- Weld seam in line with eddy current testing for corrosion damage or cracking
- Visual inspection
  - Free of scratch
  - Free of deformation
  - Free of welding defects
  - Free of dirt, dust and other contaminant

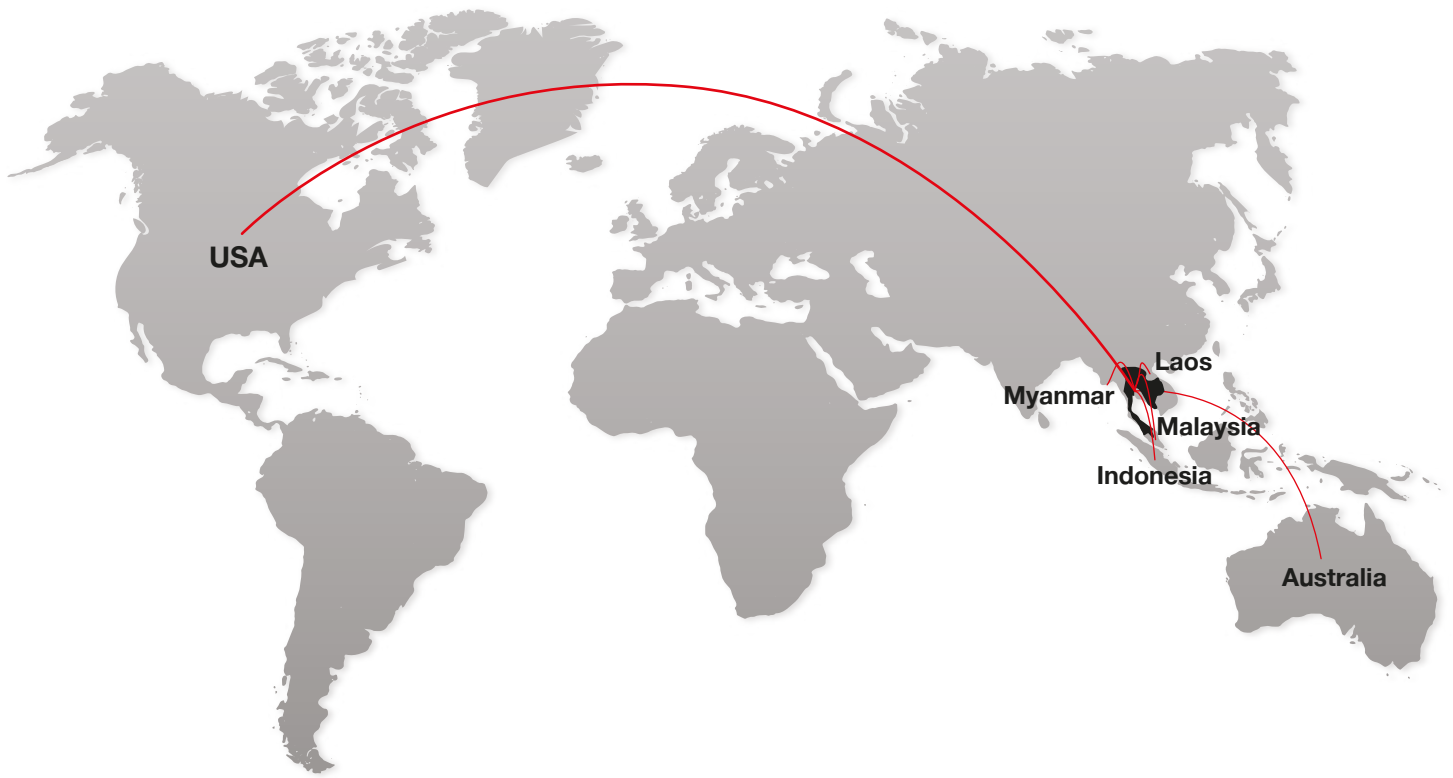
### Hydrostatic pressure testing

Mechanical testing for measuring elasticity, tensile strength, elongation, hardness, fracture toughness, impact resistance, stress rupture, and fatigue limit.

Bending | Flatting | Expanding

### SIZE INSPECTION

- Outside diameter
- Wall thickness
- Length
- Weight



## VISION

TO BE A **WORLD-CLASS QUALITY IN STEEL PIPE INDUSTRY**

## MISSION

CONTINUOUSLY IMPROVE, IMPLEMENT AND COMPLY WITH TOTAL QUALITY MANAGEMENT SYSTEM BY LETTING EVERYONE IN ALL LEVEL PARTICIPATE IN DEVELOPMENT





# STEEL PIPES FOR FIRE SPRINKLER SYSTEMS



## ASTM A795 Schedule 7 : 1" - 4"

1", 1 1/4", 1 1/2", 2",  
2 1/2", 3" and 4"

## ASTM A795 Schedule 10 : 3/4" - 6"

3/4", 1", 1 1/4", 1 1/2", 2",  
2 1/2", 3", 3 1/2", 4", 5", and 6"

## ASTM A53 Schedule 40 : 1/2" - 6"

1/2", 3/4", 1", 1 1/4", 1 1/2",  
2", 2 1/2", 3", 3 1/2", 4", 5" and 6"





# STEEL PIPES FOR FIRE SPRINKLER SYSTEMS

## Chemical Composition

	Max
Carbon	0.25
Manganese	0.95
Phosphorus	0.035
Sulphur	0.035

## Mechanical Properties

	Min
Tensile	-
Yield	-
Elongation	-



## ASTM A795 SCHEDULE 10, TYPE E, GRADE A

Nominal Size		OD	Wall Thickness	Weight Plain-end		Rated Working Pressure	Hydro Test Pressure
mm	inch	mm	mm	kg/m	lb/ft	psi	psi
20	3/4"	26.70	2.11	1.28	0.86	300	1200
25	1"	33.40	2.77	2.09	1.41	300	1200
32	1 1/4"	42.20	2.77	2.69	1.81	300	1200
40	1 1/2"	48.30	2.77	3.11	2.09	300	1200
50	2"	60.30	2.77	3.93	2.64	300	1200
65	2 1/2"	73.00	3.05	5.26	3.53	300	1200
80	3"	88.90	3.05	6.46	4.34	300	1200
90	3 1/2"	101.60	3.05	7.41	4.98	300	1200
100	4"	114.30	3.05	8.37	5.62	300	1200
125	5"	141.30	3.40	11.58	7.78	300	1200
150	6"	168.30	3.40	13.85	9.30	300	1200

## TOLERANCE

OD	NPS $\leq$ 1 1/2 in. (40 mm) : $\pm$ 0.016 in. (0.41 mm) NPS $\geq$ 2 in. (50 mm) : $\pm$ 1% from specified OD
WT	- 12.5%, + not limit
Weight	$\pm$ 5%

# STEEL PIPES FOR FIRE SPRINKLER SYSTEMS

## Chemical Composition

	Max
Carbon	0.25
Manganese	0.95
Phosphorus	0.05
Sulphur	0.045

## Mechanical Properties

	GRADE A	GRADE B
	Min	Min
Tensile	330 MPa	415 MPa
Yield	205 MPa	240 MPa
Elongation	22%	18%



## ASTM A53 SCHEDULE 40, TYPE E, GRADE A, B

Nominal Size		OD	Wall Thickness	Weight Plain-end		Hydro Test Pressure
mm	inch	mm	mm	kg/m	lb/ft	psi
20	3/4"	26.70	2.87	1.69	1.13	1200
25	1"	33.40	3.38	2.50	1.68	1200
32	1 1/4"	42.20	3.56	3.39	2.27	1200
40	1 1/2"	48.30	3.68	4.05	2.72	1200
50	2"	60.30	3.91	5.44	3.66	1200
65	2 1/2"	73.00	5.16	8.63	5.80	1200
80	3"	88.90	5.49	11.29	7.58	1200
90	3 1/2"	101.60	5.74	13.57	9.12	1200
100	4"	114.30	6.02	16.07	10.80	1200
125	5"	141.30	6.55	21.77	14.63	1200
150	6"	168.30	7.11	28.26	18.99	1200

## TOLERANCE

OD	NPS $\leq$ 1 1/2 in. (40 mm) : $\pm$ 0.016 in. (0.41 mm) NPS $\geq$ 2 in. (50 mm) : $\pm$ 1% from specified OD
WT	- 12.5%, + not limit
Weight	$\pm$ 10%

# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

## Chemical Composition

	GRADE A	GRADE B
	Max	Max
Carbon	0.25	0.30
Manganese	0.95	1.20
Phosphorus	0.05	0.05
Sulphur	0.045	0.045

## Mechanical Properties

	GRADE A	GRADE B
	Min	Min
Tensile	330 MPa	415 MPa
Yield	205 MPa	240 MPa
Elongation	22%	18%



## ASTM A53 SCHEDULE 40, TYPE E, GRADE A, B

Nominal Size		OD		Wall Thickness		Weight Plain-end		Hydro Test Pressure		Schedule
								Grade A	Grade B	
NPS	mm	inch	mm	inch	std	lb/ft	kg/m	psi	psi	
15	1/2"	0.84	21.3	0.083	2.11	0.67	0.997	700	700	10
				0.109	2.77	0.85	1.27	700	700	40(STD)
20	3/4"	1.05	26.7	0.083	2.11	0.86	1.28	700	700	10
				0.113	2.87	1.13	1.69	700	700	40(STD)
25	1"	1.315	33.4	0.109	2.77	1.40	2.08	700	700	10
				0.133	3.38	1.68	2.50	700	700	40(STD)
32	1-1/4"	1.66	42.2	0.109	2.77	1.81	2.69	1000	1000	10
				0.140	3.56	2.27	3.39	1200	1300	40(STD)
40	1-1/2"	1.90	48.3	0.109	2.77	2.09	3.11	1000	1000	10
				0.145	3.68	2.72	4.05	1200	1300	40(STD)
50	2"	2.375	60.3	0.109	2.77	2.64	3.93	1000	1000	10
				0.154	3.91	3.66	5.44	2300	2500	40(STD)
65	2-1/2"	2.875	73.0	0.120	3.05	3.53	5.25	1000	1000	10
				0.203	5.16	5.80	8.63	2500	2500	40(STD)
				0.276	7.01	7.67	11.41	2500	2500	80(XS)
80	3"	3.50	88.9	0.120	3.05	4.33	6.44	1000	1000	10
				0.125	3.18	4.51	6.72	1290	1500	10
				0.156	3.96	5.58	8.29	1600	1870	10
				0.188	4.78	6.66	9.92	1930	2260	10
				0.216	5.49	7.58	11.29	2220	2500	40(STD)
				0.250	6.35	8.69	12.93	2500	2500	40(STD)
				0.281	7.14	9.67	14.40	2500	2500	40(STD)
				0.300	7.62	10.26	15.27	2500	2500	80(XS)
90	3-1/2"	4.0	101.6	0.120	3.05	4.97	7.40	1080	1200	10
				0.125	3.18	5.18	7.72	1120	1310	10
				0.156	3.96	6.41	9.53	1400	1640	10
				0.188	4.78	7.66	11.41	1690	1970	10
				0.226	5.74	9.12	13.57	2030	2370	40(STD)
				0.250	6.35	10.02	14.92	2250	2500	40(STD)
				0.281	7.14	11.17	16.63	2500	2500	40(STD)
				0.318	8.08	12.52	18.63	2800	2800	80(XS)



# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

## Chemical Composition

	GRADE A	GRADE B
	Max	Max
Carbon	0.25	0.30
Manganese	0.95	1.20
Phosphorus	0.05	0.05
Sulphur	0.045	0.045

## Mechanical Properties

	GRADE A	GRADE B
	Min	Min
Tensile	330 MPa	415 MPa
Yield	205 MPa	240 MPa
Elongation	22%	18%



## ASTM A53 SCHEDULE 40, TYPE E, GRADE A, B (CONTINUED)

Nominal Size		OD		Wall Thickness		Weight Plain-end		Hydro Test Pressure		Schedule
								Grade A	Grade B	
NPS	mm	inch	mm	inch	std	lb/ft	kg/m	psi	psi	
100	4"	4.50	114.3	0.120	3.05	5.61	8.35	960	1200	10
				0.125	3.18	5.85	8.71	1000	1170	10
				0.156	3.96	7.24	10.78	1250	1460	10
				0.188	4.78	8.67	12.91	1500	1750	10
				0.219	5.56	10.02	14.91	1750	2040	10
				0.237	6.02	10.80	16.07	1900	2210	40(STD)
				0.250	6.35	11.36	16.90	2000	2330	40(STD)
				0.281	7.14	12.67	18.87	2250	2620	40(STD)
				0.312	7.92	13.97	20.78	2500	2800	40(STD)
				0.337	8.56	15.00	22.32	2700	2800	80(XS)
125	5"	5.563	141.3	0.134	3.40	7.77	11.60	870	1200	10
				0.156	3.96	9.02	13.41	1010	1180	10
				0.188	4.78	10.80	16.09	1220	1420	10
				0.219	5.56	12.51	18.61	1420	1650	10
				0.258	6.55	14.63	21.77	1670	1950	40(STD)
				0.281	7.14	15.87	23.62	1820	2120	40(STD)
				0.312	7.92	17.51	26.05	2020	2360	40(STD)
				0.344	8.74	19.19	28.57	2230	2600	40(STD)
				0.375	9.52	20.80	30.94	2430	2800	80(XS)
150	6"	6.625	168.3	0.134	3.40	9.27	13.80	730	1200	10
				0.188	4.78	12.92	19.23	1020	1190	10
				0.219	5.56	14.98	22.29	1190	1390	10
				0.250	6.35	17.02	25.33	1360	1580	10
				0.280	7.11	18.97	28.26	1520	1780	40(STD)
				0.312	7.92	21.04	31.32	1700	1980	40(STD)
				0.344	8.74	23.08	34.39	1870	2180	40(STD)
				0.375	9.52	25.03	37.28	2040	2380	40(STD)
				0.432	10.97	28.57	42.56	2350	2470	80(XS)

## TOLERANCE

OD	NPS ≤ 1 1/2 in. (40 mm) : ± 0.016 in. (0.41 mm)
	NPS ≥ 2 in. (50 mm) : ±1% from specified OD
WT	- 12.5%, + not limit
Weight	± 10%

# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

## Chemical Composition

	Max
Carbon	0.4
Manganese	-
Phosphorus	0.045
Sulphur	0.045

## Mechanical Properties

	Min
Tensile	320 - 460 MPa
Yield	195 MPa
Elongation	20%

## AS 1074: STEEL TUBES AND TUBULARS FOR ORDINARY SERVICE

Nominal Size			Outside Diameter (mm)			Thickness	Mass per Unit Length		Hydro Test Pressure
DN	inch	mm	std	min	max		kg/m	kg/m	psi
LIGHT CLASS									
15	1/2"	21.40	21.40	21.00	21.40	2.0	0.947	0.956	700
20	3/4"	26.90	26.90	26.40	26.90	2.3	1.38	1.39	700
25	1"	33.80	33.80	33.20	33.80	2.6	1.98	2.00	700
32	1¼"	42.50	42.50	41.90	42.50	2.6	2.54	2.57	700
40	1½"	48.40	48.40	47.80	48.40	2.9	3.23	3.27	700
50	2"	60.20	60.20	59.60	60.20	2.9	4.08	4.15	700
65	2½"	76.00	76.00	75.20	76.00	3.2	5.71	5.83	700
80	3"	88.70	88.70	87.90	88.70	3.2	6.72	6.89	700
100	4"	113.9	113.9	113	113.9	3.6	9.75	10.0	700
MEDIUM CLASS									
15	1/2"	21.70	21.70	21.10	21.70	2.6	1.210	1.220	700
20	3/4"	27.20	27.20	26.60	27.20	2.6	1.56	1.57	700
25	1"	34.20	34.20	33.40	34.20	3.2	2.41	2.43	700
32	1¼"	42.90	42.90	42.10	42.90	3.2	3.10	3.13	700
40	1½"	48.80	48.80	48.00	48.80	3.2	3.57	3.61	700
50	2	60.80	60.80	59.80	60.80	3.6	5.03	5.10	700
65	2-1/2"	76.60	76.60	75.40	76.60	3.6	6.43	6.55	700
80	3"	89.50	89.50	88.10	89.50	4.0	8.37	8.54	700
100	4"	114.90	114.90	113.30	114.90	4.5	12.2	12.50	700
125	5"	140.60	140.60	138.70	140.60	5.0	16.60	17.10	700
150	6"	166.10	166.10	164.10	166.10	5.0	19.70	20.30	700
HEAVY CLASS									
15	1/2"	21.70	21.70	21.10	21.70	3.2	1.440	1.450	700
20	3/4"	27.20	27.20	26.60	27.20	3.2	1.87	1.88	700
25	1"	34.20	34.20	33.40	34.20	4.0	2.94	2.96	700
32	1¼"	42.90	42.90	42.10	42.90	4.0	3.80	3.83	700
40	1½"	48.80	48.80	48.00	48.80	4.0	4.38	4.42	700
50	2	60.80	60.80	59.80	60.80	4.5	6.19	6.26	700
65	2-1/2"	76.60	76.60	75.40	76.60	4.5	7.93	8.05	700
80	3"	89.50	89.50	88.10	89.50	5.0	10.30	10.50	700
100	4"	114.90	114.90	113.30	114.90	5.4	14.50	14.80	700
125	5"	140.60	140.60	138.70	140.60	5.4	17.90	18.40	700
150	6"	166.10	166.10	164.10	166.10	5.4	21.30	21.90	700

### TOLERANCE

WT	Light class: - 8%, + unlimited
Weight	Medium and heavy class : - 10%, + unlimited -8%, +10%

# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

Chemical Composition		Chemical Composition		Class	Marking Color
	Max		Min	light	Brown
Carbon	0.20	Tensile	320 - 460 MPa	Medium	Blue
Silicon	-	Yield	195 MPa	Heavy	Red
Manganese	1.20	Elongation	20%		
Phosphorus	0.045				
Sulphur	0.045				

## BS 1387: CARBON STEEL PIPES FOR ORDINARY PIPING

Nominal Size		Thickness	Outside Diameter		Mass per Unit Length		Threads per Inch	Hydro Test Pressure
					Plain End	Thread & Couplings		psi
inch	mm	mm	min	max	kg/m	kg/m		
				LIGHT CLASS				
1/2"	15	2.0	21.0	21.4	0.947	0.96	14	700
3/4"	20	2.3	26.4	26.9	1.38	1.39	14	700
1"	25	2.6	33.2	33.8	1.98	2.00	11	700
1¼"	32	2.6	41.9	42.5	2.54	2.57	11	700
1½"	40	2.9	47.8	48.4	3.23	3.27	11	700
2"	50	2.9	59.6	60.2	4.08	4.15	11	700
2½"	65	3.2	75.2	76.0	5.71	5.83	11	700
3"	80	3.2	87.9	88.7	6.72	6.89	11	700
4"	100	3.6	113.0	113.9	9.75	10.00	11	700
				MEDIUM CLASS				
1/2"	15	2.6	21.1	21.7	1.21	1.22	14	700
3/4"	20	2.6	26.6	27.2	1.56	1.57	14	700
1"	25	3.2	33.4	34.2	2.41	2.43	11	700
1¼"	32	3.2	42.1	42.9	3.10	3.13	11	700
1½"	40	3.2	48.0	48.8	3.57	3.61	11	700
2"	50	3.6	59.8	60.8	5.03	5.10	11	700
2½"	65	3.6	75.4	76.6	6.43	6.55	11	700
3"	80	4.0	88.1	89.5	8.37	8.54	11	700
4"	100	4.5	113.3	114.9	12.2	12.5	11	700
5"	125	5.0	138.7	140.6	16.6	17.1	11	700
6"	150	5.0	164.1	166.1	19.7	20.3	11	700
				HEAVY CLASS				
1/2"	15	3.2	21.1	21.7	1.44	1.45	14	700
3/4"	20	3.2	26.6	27.2	1.87	1.88	14	700
1"	25	4.0	33.4	34.2	2.94	2.96	11	700
1¼"	32	4.0	42.1	42.9	3.80	3.83	11	700
1½"	40	4.0	48.0	48.8	4.38	4.42	11	700
2"	50	4.5	59.8	60.8	6.19	6.26	11	700
2½"	65	4.5	75.4	76.6	7.93	8.05	11	700
3"	80	5.0	88.1	89.5	10.3	10.5	11	700
4"	100	5.4	113.3	114.9	14.5	14.8	11	700
5"	125	5.4	138.7	140.6	17.9	18.4	11	700
6"	150	5.4	164.1	166.1	21.3	21.9	11	700

### TOLERANCE

WT

Light class: - 8%, + unlimited

Weight

Medium and heavy class : - 10%, + unlimited

-8%, +10%



# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

Chemical Composition		Chemical Composition		Class	Marking Color
	Max		Min	H Series	Red
Carbon	0.20	Tensile	320 - 520 MPa	M Series	Blue
Silicon	-	Yield	195 MPa		
Manganese	1.40	Elongation	20%		
Phosphorus	0.035				
Sulphur	0.03				

## BS EN 10255: CARBON STEEL PIPES (TRANSITION FROM BS 1387)

Nominal Size	Specified Outside Diameter	Designation of Thread	Outside Diameter		Thickness	Mass per Unit Length		Hydro Test Pressure
			min	max		Plain End	Thread & Couplings	
mm	mm		mm	mm		kg/m	kg/m	psi
M SIZE								
10	17.2	3/8	16.7	17.5	2.3	0.839	0.845	700
15	21.3	1/2	21.0	21.8	2.6	1.21	1.22	700
20	26.9	3/4	26.5	27.3	2.6	1.56	1.57	700
25	33.7	1	33.3	34.2	3.2	2.41	2.43	700
32	42.4	1 1/4	42.0	42.9	3.2	3.10	3.13	700
40	48.3	1 1/2	47.9	48.8	3.2	3.56	3.60	700
50	60.3	2	59.7	60.8	3.6	5.03	5.10	700
65	76.1	2 1/2	75.3	76.6	3.6	6.42	6.54	700
80	88.9	3	88.0	89.5	4.0	8.36	8.53	700
100	114.3	4	113.1	115.0	4.5	12.2	12.5	700
125	139.7	5	138.5	140.8	5.0	16.6	17.1	700
150	165.1	6	163.9	166.5	5.0	19.8	20.4	700
H SIZE								
10	17.2	3/8	16.7	17.5	2.9	1.02	1.03	700
15	21.3	1/2	21.0	21.8	3.2	1.44	1.45	700
20	26.9	3/4	26.5	27.3	3.2	1.87	1.88	700
25	33.7	1	33.3	34.2	4.0	2.93	2.95	700
32	42.4	1 1/4	42.0	42.9	4.0	3.79	3.82	700
40	48.3	1 1/2	47.9	48.8	4.0	4.37	4.41	700
50	60.3	2	59.7	60.8	4.5	6.19	6.26	700
65	76.1	2 1/2	75.3	76.6	4.5	7.93	8.05	700
80	88.9	3	88.0	89.5	5.0	10.3	10.5	700
100	114.3	4	113.1	115.0	5.4	14.5	14.8	700
125	139.7	5	138.5	140.8	5.4	17.9	18.4	700
150	165.1	6	163.9	166.5	5.4	21.3	21.9	700

### TOLERANCE

WT	M and H Series: $\pm 10\%$
Weight	M and H Series: $\pm 7.5\%$

# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

Chemical Composition		Chemical Composition		Class	Marking Color
	Max		Min	Type L	Green
Carbon	0.20	Tensile	320 - 520 MPa	Type L1	White
Silicon	-	Yield	195 MPa	Type L2	Brown
Manganese	1.40	Elongation	20%		
Phosphorus	0.035				
Sulphur	0.03				

## BS EN 10255: CARBON STEEL PIPES (TRANSITION FROM BS 1387)

Nominal Size	Specified Outside Diameter	Designation of Thread	Outside Diameter		Thickness	Mass per Unit Length		Hydro Test Pressure
			min	max		Plain End	Thread & Couplings	
mm	mm		mm	mm		kg/m	kg/m	psi
Type L								
10	17.2	3/8	16.7	17.4	2.0	0.750	0.756	700
15	21.3	1/2	21.0	21.7	2.3	1.08	1.09	700
20	26.9	3/4	26.4	27.1	2.3	1.40	1.41	700
25	33.7	1	33.2	34.0	2.9	2.20	2.22	700
32	42.4	1 1/4	41.9	42.7	2.9	2.82	2.85	700
40	48.3	1 1/2	47.8	48.6	2.9	3.25	3.29	700
50	60.3	2	59.6	60.7	3.2	4.51	4.58	700
65	76.1	2 1/2	75.2	76.0	3.2	5.75	5.87	700
80	88.9	3	87.9	88.7	3.2	6.76	6.93	700
90	101.6	3 1/2	100.3	101.2	3.6	8.70	8.88	700
100	114.3	4	113.0	113.9	3.6	9.83	10.1	700
125	139.7	5	138.5	140.8	4.5	15.0	15.5	700
150	165.1	6	163.9	166.5	4.5	17.8	18.4	700
Type L1								
10	17.2	3/8	16.7	17.4	2.0	0.742	0.748	700
15	21.3	1/2	21.0	21.7	2.3	1.08	1.09	700
20	26.9	3/4	26.4	27.1	2.3	1.39	1.40	700
25	33.7	1	33.2	34.0	2.9	2.20	2.22	700
32	42.4	1 1/4	41.9	42.7	2.9	2.82	2.85	700
40	48.3	1 1/2	47.8	48.6	2.9	3.24	3.28	700
50	60.3	2	59.6	60.7	3.2	4.49	4.56	700
65	76.1	2 1/2	75.2	76.3	3.2	5.73	5.85	700
80	88.9	3	87.9	89.4	3.6	7.55	7.72	700
100	114.3	4	113.0	114.9	4.0	10.80	11.10	700
Type L2								
10	17.2	3/8	16.7	17.1	1.8	0.670	0.676	700
15	21.3	1/2	21.0	21.4	2.0	0.947	0.956	700
20	26.9	3/4	26.4	26.9	2.3	1.38	1.39	700
25	33.7	1	33.2	33.8	2.6	1.98	2.00	700
32	42.4	1 1/4	41.9	42.5	2.6	2.54	2.57	700
40	48.3	1 1/2	47.8	48.4	2.9	3.23	3.27	700
50	60.3	2	59.6	60.2	2.9	4.08	4.15	700
65	76.1	2 1/2	75.2	76.0	3.2	5.71	5.83	700
80	88.9	3	87.9	88.7	3.2	6.72	6.89	700
100	114.3	4	113.0	113.9	3.6	9.75	10.00	700

### TOLERANCE

WT	Type L : $\pm 10\%$
	Type L1, L2 : + bymass tolerance, -8%
Weight	Type L : $\pm 7.5\%$
	Type L1, L2 : + 10% , -8% on individual tubes

## STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

### Chemical Composition

	Max
Carbon	-
Silicon	-
Manganese	-
Phosphorus	0.04
Sulphur	0.04
Steel Grade : SGP	

### Mechanical Properties

	Min
Tensile	290 MPa
Yield	-
Elongation	19 - 25
	up to wall thickness

## JIS G3452: CARBON STEEL PIPES FOR ORDINARY PIPING

Nominal Diameter		Outside Diameter (mm)			Wall Thickness		Unit mass excluding socket	Hydrostatic Test
DN	size	std	Pipes to be cut in taper thread	Other pipes	mm	Tolerances	kg/m	MPa (Bar)
15	1/2"	21.7	± 0.5 mm	± 0.5 mm	2.8	<b>-12.5%</b> +Not specified	1.31	2.5 (25)
20	3/4"	27.2	± 0.5 mm	± 0.5 mm	2.8		1.68	2.5 (25)
25	1"	34	± 0.5 mm	± 0.5 mm	3.2		2.43	2.5 (25)
32	1-1/4"	42.7	± 0.5 mm	± 0.5 mm	3.5		3.38	2.5 (25)
40	1-1/2"	48.6	± 0.5 mm	± 0.5 mm	3.5		3.89	2.5 (25)
50	2"	60.5	± 0.5 mm	± 1%	3.8		5.31	2.5 (25)
65	2-1/2"	76.3	± 0.7 mm	± 1%	4.2		7.47	2.5 (25)
80	3"	89.1	± 0.8 mm	± 1%	4.2		8.79	2.5 (25)
90	3-1/2"	101.6	± 0.8 mm	± 1%	4.2		10.1	2.5 (25)
100	4"	114.3	± 0.8 mm	± 1%	4.5		12.2	2.5 (25)
125	5"	139.8	± 0.8 mm	± 1%	4.5		15	2.5 (25)
150	6"	165.2	± 0.8 mm	± 1.6%	5.0		19.8	2.5 (25)



# STEEL PIPES FOR ORDINARY PURPOSES AND PIPING SYSTEM

## Chemical Composition

	STPG 370 Max	STPG 410 Max
Carbon	0.25	0.30
Silicon	0.35	0.35
Manganese	0.3 - 0.9	0.3 - 1.0
Phosphorus	0.04	0.04
Sulphur	0.04	0.04

## Mechanical Properties

	STPG 370 Min	STPG 410 Min
Tensile	370 MPa	410 MPa
Yield	215 MPa	245 MPa
Elongation	30%	25%

## JIS G3454: CARBON STEEL PIPES FOR ORDINARY PIPING

Nominal Diameter		Outside Diameter (mm)			Wall Thickness			Unit Mass	Schedule	Test Pressure
DN	size	std	min	max	std	min	max	kg/m		Bar
15	1/2"	21.7	21.4	22.0	2.8 3.2	2.5 2.88	3.1 3.52	1.31 1.46	40 60	60 90
20	3/4"	27.2	26.9	27.5	2.9 3.4	2.6 3.06	3.2 3.74	1.74 2.0	40 60	60 90
25	1"	34	33.7	34.3	3.4 3.9 4.5	3.06 3.51 4.05	3.74 4.29 4.95	2.57 2.89 3.27	40 60 80	60 90 120
32	1-1/4"	42.7	42.4	43	3.6 4.5 4.9	3.24 4.05 4.41	3.96 4.95 5.39	3.47 4.24 4.57	40 60 80	60 90 120
40	1-1/2"	48.6	48.2	49.0	3.7 4.5 5.1	3.33 4.05 4.59	4.07 4.95 5.61	4.1 4.89 5.47	40 60 80	60 90 120
50	2"	60.5	60.0	61.0	3.2 3.9 4.9 5.5	2.88 3.51 4.41 4.95	3.52 4.29 5.39 6.05	4.52 5.44 6.72 7.46	20 40 60 80	35 60 90 120
65	2-1/2"	76.3	75.7	76.9	4.5 5.2 6.0 7.0	4.05 4.68 5.4 6.3	4.95 5.72 6.6 7.7	7.97 9.12 10.4 12	20 40 60 80	35 60 90 120
80	3"	89.1	88.4	89.8	4.5 5.5 6.6 7.6	4.05 4.95 5.94 6.84	4.95 6.05 7.26 8.36	9.39 11.3 13.4 15.3	20 40 60 80	35 60 90 120
90	3-1/2"	101.6	100.8	102.4	4.5 5.7 7.0 8.1	4.05 5.13 6.3 7.29	4.95 6.27 7.7 8.91	10.8 13.5 16.3 18.7	20 40 60 80	35 60 90 120
100	4"	114.3	113.4	115.2	4.9 6.0 7.1 8.6	4.41 5.4 6.39 7.74	5.39 6.6 7.81 9.46	13.2 16 18.8 22.4	20 40 60 80	35 60 90 120
125	5"	139.8	138.7	140.9	5.1 6.6 8.1 9.5	4.59 5.94 7.29 8.55	5.61 7.26 8.91 10.45	16.9 21.7 26.3 30.5	20 40 60 80	35 60 90 120
150	6"	165.2	163.9	166.5	5.5 7.1 9.3 11.0	4.95 6.39 8.37 9.9	6.05 7.81 10.23 12.1	21.7 27.7 35.8 41.8	20 40 60 80	35 60 90 120

### TOLERANCE

OD	DN ≤ 25 mm: ± 0.3 mm DN ≥ 32 mm: ± 0.8%
WT	t < 3.0 mm: ± 0.3 mm t ≥ 3.0 mm: ± 10%
Weight	± 10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	Grade A, B & D	Grade C
	Max	Max
Carbon	0.26	0.27
Manganese	1.40	1.40
Phosphorus	0.045	0.045
Sulphur	0.045	0.045

## Mechanical Properties

	Grade A	Grade B	Grade C	Grade D
	Min	Min	Min	Min
Tensile	310 MPa	400 MPa	425 MPa	400 MPa
Yield	270 MPa	315 MPa	345 MPa	250 MPa
Elongation	25%	23%	21%	21%

## ATSM A500 Grade A, B, C & D

Outer Diameter		Wall Thickness (Mass per meter/Lbs per FT)													
		0.065" (1.651)		0.12" (3.048)		0.125" (3.175)		0.188" (4.775)		0.25" (6.35)		0.313" (7.95)		0.375" (9.525)	
inch	mm	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft
1/2" x 1/2"	12.7 x 12.7	0.574	0.385												
1" x 1"	25.4 x 25.4	1.232	0.827	2.141	1.437	2.217	1.488								
1.25" x 1.25"	31.8 x 31.8	1.562	1.048	2.751	1.846	2.849	1.912	3.586	2.410						
1.5" x 1.5"	38.1 x 38.1	1.892	1.270	3.355	2.252	3.274	2.200	4.524	3.040	6.333	4.250				
2" x 2"	50.8 x 50.8	2.551	1.712	4.571	3.068	4.559	3.060	6.429	4.320	8.051	5.410				
2.5" x 2.5"	63.5 x 63.5			5.811	3.900	5.804	3.900	8.319	5.590	10.581	7.110				
3" x 3"	76.2 x 76.2			7.078	4.750	7.069	4.750	10.224	6.870	13.111	8.810	15.745	10.580	18.111	12.170
3.5" x 3.5"	88.9 x 88.9			8.225	5.520	8.349	5.610	12.129	8.150	15.641	10.510	18.900	12.700	21.906	14.720
4" x 4"	101.6 x 101.6			9.432	6.330	9.614	6.460	14.019	9.420	18.171	12.210	22.069	14.830	25.701	17.270
5" x 5"	127 x 127					12.143	8.160	17.813	11.970	23.245	15.620	28.394	19.080	33.290	22.370
6" x 6"	152.4 x 152.4							21.623	14.530	28.305	19.020	34.789	23.348	40.895	27.480

## TOLERANCE

OD	65 mm or under : $\pm 0.02$ in (0.5 mm) 65 - 90 mm : $\pm 0.025$ in (0.6 mm) Over 90 - 140 mm : $\pm 0.03$ in (0.8 mm) Over 140 mm : 0.01 times large flat dimension
WT	$\pm 10\%$
Weight	N/A

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	Grade A, B & D Max	Grade C Max
Carbon	0.26	0.27
Manganese	1.40	1.40
Phosphorus	0.045	0.045
Sulphur	0.045	0.045

## Mechanical Properties

	Grade A Min	Grade B Min	Grade C Min	Grade D Min
Tensile	310 MPa	400 MPa	425 MPa	400 MPa
Yield	270 MPa	315 MPa	345 MPa	250 MPa
Elongation	25%	23%	21%	21%

## ATSM A500 GRADE A, B, C & D

Outer Diameter		Wall Thickness (Mass per meter/Lbs per FT)											
		0.065" (1.651)		0.12" (3.048)		0.125" (3.175)		0.188" (4.775)		0.25" (6.35)		0.375" (9.525)	
inch	mm	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft	kg/m	lb/ft
2" x 1"	50.8 x 25.4	1.892	1.270	3.278	2.200	3.355	2.252						
3" x 1.5"	76.2 x 38.1			5.179	3.476	5.185	3.480	7.390	4.960				
3" x 2"	76.2 x 50.8			5.811	3.900	5.85	1.78	8.329	5.590	10.594	7.110		
4" x 2"	101.6 x 50.8			7.078	4.750	7.078	4.750	10.236	6.870	13.127	8.810	18.111	12.170
4" x 3"	101.6 x 76.2			8.225	5.520	8.359	5.610	12.144	8.150	15.660	10.510	21.906	14.720
5" x 2"	127 x 50.8			8.225	5.520	8.359	5.610	12.144	8.150	15.660	10.510	21.906	14.720
5" x 3"	127 x 76.2			9.432	6.330	9.625	6.460	14.036	9.420	18.193	12.210	25.701	17.270
6" x 2"	152.4 x 50.8			9.432	6.330	9.625	6.460	14.036	9.420	18.193	12.210	25.701	17.270
6" x 3"	152.4 x 76.2					10.892	7.310	15.943	10.700	20.726	13.910	29.495	19.820
6" x 4"	152.4 x 101.6					12.158	8.160	17.835	11.970	23.274	15.620	33.290	22.370
8" x 4"	203.2 x 101.6							21.650	14.530	28.340	19.020	40.895	27.480

## TOLERANCE

### OD

65 mm or under :  $\pm 0.02$  in (0.5 mm)

65 - 90 mm :  $\pm 0.025$  in (0.6 mm)

Over 90 - 140 mm :  $\pm 0.03$  in (0.8 mm)

Over 140 mm : 0.01 times large flat dimension

### WT

$\pm 10\%$

### Weight

N/A



# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Max</b>	<b>Max</b>	<b>Max</b>
Carbon	0.12	0.20	0.20
Silicon	0.05	0.45	0.45
Manganese	0.50	1.60	1.70
Phosphorus	0.03	0.03	0.03
Sulphur	0.03	0.03	0.03

## Mechanical Properties

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Min</b>	<b>Min</b>	<b>Min</b>
Tensile	320 MPa	430 MPa	500 MPa
Yield	250 MPa	350 MPa	450 MPa
Elongation	18%	16%	12%

## AS1163: CIRCULAR HOLLOW SECTIONS (CHS)

Outside Diameter (mm)			Thickness mm	kg/m
std	min	max		
17.2	16.7	17.7	2.3 2.9	0.845 1.02
21.3	20.8	21.8	2.6 3.2 3.6	1.20 1.43 1.57
26.9	26.4	27.4	2.6 3.2 4.0	1.56 1.87 2.26
33.7	33.2	34.2	3.2 4.0 4.5	2.41 2.93 3.24
42.4	41.9	42.9	3.2 4.0 4.9	3.09 3.79 4.53
48.3	47.8	48.8	3.2 4.0 5.4	3.56 4.37 5.71
60.3	59.8	60.8	3.6 4.5 5.4	5.03 6.19 7.31
76.1	75.34	76.86	2.3 3.2 3.6 4.5 5.9	4.19 5.75 6.44 7.95 10.2

Outside Diameter (mm)			Thickness mm	kg/m
std	min	max		
88.9	88.01	89.79	2.6 3.2 4.0 4.8 5.0 5.5 5.9	5.53 6.76 8.38 9.96 10.3 11.3 12.1
101.6	100.58	102.62	2.6 3.2 4.0 5.0	6.35 7.77 9.63 11.9
114.3	113.16	115.44	3.2 3.6 4.5 4.8 5.4 6.0	8.77 9.83 12.2 13.0 14.5 16.0
139.7	138.3	141.1	3.0 3.5 5.0 5.4	10.1 11.8 16.6 17.9
165.1	163.45	166.75	3.0 3.5 5.0 5.4	12.0 13.9 19.7 21.3
168.3	166.62	169.98	4.8 6.4 7.1	19.4 25.6 28.2

## TOLERANCE

OD	≤ 50 mm: ± 0.5 mm > 50 mm: ± 1 %
WT	±10%
Weight	- 4%, + Not limit

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Max</b>	<b>Max</b>	<b>Max</b>
Carbon	0.12	0.20	0.20
Silicon	0.05	0.45	0.45
Manganese	0.50	1.60	1.70
Phosphorus	0.03	0.03	0.03
Sulphur	0.03	0.03	0.03

## Mechanical Properties

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Min</b>	<b>Min</b>	<b>Min</b>
Tensile	320 MPa	430 MPa	500 MPa
Yield	250 MPa	350 MPa	450 MPa
Elongation	18%	16%	12%

## AS1163: SQUARE HOLLOW SECTIONS (SHS)

Nominal Size (mm)			Thickness (mm)								
			1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.0	9.0
std	min	max	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m
20 x 20	19.5 x 19.5	20.5 x 20.5	0.873	1.05							
25 x 25	24.5 x 24.5	25.5 x 25.5	1.12	1.36	1.64	1.89					
30 x 30	29.5 x 29.5	30.5 x 30.5	1.38	1.68	2.03	2.36					
35 x 35	34.5 x 34.5	35.5 x 35.5	1.63	1.99	2.42	2.83					
40 x 40	39.5 x 39.5	40.5 x 40.5	1.88	2.31	2.82	3.30		4.09			
50 x 50	49.5 x 49.5	50.5 x 50.5	2.38	2.93	3.60	4.25		5.35	6.39	7.32	
65 x 65	64.35 x 64.35	65.65 x 65.65		3.88	4.78	5.66			8.75	10.20	
75 x 75	74.25 x 74.25	75.75 x 75.75		4.50	5.56	6.60	7.53	8.49	10.30	12.00	
89 x 89	88.11 x 88.11	89.89 x 89.89					9.06		12.50	14.60	
100 x 100	99 x 99	101 x 101				8.96		11.60	14.20	16.70	
125 x 125	123.75 x 123.75	126.25 x 126.25						14.80	18.20	21.40	30.60
150 x 150	148.5 x 148.5	151.5 x 151.5							22.10	26.20	37.70

## TOLERANCE

OD	≤ 50 mm: ± 0.5 mm
	> 50 mm: ± 1%
WT	±10%
Weight	- 4%, + Not limit

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Max</b>	<b>Max</b>	<b>Max</b>
Carbon	0.12	0.20	0.20
Silicon	0.05	0.45	0.45
Manganese	0.50	1.60	1.70
Phosphorus	0.03	0.03	0.03
Sulphur	0.03	0.03	0.03

## Mechanical Properties

	C250, C250L0	C350, C350L0	C450, C450L0
	<b>Min</b>	<b>Min</b>	<b>Min</b>
Tensile	320 MPa	430 MPa	500 MPa
Yield	250 MPa	350 MPa	450 MPa
Elongation	18%	16%	12%

## AS1163: RECTANGULAR HOLLOW SECTIONS (RHS)

Nominal Size (mm)			Thickness (mm)								
			1.6	2.0	2.5	3.0	3.5	4.0	5.0	6.0	9.0
std	min	max	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m	kg/m
50 x 20	49.5 x 19.5	50.5 x 20.5	1.63	1.99	2.42	2.83					
50 x 25	49.5 x 24.5	50.5 x 25.5	1.75	2.15	2.62	3.07					
65 x 35	64.35 x 34.5	65.65 x 35.5		2.93	3.60	4.25		5.35			
75 x 25	74.25 x 24.5	75.75 x 25.5	2.38	2.93	3.60						
75 x 50	74.25 x 49.5	75.75 x 50.5		3.72	4.58	5.42		6.92	8.35	9.67	
100 x 50	99 x 49.5	101 x 50.5		4.50	5.56	6.60	7.53	8.49	10.30	12.00	
125 x 75	123.75 x 74.25	126.25 x 75.75				8.96		11.60	14.20		
150 x 50	148.5 x 49.5	151.5 x 50.5				8.96		11.60	14.20	16.70	
150 x 100	148.5 x 99	151.5 x 101						14.80	18.20	21.40	
200 x 100	198 x 99	202 x 101						17.90	22.10	26.20	37.70

## TOLERANCE

OD	≤ 50 mm: ± 0.5 mm > 50 mm: ± 1%
WT	±10%
Weight	- 4%, + Not limit

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	STK 400 Max	STK 490 Max
Carbon	0.25	0.18
Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.035
Sulphur	0.04	0.035

## Mechanical Properties

	STK 400 Min	STK 490 Min
Tensile	400 MPa	490 MPa
Yield	235 MPa	315 MPa
Elongation	12-23%	12-23%

## JIS G3444: CARBON STEEL TUBES FOR GENERAL STRUCTURE - ROUND TUBES

Nominal Size (mm)		Outside diameter (mm)			Thickness	Weight	Area	Moment of Inertia	Section Modulus	Radius of Gyration
inch	mm	mean	min	max	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
1/2"	15	21.7	21.2	22.2	2.0	0.972	1.24	0.607	0.56	0.70
3/4"	20	27.2	26.7	27.7	2.0 2.3	1.24 1.41	1.58 1.80	1.26 1.41	0.93 1.03	0.89 0.88
1"	25	34	33.5	34.5	2.3	1.80	2.29	2.89	1.70	1.12
1-1/4"	32	42.7	42.2	43.2	2.3 2.5 2.8	2.29 2.49 2.76	2.92 3.16 3.51	5.97 6.40 7.02	2.80 3.00 3.29	1.43 1.42 1.41
1-1/2"	40	48.6	48.1	49.1	2.3 2.5 2.8 3.2	2.63 2.84 3.16 3.58	3.35 3.62 4.03 4.56	8.99 9.65 10.60 11.80	3.70 3.97 4.36 4.86	1.64 1.63 1.62 1.61
2"	50	60.5	59.9	61.11	2.3 3.2 4.0	3.30 4.52 5.57	4.21 5.76 7.10	17.80 23.70 28.50	5.90 7.84 9.41	2.06 2.03 2.00
2-1/2"	65	76.3	75.54	77.06	2.8 3.2 4.0	5.08 5.77 7.13	6.47 7.35 9.09	43.70 49.20 59.50	11.50 12.90 15.60	2.60 2.59 2.56
3"	80	89.1	88.21	89.99	2.8 3.2 4.0	5.96 6.78 8.39	7.59 8.64 10.69	70.70 79.80 97.00	15.90 17.90 21.80	3.05 3.04 3.01
3-1/2"	90	101.6	100.58	102.62	3.2 4.0 5.0	7.76 9.63 11.90	9.89 12.26 15.17	120 146 177	23.60 28.80 34.90	3.48 3.45 3.42
4"	100	114.3	113.16	115.44	3.2 3.6 4.5 5.6	8.77 9.83 12.20 15.00	11.17 12.52 15.52 19.12	172 192 234 283	30.20 33.60 41.00 49.60	3.93 3.92 3.89 3.85
5"	125	139.8	138.4	141.2	3.6 4.0 4.5 6.0	12.10 13.40 15.00 19.80	15.40 17.07 19.13 25.22	357 394 438 566	51.10 56.30 62.70 80.90	4.82 4.80 4.79 4.74
6"	150	165.2	163.55	166.85	4.5 5.0 6.0 7.1	17.80 19.80 23.60 27.70	22.72 25.16 30.01 35.26	734 808 952 1100	88.90 97.80 115 134	5.68 5.67 5.63 5.60

## TOLERANCE

<b>CLASS 1</b>	OD < 50 mm: ± 0.5 mm OD ≥ 50 mm: ± 1%
<b>CLASS 2</b>	OD < 50 mm: ± 0.25 mm OD ≥ 50 mm: ± 0.5%

<b>CLASS 1</b>	t < 4.0 mm: - 0.5 mm, +0.6 mm 4.0 mm ≤ t < 12 mm: -12.5% , +15% t > 12.0 mm: - 1.5 mm, +15%
<b>CLASS 2</b>	t < 3.0 mm: ± 0.3 mm 3.0 mm ≤ t < 12 mm: ±10% t ≥ 12.0 mm: - 1.2 mm, +10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	STKR 400	STK 490
	<b>Max</b>	<b>Max</b>
Carbon	0.25	0.18
Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.04
Sulphur	0.04	0.04

## Mechanical Properties

	STKR 400	STK 490
	<b>Min</b>	<b>Min</b>
Tensile	400 MPa	490 MPa
Yield	245 MPa	325 MPa
Elongation	23%	23%

## JIS G3466 : CARBON STEEL TUBES FOR GENERAL STRUCTURE - SQUARE TUBES

Nominal Size (mm)			Thickness	Unit Mass	Cross Sectional area	Moment of Inertia	Modulus of Section	Radius of Gyration
A X B	min	max				cm <sup>4</sup>	cm <sup>3</sup>	cm
mm	mm	mm				I <sub>x</sub> I <sub>y</sub>	Z <sub>x</sub> Z <sub>y</sub>	i <sub>x</sub> i <sub>y</sub>
40 x 40	38.5 x 38.5	41.5 x 41.5	1.6	1.88	2.392	5.79	2.9	1.56
			2.3	2.62	3.332	7.73	3.86	1.52
50 x 50	48.5 x 48.5	51.5 x 51.5	1.6	2.38	3.032	11.7	4.68	1.96
			2.3	3.34	4.252	15.9	6.34	1.93
			3.2	4.50	5.727	20.4	8.16	1.89
60 x 60	58.5 x 58.5	61.5 x 61.5	1.6	2.88	3.672	20.7	6.89	2.37
			2.3	4.06	5.172	28.3	9.44	2.34
			3.2	5.5	7.007	36.9	12.3	2.3
75 x 75	73.5 x 73.5	76.5 x 76.5	1.6	3.64	4.632	41.3	11	2.99
			2.3	5.14	6.552	57.1	15.2	2.95
			3.2	7.01	8.927	75.5	20.1	2.91
			4.5	9.55	12.17	98.6	26.3	2.85
80 x 80	78.5 x 78.5	81.5 x 81.5	2.3	5.5	7.012	69.9	17.5	3.16
			3.2	7.51	9.567	92.7	23.2	3.11
			4.5	10.3	13.07	122	30.4	3.05
90 x 90	88.5 x 88.5	91.5 x 91.5	2.3	6.23	7.932	101	22.4	3.56
			3.2	8.51	10.85	135	29.9	3.52
100 x 100	98.5 x 98.5	101.5 x 101.5	2.3	6.95	8.852	140	27.9	3.97
			3.2	9.52	12.13	187	37.5	3.93
			4.0	11.7	14.95	226	45.3	3.89
			4.5	13.1	16.67	249	49.9	3.87
			6.0	17.0	21.63	311	62.3	3.79
			9.0	24.1	30.67	408	81.6	3.65
			12.0	30.2	38.53	471	94.3	3.5
125 x 125	123.13 x 123.13	126.88 x 126.88	3.2	12.0	15.33	376	60.1	4.95
			4.5	16.6	21.17	506	80.9	4.89
			5.0	18.3	23.36	553	88.4	4.86
			6.0	21.7	27.63	641	103	4.82
			9.0	31.1	39.67	865	138	4.67
150 x 150	147.75 x 147.75	152.25 x 152.25	4.5	20.1	25.67	896	120	5.91
			5.0	22.3	28.36	982	131	5.89
			6.0	26.4	33.63	1150	153	5.84
			9.0	38.2	48.67	1580	210	5.69

## TOLERANCE

OD	A,B ≤ 100 mm: ± 1.5 mm	
	A,B > 100 mm: ± 1.5%	
WT	t < 3.0 mm	± 0.3 mm
	t ≥ 3.0 mm	± 10%



# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	STKR 400	STK 490
	<b>Max</b>	<b>Max</b>
Carbon	0.25	0.18
Silicon	-	0.55
Manganese	-	1.65
Phosphorus	0.04	0.04
Sulphur	0.04	0.04

## Mechanical Properties

	STKR 400	STK 490
	<b>Min</b>	<b>Min</b>
Tensile	400 MPa	490 MPa
Yield	245 MPa	325 MPa
Elongation	23%	23%

## JIS G3466: CARBON STEEL TUBES FOR GENERAL STRUCTURE - RECTANGULAR TUBES

Nominal Size (mm)			Thickness	Unit Mass	Cross Sectional area	Moment of Inertia		Modulus of Section		Radius of Gyration	
A X B	min	max				cm <sup>4</sup>		cm <sup>3</sup>		cm	
mm	mm	mm				I <sub>x</sub>	I <sub>y</sub>	Z <sub>x</sub>	Z <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>
50 x 20	48.5 x 18.5	51.5 x 21.5	1.6	1.63	2.072	6.08	1.42	2.43	1.42	1.71	0.829
			2.3	2.25	2.872	8	1.83	3.2	1.83	1.67	0.798
50 x 30	48.5 x 28.5	51.5 x 31.5	1.6	1.88	2.392	7.96	3.6	3.18	2.4	1.82	1.23
			2.3	2.62	3.332	10.6	4.76	4.25	3.17	1.79	1.2
60 x 30	58.5 x 28.5	61.5 x 31.5	1.6	2.13	2.712	12.5	4.25	4.16	2.83	2.15	1.25
			2.3	2.98	3.792	16.8	5.65	5.61	3.76	2.11	1.22
			3.2	3.99	5.087	21.4	7.08	7.15	4.72	2.05	1.18
75 x 20	73.5 x 18.5	76.5 x 21.5	1.6	2.25	2.872	17.6	2.1	4.69	2.1	2.47	0.855
			2.3	3.16	4.022	23.7	2.73	6.31	2.73	2.43	0.824
100 x 50	98.5 x 48.5	101.5 x 51.5	1.6	3.64	4.632	61.3	21.1	12.3	8.43	3.64	2.13
			2.3	5.14	6.552	84.8	29	17	11.6	3.6	2.1
			3.2	7.01	8.927	112	38	22.5	15.2	3.55	2.06
			4.5	9.55	12.17	147	48.9	29.3	19.5	3.47	2
125 x 75	123.12 x 73.5	126.87 x 76.5	2.3	6.95	8.852	192	87.5	30.6	23.3	4.65	3.14
			3.2	9.52	12.13	257	117	41.1	31.1	4.6	3.1
			4.0	11.7	14.95	311	141	49.7	37.5	4.56	3.07
			4.5	13.1	16.67	342	155	54.8	41.2	4.53	3.04
			6.0	17	21.63	428	192	68.5	51.1	4.45	2.98
150 x 75	147.75 x 73.5	152.25 x 76.5	3.2	10.8	13.73	402	137	53.6	36.6	5.41	3.16
150 x 100	147.75 x 98.5	152.25 x 101.5	3.2	12	15.33	488	262	65.1	52.5	5.64	4.14
			4.5	16.6	21.17	658	352	87.7	70.4	5.58	4.08
			6.0	21.7	27.63	835	444	111	88.8	5.5	4.01
			9.0	31.1	39.67	1130	595	151	119	5.33	3.87
200 x 100	197 x 98.5	203 x 101.5	4.5	20.1	25.67	1130	455	133	90.9	7.2	4.21
			6.0	26.4	33.63	1700	577	170	115	7.12	4.14
			9.0	38.2	48.67	2350	782	235	156	6.94	4.01

## TOLERANCE

OD	A,B ≤ 100 mm: ± 1.5 mm	
	A,B > 100 mm: ± 1.5%	
WT	t < 3.0 mm	± 0.3 mm
Weight	t ≥ 3.0 mm	± 10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	HS41
	<b>Max</b>
Carbon	0.25
Silicon	-
Manganese	-
Phosphorus	0.40
Sulphur	0.40

## Mechanical Properties

	HS41
	<b>Min</b>
Tensile	400 MPa
Yield	235 MPa
Elongation	12-23%

## TIS 107 : HOLLOW STRUCTURAL STEEL SECTIONS - ROUND TUBES

Nominal Size		Outside Diameter (mm)			Thickness	Weight	Area	Moment of inertia	Section Modulus	Radius of Gyration
inch	mm	mean	min	max	mm	kg/m	cm <sup>2</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm
1/2"	15	21.7	21.2	22.2	2.0	0.972	1.238	0.607	0.560	0.70
3/4"	20	27.2	26.7	27.7	2.3	1.41	1.80	1.41	1.03	0.88
1"	25	34	33.5	34.5	2.3	1.80	2.29	2.89	1.70	1.12
1-1/4"	32	42.7	42.2	43.2	2.3	2.29	2.92	5.97	2.80	1.43
1-1/2"	40	48.6	48.1	49.1	2.3	2.63	3.35	8.99	3.70	1.64
					3.2	3.58	4.56	11.80	4.86	1.61
2"	50	60.5	59.9	61.11	3.2	4.52	5.76	23.70	7.84	2.03
					4.0	5.57	7.10	28.50	9.41	2.00
2-1/2"	65	76.3	75.54	77.06	3.2	5.77	7.35	49.20	12.90	2.59
					4.0	7.13	9.09	59.50	15.60	2.65
3"	80	89.1	88.21	89.99	3.2	6.78	8.64	79.80	17.90	3.04
					4.0	8.39	10.69	97.00	21.80	3.01
3-1/2"	90	101.6	100.58	102.62	3.2	7.76	9.89	120	23.60	3.48
					4.0	9.63	12.26	146	28.80	3.45
4"	100	114.3	113.16	115.44	3.2	8.77	11.17	172	30.20	3.93
					4.5	12.2	15.52	234	41.00	3.89
					5.6	15.0	19.12	283	49.60	3.85
5"	125	139.8	138.4	141.2	4.5	15.0	19.13	438	62.70	4.79
					6.0	19.8	25.22	566	80.90	4.74
6"	150	165.2	163.55	166.85	4.5	17.8	22.72	734	88.90	5.68
					6.0	23.6	30.01	952	115	5.63

## TOLERANCE

OD

DN < 50 mm: ± 0.5 mm

DN ≥ 50 mm: ± 1%

WT

< 4.0 mm: + 0.6/-0.5 mm

4 ≤ t < 12 mm: +15% , - 12.5%

≥ 12 mm: +15% , - 1.5 mm

Weight

± 10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	HS41
	<b>Max</b>
Carbon	0.25
Silicon	-
Manganese	-
Phosphorus	0.40
Sulphur	0.40

## Mechanical Properties

	HS41
	<b>Min</b>
Tensile	400 MPa
Yield	235 MPa
Elongation	12-23%

## TIS 107 : HOLLOW STRUCTURAL STEEL SECTIONS - SQUARE TUBES

Nominal Size	Thickness	Weight	Cross Sectional Area	Moment of Inertia	Modulus of Section	Radius of Gyration
				cm <sup>4</sup>	cm <sup>3</sup>	cm
mm	mm	kg/m	cm <sup>2</sup>	I <sub>x</sub> I <sub>y</sub>	Z <sub>x</sub> Z <sub>y</sub>	i <sub>x</sub> i <sub>y</sub>
25 x 25	2.0	1.36	1.737	1.48	1.19	0.924
	2.3	1.53	1.972	1.61	1.29	0.904
32 x 32	2.3	2.04	2.596	3.71	2.32	1.20
	3.2	2.69	3.423	4.54	2.84	1.15
38 x 38	2.3	2.47	3.148	6.54	3.44	1.44
	3.2	3.29	4.191	8.18	4.30	1.40
50 x 50	2.3	3.34	4.252	15.9	6.34	1.93
	3.2	4.50	5.727	20.4	8.16	1.89
60 x 60	2.3	4.06	5.172	28.3	9.44	2.34
	3.2	5.50	7.007	36.9	12.3	2.30
	4.0	6.71	8.548	43.6	14.5	2.26
75 x 75	3.2	7.01	8.927	75.5	20.1	2.91
	4.0	8.59	10.948	90.2	24.1	2.87
90 x 90	3.2	8.51	10.85	135	29.9	3.52
	4.0	10.48	13.35	162	36.0	3.48
	4.5	11.67	14.87	178	39.5	3.46
100 x 100	3.2	9.52	12.13	187	37.5	3.93
	4.0	11.70	14.95	226	45.3	3.89
	4.5	13.10	16.67	249	49.9	3.87
150 x 150	4.5	20.10	25.67	896	120	5.91
	6.0	26.40	33.63	1150	153	5.84

## TOLERANCE

OD	A,B ≤ 100 mm: ± 1.5 mm
	A,B > 100 mm: ± 1.5%
WT	< 3.0 mm: ± 0.3 mm
	≥ 3.0 mm: ± 10%
Weight	± 10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	HS41
	<b>Max</b>
Carbon	0.25
Silicon	-
Manganese	-
Phosphorus	0.40
Sulphur	0.40

## Mechanical Properties

	HS41
	<b>Min</b>
Tensile	400 MPa
Yield	235 MPa
Elongation	12-23%

## TIS 107 : Hollow Structural Steel Sections - Rectangular Tubes

Nominal Size	Thickness	Weight	Cross Sectional Area	Moment of Inertia		Modulus of Section		Radius of Gyration	
				cm <sup>4</sup>		cm <sup>3</sup>		cm	
mm	mm	kg/m	cm <sup>2</sup>	I <sub>x</sub>	I <sub>y</sub>	Z <sub>x</sub>	Z <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>
50 x 25	2.3	2.44	3.102	9.31	3.10	3.72	2.48	1.73	1.00
	3.2	3.24	4.127	11.6	3.80	4.65	3.04	1.68	0.96
60 x 30	2.3	2.98	3.792	16.8	5.65	5.61	3.76	2.11	1.22
	3.2	3.99	5.087	21.4	7.08	7.15	4.72	2.05	1.18
75 x 38	2.3	3.81	4.850	34.6	12.0	9.23	6.30	2.67	1.57
	3.2	5.15	6.559	45.0	15.4	12.0	8.09	2.62	1.53
75 x 45	2.3	4.06	5.172	38.9	17.6	10.4	7.82	2.74	1.84
	3.2	5.50	7.007	50.8	22.8	13.5	10.10	2.69	1.80
90 x 45	2.3	4.60	5.862	61.0	20.8	13.6	9.22	3.23	1.88
	3.2	6.25	7.967	80.2	27.0	17.8	12.00	3.17	1.84
100 x 50	3.2	7.01	8.927	112	38.0	22.5	15.2	3.55	2.06
	4.0	8.59	10.95	142	46.7	28.4	18.7	3.55	2.03
	4.5	9.55	12.17	147	48.9	29.3	19.5	3.47	2.00
125 x 50	3.2	8.26	10.53	198	46.7	31.6	18.7	4.33	2.11
	4.0	10.2	12.95	238	55.6	38.0	22.0	4.28	2.07
	4.5	11.3	14.42	261	60.6	41.7	24.2	4.25	2.05
125 x 75	3.2	9.52	12.13	257	117	41.1	31.1	4.60	3.10
	4.0	11.7	14.95	311	141	49.7	37.5	4.56	3.07
	4.5	13.1	16.67	342	155	54.8	41.2	4.53	3.04
150 x 80	4.5	15.2	19.37	563	211	75.0	52.9	5.39	3.30
	6.0	19.8	25.23	710	264	94.7	66.1	5.31	3.24
150 x 100	4.5	16.6	21.17	658	352	87.7	70.4	5.58	4.08
	6.0	21.7	27.63	835	444	111	88.8	5.50	4.01
200 x 100	4.5	20.1	25.67	1330	455	133	90.9	7.20	4.21
	6.0	26.4	33.63	1700	577	170	115	7.12	4.14

## TOLERANCE

OD	A,B ≤ 100 mm: ± 1.5 mm
	A,B > 100 mm: ± 1.5%
WT	< 3 mm: ± 0.3 mm
	≥ 3 mm: ± 10%
Weight	± 10%

# HOLLOW STRUCTURAL SECTIONS

## Chemical Composition

	Max
Carbon	0.20
Silicon	0.30
Manganese	-
Phosphorus	0.05
Sulphur	0.05

## Mechanical Properties

	Min
Tensile	340 - 480 MPa
Yield	235 MPa
Elongation	24%

## BS 1139 : STEEL TUBES FOR SCAFFOLDING

Outside Diameter			Inside Diameter	Wall Thickness			Unit Mass
std	min	max	mm	std	min	max	kg/m
48.3	47.8	48.8	40.3	4.0	3.6	Not limit	4.37

## TOLERANCE

OD	48.3 mm : $\pm 0.5$ mm
ID	40.3 mm : - 2.6 mm
WT	- 10%, + not limit
Weight	Single tube: - 8%, +12% Batch: $\pm 7.5\%$



# STEEL TUBES FOR CONVEYOR ROLLER

## Chemical Composition

	<b>Max</b>
Carbon	0.25
Silicon	-
Manganese	-
Phosphorus	0.04
Sulphur	0.04

## Mechanical Properties

	<b>Min</b>
Tensile	400 MPa
Yield	245 MPa
Elongation	23%

## STEEL TUBES FOR CONVEYOR ROLLER

Norminal Size (mm)	Outside Diameter (mm)		Inside Diameter (mm)		Thickness	Weight (plain end)
mm	min	max	min	max	mm	kg/m
60.3	59.75	60.25	53.75	54.25	3.00	4.34
76.0	75.70	76.30	69.70	70.30	3.00	5.51
88.9	88.60	89.20	82.60	83.20	3.00	6.47
			79.60	80.20	4.50	9.58
			77.60	78.20	5.50	11.6
101.6	101.30	101.90	95.30	95.90	3.00	7.41
			94.30	94.90	3.50	9.09
			93.90	94.50	3.70	9.08
114.3	113.90	114.70	107.50	108.30	3.20	8.89
			106.90	107.70	3.50	9.71
			106.50	107.30	3.70	10.22
			104.90	105.70	4.50	12.39
127.0	126.60	127.40	120.20	121.00	3.20	10.52
			119.60	120.40	3.50	10.81
			119.20	120.00	3.70	11.41
			118.60	119.40	4.00	12.32
			117.60	118.40	4.50	14.43
			116.60	117.40	5.00	15.92
139.8	139.40	140.20	132.00	132.80	3.70	12.57
			130.20	131.00	4.60	15.55
140.0	139.60	140.40	131.60	132.40	4.00	13.62
			129.40	130.20	5.10	17.25
152.4	152.00	152.80	144.00	144.80	4.00	14.81
			142.80	143.60	4.60	17.02
			140.00	140.80	6.00	22.03
159.0	158.60	159.40	149.60	150.40	4.50	17.39
			149.40	150.20	4.60	17.77
			148.80	149.60	4.90	18.90
			146.60	147.40	6.00	23.01
165.1	164.70	165.50	155.70	156.50	4.50	18.82
			152.70	153.50	6.00	24.68

## TOLERANCE

OD&ID	OD	OD & ID	WT	± 0.2 mm
	≤ 60	: ± 0.25 mm	Inner Scrafig	- 0.35 mm, + 0.1 mm
	≥ 76 ≤ 101.6	: ± 0.30 mm	Outer Scrafig	0.1 mm max
	≥ 108	: ± 0.40 mm	Straightness	Less than 1.0 mm per meter



**THAI PREMIUM PIPE CO., LTD**

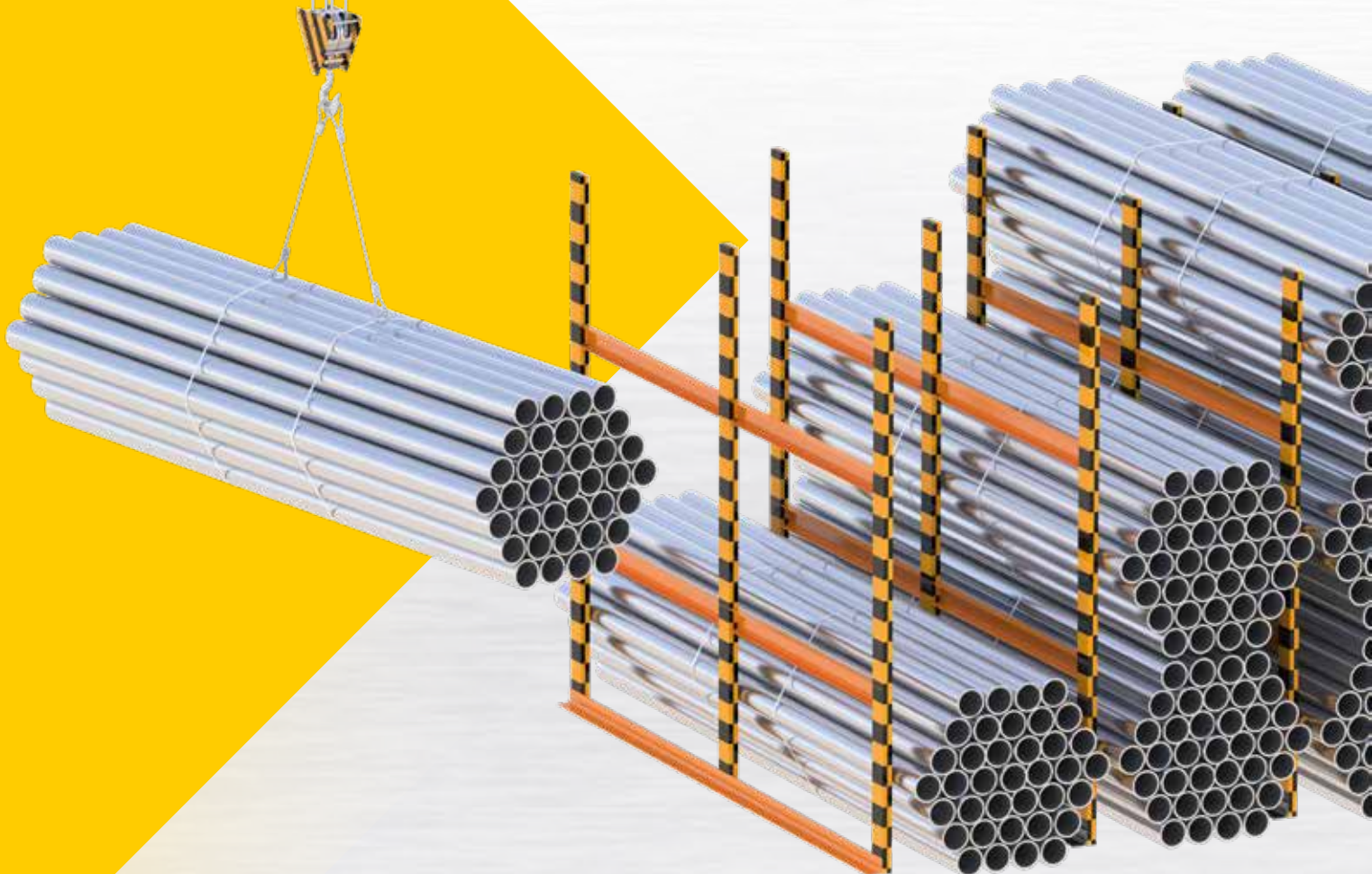
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ISO 9001



ISO 14001



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