



沧州博拓国际贸易有限公司

Cangzhou Botop International Co.,Ltd.

# API 5L X65 Specification

- LSAW Steel Pipe

<https://www.botopsteelpipe.com>

## Navigation Buttons



- [👉 What is API 5L Grade X65 Material?](#)
- [👉 About Us](#)
- [👉 API 5L X65 Classification](#)
- [👉 Delivery Conditions](#)
- [👉 API 5L X65 Manufacturing Process](#)
- [👉 Pipe End Types for API 5L X65](#)
- [👉 API 5L X65 Chemical Composition](#)
- [👉 API 5L X65 Mechanical Properties](#)
- [👉 Hydrostatic Test](#)
- [👉 Nondestructive Inspection](#)
- [👉 API 5L Pipe Schedule Chart](#)
- [👉 Specify Outside Diameter and Wall Thickness](#)
- [👉 Dimensional Tolerances](#)
- [👉 API 5L X65 Applications](#)
- [👉 API 5L X65 Equivalent Material](#)
- [👉 Our Supply Range](#)

## What is API 5L Grade X65 Material?



**API 5L X65 (L450)** is an API 5L medium to high-grade carbon steel pipe, named for its **minimum yield strength of 65,300 psi (450 MPa)**.

Often designed to cope with extreme pressures and harsh environments, X65 steel pipe is ideally suited for oil and gas pipelines where high durability and reliability are required. In addition, its excellent mechanical properties and corrosion resistance make it ideal for use in subsea pipelines and highly corrosive industrial environments.



## About Us



**Botop Steel** is a professional manufacturer of thick-walled large-diameter double-sided submerged arc LSAW steel pipe located in China.

- Location: Cangzhou City, Hebei Province, China;
- Total Investment: 500 million RMB;
- Factory area: 60,000 square meters;
- Annual production capacity: 200,000 tons of JCOE LSAW steel pipes;
- Equipment: Advanced production and testing equipment;
- Specialization: LSAW steel pipe production;
- Certification: API 5L certified.



## API 5L X65 Classification



Depending on the PSL level and delivery condition, X65 can be categorized as follows:

**PSL1: X65 (L450);**

**PSL2: X65Q (L450Q) and X65M (L450M);**

In order to cope with the harsh conditions of offshore (O) and sour service environments (S), the API 5L PSL2 standard has special requirements for both environments. These requirements are indicated by the addition of a specific letter to the pipe grade.

Offshore services PSL2 pipe: **X65QO (L450QO)** or **X65MO (L450MO)**;

Sour service PSL2 pipe: **X65QS (L450QS)** or **X65MS (L450MS)**.

# Delivery Conditions



PSL	Delivery Condition	Pipe Grade/Steel Grade	
PSL1	As-rolled, normalizing rolled, thermomechanical rolled, thermomechanical formed, normalizing formed, normalized, normalized and tempered or quenched and tempered	X65	L450
PSL2	Quenched and tempered	X65Q	L450Q
	Thermomechanical rolled or thermomechanical formed	X65M	L450M

For SAW ( Submerged Arc Welded) or COW (Combination Welded Pipe), Q and M in the delivery status of API 5L PSL2 correspond to the following manufacturing processes respectively.

Acceptable Manufacturing Routes for PSL 2 Pipe				
Type of Pipe	Starting Material	Pipe Forming	Pipe Heat Treatment	Delivery Condition
SAW or COW pipe	Normalized or normalizing-rolled coil or plate	Cold forming	—	N
	As-rolled, thermomechanical-rolled, normalizing-rolled, or normalized	Cold forming	Normalizing	N
	Thermomechanical-rolled coil or plate	Cold forming	—	M
	Quenched and tempered plate	Cold forming	—	Q
	As-rolled, thermomechanical-rolled, normalizing-rolled, or normalized coil or plate	Cold forming	Quenching and tempering	Q
	As-rolled, thermomechanical-rolled, normalizing-rolled, or normalized coil or plate	Normalizing forming	—	N

# API 5L X65 Manufacturing Process

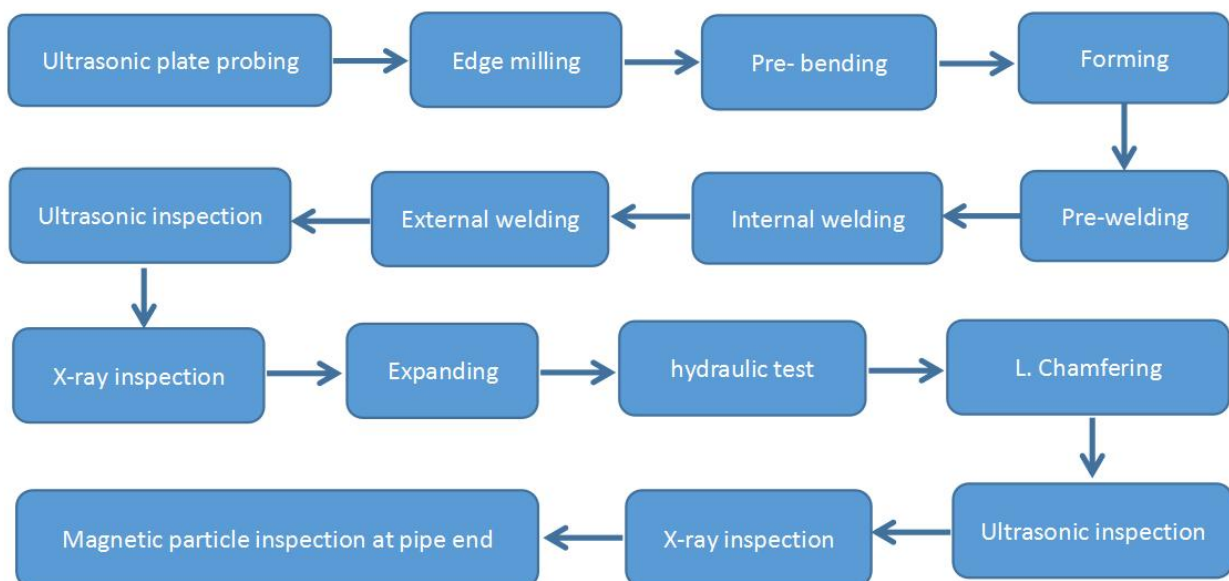


**X65** pipes can be produced through a variety of manufacturing processes to suit a wide range of engineering applications.

API 5L PSL1 X65	SMLS	LFW	HFW	LW	SAWL	SAWH	COWL	COWH
API 5L PSL2 X65	SMLS	—	HFW	—	SAWL	SAWH	COWL	COWH

**SAWL** (LSAW) is ideal for the production of large-diameter, thick-walled tubes with diameters in excess of 660 mm, especially at the price point where it offers a cost advantage over seamless tubes.

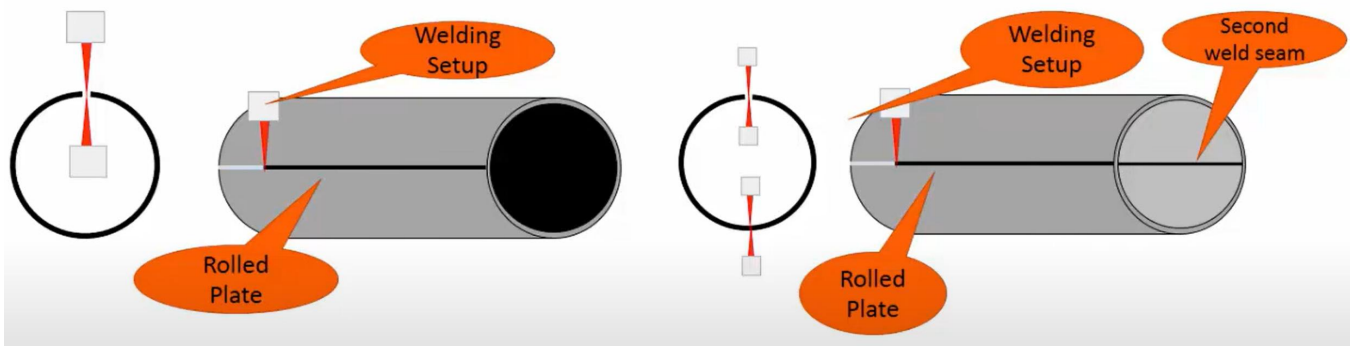
Main production process of **Longitudinal submerged-arc welded steel pipe** :



# API 5L X65 Manufacturing Process



**LSAW** is also often referred to as **DSAW** because of the double-sided welding process used in the welding process. It is important to note that DSAW refers to the welding technique and does not specifically refer to the shape or direction of the weld. It can be either a straight seam or a spiral seam.



**LSAW** pipe may be double welded due to equipment limitations in the production of large-diameter pipe, and the welds should be approximately 180° apart.



## Pipe End Types for API 5L X65



**PSL1 Steel Pipe End: Belled end or Plain end;**

**PSL2 Steel Pipe End: Plain end;**

For plain pipe ends the following requirements should be followed:

The end faces of  $t \leq 3.2$  mm (0.125 in) plain end pipe shall be square cut.

Plain-end tubes with  $t > 3.2$  mm (0.125 in) shall be beveled for welding. The bevel angle should be  $30-35^\circ$  and the width of the root face of the bevel should be 0.8 - 2.4 mm (0.031 - 0.093 in).



# API 5L X65 Chemical Composition



The chemical composition of PSL1 and PSL2 steel pipe  $t > 25.0$  mm (0.984 in) shall be determined by agreement.

## Chemical Composition for PSL 1 Pipe with $t \leq 25.0$ mm (0.984 in.)

Steel Grade	Pipe Type	Mass Fraction, Based on Heat and Product Analyses <sup>a,g</sup> , %						
		C	Mn	P	S	V	Nb	Ti
		max <sup>b</sup>	max <sup>b</sup>	max	max	max	max	max
X65 (L450)	Seamless Pipe	0.28 <sup>e</sup>	1.40 <sup>e</sup>	0.03	0.03	f	f	f
X65 (L450)	Welded Pipe	0.26 <sup>e</sup>	1.45 <sup>e</sup>	0.03	0.03	f	f	f

<sup>a</sup> Cu ≤ 0.50 %; Ni ≤ 0.50 %; Cr ≤ 0.50 % and Mo ≤ 0.15 %.  
<sup>b</sup> For every 0.01 % decrease in carbon content from the specified maximum carbon content, the permitted manganese content is increased by 0.05 % from the specified maximum manganese content. For Grade B, the maximum manganese content is 1.65 %;  
<sup>e</sup> Unless otherwise agreed.  
<sup>f</sup> Unless otherwise agreed, Nb + V + Ti ≤ 0.15%.  
<sup>g</sup> No deliberate addition of B is permitted and the residual B ≤ 0.001 %.

## Chemical Composition for PSL 2 Pipe with $t \leq 25.0$ mm (0.984 in.)

Steel Grade	Pipe Type	Mass Fraction, Based on Heat and Product Analyses % max									Carbon Equivalent <sup>a</sup> %max	
		C <sup>b</sup>	Si	Mn <sup>b</sup>	P	S	V	Nb	Ti	Other	CE <sub>rw</sub>	CE <sub>pcm</sub>
X65Q (L450Q)	Seamless and Welded Pipe	0.18 <sup>f</sup>	0.45 <sup>f</sup>	1.70 <sup>f</sup>	0.025	0.015	g	g	g	h,i	0.43	0.25
X65M (L450M)	Welded Pipe	0.12 <sup>f</sup>	0.45 <sup>f</sup>	1.60 <sup>f</sup>	0.025	0.015	g	g	g	h,i	0.43	0.25

<sup>a</sup> Based on product analysis, for seamless pipe with  $t > 20.0$  mm (0.787 in.), the CE limits shall be as agreed; the CE<sub>rw</sub> limits apply if C > 0.12 % and the CE<sub>pcm</sub> limits apply if C ≤ 0.12 %.  
<sup>b</sup> For every 0.01 % decrease in carbon content from the specified maximum carbon content, the permitted manganese content is increased by 0.05 % from the specified maximum manganese content. For Grade B, the maximum manganese content is 1.65 %.  
<sup>f</sup> Unless otherwise agreed.  
<sup>g</sup> Unless otherwise agreed, Nb + V + Ti ≤ 0.15%.  
<sup>h</sup> Unless otherwise agreed, Cu ≤ 0.50 %; Ni ≤ 0.50 %; Cr ≤ 0.50 % and Mo ≤ 0.50 %.  
<sup>i</sup> Unless otherwise agreed no intentional addition of B is permitted and residual B < 0.001 %.

For PSL2 steel pipe products analyzed with a carbon content of ≤ 0.12%, the carbon equivalent CE<sub>pcm</sub> can be calculated using the following formula:

$$CE_{pcm} = C + \frac{Si}{30} + \frac{Mn}{20} + \frac{Cu}{20} + \frac{Ni}{60} + \frac{Cr}{20} + \frac{Mo}{15} + \frac{V}{15} + 5B$$

## API 5L X65 Chemical Composition



For PSL2 steel pipe products analyzed with a carbon content > 0.12%, the carbon equivalent  $CE_{Iw}$  can be calculated using the formula below:

$$CE_{Iw} = C + \frac{Mn}{6} + \frac{(Cr + Mo + V)}{5} + \frac{(Ni + Cu)}{15}$$

# API 5L X65 Mechanical Properties



## Tensile Properties

Tensile testing allows for the determination of key properties of X65 materials, including yield strength, tensile strength, and elongation.

### PSL1 X65 Tensile Properties

Pipe Grade	Pipe Body of Seamless and Welded Pipe			Weld Seam of EW, LW, SAW, and COW Pipe
	Yield Strength R <sub>10.5</sub> psi(MPa), min	Tensile Strength R <sub>m</sub> psi(MPa), min	Elongation (on 50 mm or 2 in.) A <sub>f</sub> %, min	Tensile Strength R <sub>m</sub> psi(MPa), min
X65 (L450)	65,300 (450)	77,600 (535)	Note	77,600 (535)

### PSL2 X65 Tensile Properties

Pipe Grade	Pipe Body of Seamless and Welded Pipe					Weld Seam of HFW SAW and COW Pipe
	Yield Strength R <sub>10.5</sub> psi (MPa)		Tensile Strength R <sub>m</sub> psi (MPa)		Ratio <sup>a</sup> R <sub>10.5</sub> /R <sub>m</sub>	Elongatio (on 50 mm or 2 in.) A <sub>f</sub> %
	min	max	min	max	max	min
X65Q (L450Q) X65M (L450M)	65,300 (450)	87,000 (600)	77,600 (535)	110,200 (760)	0.93	Note

<sup>a</sup> This limit applies for pipe with D > 323.9 mm (12.750 in.).

**Note:** The specified minimum elongation, Af shall be as determined using the following equation:

$$A_f = C \times (A_{xc}^{0.2}/U^{0.9})$$

# API 5L X65 Mechanical Properties



## Other Mechanical Experiments

The following test program applies to SAW pipe types.

For other pipe types, see Tables 17 and 18 of API 5L.

**Weld guide bending test;**

**Cold-formed welded pipe hardness test;**

**Macro inspection of welded seam;**

**and only for PSL2 steel pipe: CVN impact test and DWT test.**

# Hydrostatic Test



## Test Time

All sizes of seamless and welded steel tubes with  $D \leq 457$  mm (18 in.): test time  $\geq 5$ s;

Welded steel pipe  $D > 457$  mm (18 in.): test time  $\geq 10$ s.

## Test Frequency

Each steel pipe.

## Test pressures

The hydrostatic test pressure  $P$  of a plain-end steel pipe can be calculated by using the formula.

$$P = 2St/D$$

$S$  is the hoop stress. the value is equal to the specified minimum yield strength of the steel pipe x a percentage, in MPa (psi);

The following  $S$ -value is determined for X65 material:

Pipe Grade	Specified Outside Diameter D mm (in.)	Percentage of Specified Minimum Yield Strength for Determination of S	
		Standard Test Pressure	Alternative Test Pressure
X65	$\leq 141.3$ (5.563)	60 <sup>b</sup>	75 <sup>c</sup>
	$> 141.3$ (5.563) to 219.1 (8.625)	75 <sup>b</sup>	75 <sup>c</sup>
	$> 219.1$ (8.625) to 508 (20)	85 <sup>b</sup>	85 <sup>c</sup>
	$\geq 508$ (20)	90 <sup>b</sup>	90 <sup>c</sup>

<sup>b</sup> It is not necessary that the test pressure exceed 20.5 MPa (2970 psi).

<sup>c</sup> For  $D \leq 406.4$  mm (16.000 in.), it is not necessary that the test pressure exceed 50.0 MPa (7260 psi); for  $D > 406.4$  mm (16.000 in.), it is not necessary that the test pressure exceed 25.0 MPa (3630 psi).

## Hydrostatic Test



$t$  is the specified wall thickness, expressed in millimeters (inches);

$D$  is the specified outside diameter, expressed in millimeters (inches).



## Nondestructive Inspection



For **SAW tubes**, two methods, **UT** (ultrasonic testing) or **RT** (radiographic testing), are usually used.

ET (electromagnetic testing) is not applicable to SAW tubes.

Welded seams on welded pipes of grades  $\geq$  L210/A and diameters  $\geq$  60.3 mm (2.375 in) shall be nondestructively inspected for full thickness and length (100 %) as specified.





# API 5L Pipe Schedule Chart



API 5L pipes are categorized into different "Schedules" according to different wall thicknesses, such as Schedule 20, Schedule 40, Schedule 80, etc. These wall thicknesses correspond to different pressure ratings and application scenarios. These wall thicknesses correspond to different pressure ratings and application scenarios.

For ease of viewing and use, we have organized the relevant schedule PDF files. You can always download and view these documents if needed.

 [API 5L Pipe Schedule Chart](#)

# Specify Outside Diameter and Wall Thickness



Standardized values for specified outside diameters and specified wall thicknesses of steel pipe are given in **ISO 4200** and **ASME B36.10M**.

Permissible Specified Outside Diameter and Specified Wall Thickness		
Specified Outside Diameter D mm (in.)	Specified Wall Thickness t mm (in.)	
	Special Light Sizes <sup>a</sup>	Regular Sizes
≥ 10.3 (0.405) to < 13.7 (0.540)	—	≥ 1.7 (0.068) to ≤ 2.4 (0.094)
≥ 13.7 (0.540) to < 17.1 (0.675)	—	≥ 2.2 (0.088) to ≤ 3.0 (0.118)
≥ 17.1 (0.675) to < 21.3 (0.840)	—	≥ 2.3 (0.091) to ≤ 3.2 (0.125)
≥ 21.3 (0.840) to < 26.7 (1.050)	—	≥ 2.1 (0.083) to ≤ 7.5 (0.294)
≥ 26.7(1.050) to < 33.4 (1.315)	—	≥ 2.1 (0.083) to ≤ 7.8 (0.308)
≥ 33.4(1311}5) to < 48.3 (1.900)	—	≥ 2.1 (0.083) to ≤ 10.0 (0.394)
≥ 48.3 (1.900) to < 60.3 (2.375)	—	≥ 2.1 (0.083) to ≤ 12.5 (0.492)
≥ 60.3 (2.375) to < 73.0 (2.875)	≥ 2.1 (0.083) to ≤ 3.6 (0.141)	> 3.6 (0.141) to ≤ 14.2 (0.559)
≥ 73.0 (2.875) to < 88.9 (3.500)	≥ 2.1 (0.083) to ≤ 3.6 (0.141)	> 3.6 (0.141) to ≤ 20.0 (0.787)
≥ 88.9 (3.500) to < 101.6 (4.000)	≥ 2.1 (0.083) to ≤ 4.0 (0.156)	> 4.0 (0.156) to ≤ 22.0 (0.866)
≥ 101.6(4.000) to < 168.3 (6.625)	≥ 2.1 (0.083) to ≤ 4.0 (0.156)	> 4.0(0.156) to ≤ 25.0 (0.984)
≥ 168.3 (6.625) to < 219.1 (8.625)	≥ 2.1 (0.083) to ≤ 4.0 (0.156)	> 4.0 (0.156) to ≤ 40.0(1.575)
≥ 219.1 (8.625) to < 273.1 (10.750)	≥ 3.2 (0.125) to ≤ 4.0 (0.156)	> 4.0 (0.156) to ≤ 40.0 (1.575)
≥ 273.1 (10.750) to < 323.9 (12.750)	≥ 3.6 (0.141) to ≤ 5.2 (0.203)	> 5.2 (0.203) to ≤ 45.0 (1.771)
≥ 323.9 (12.750) to < 355.6 (14.000)	≥ 4.0 (0.156) to ≤ 5.6 (0.219)	> 5.6 (0.219) to ≤ 45.0 (1.771)
≥ 355.6 (14.000) to < 457 (18.000)	≥ 4.5 (0.177) to ≤ 7.1 (0.281)	> 7.1 (0.281) to ≤ 45.0 (1.771)
≥ 457 (18.000) to < 559 (22.000)	≥ 4.8 (0.188) to ≤ 7.1 (0.281)	> 7.1 (0.281) to ≤ 45.0(1.771)
≥ 559 (22.000) to < 711 (28.000)	≥ 5.6 (0.219) to ≤ 7.1 (0.281)	> 7.1 (0.281) to ≤ 45.0 (1.771)
≥ 711 (28.000) to < 864 (34.000)	≥ 5.6 (0.219) to ≤ 7.1 (0.281)	> 7.1 (0.281) to ≤ 52.0 (2.050)
≥ 864 (34.000) to < 965 (38.000)	—	≥ 5.6 (0.219) to ≤ 52.0 (2.050)
≥ 965 (38.000) to < 1422 (56.000)	—	≥ 6.4 (0.250) to ≤ 52.0 (2.050)
≥ 1422 (56.000) to < 1829 (72.000)	—	≥ 9.5 (0.375) to ≤ 52.0 (2.050)
≥ 1829 (72.000) to < 2134(84.000)	—	≥ 10.3 (0.406) to ≤ 52.0 (2.050)

<sup>a</sup> Pipe having the combination of specified outside diameter and specified wall thickness is defined as special light size pipe; other combinations given in this table are defined as regular size pipe.

# Dimensional Tolerances



## 💬 Tolerances for Diameter and Out-of-roundness

The diameter of a steel pipe is defined as the circumference of the pipe in any circumferential plane divided by  $\pi$ .

Specified Outside Diameter D mm (in.)	Diameter Tolerances mm (in.)				Out-of-roundness Tolerances mm (in.)	
	Pipe Except the End <sup>a</sup>		Pipe End <sup>a,b,c</sup>		Pipe Except the End <sup>a</sup>	Pipe End <sup>a,b,c</sup>
	SMLS Pipe	Welded Pipe	SMLS Pipe	Welded Pipe		
< 60.3 (2.375)	-0.8 (0.031) to +0.4 (0.016)		-0.8 (0.031) to +0.4 (0.016)		1.2 (0.048)	1.2 (0.036)
≥ 60.3 (2.375) to 168.3 (6.625)	±0.0075D		-0.4 (0.016) to +1.6 (0.063)		0.020D for D/t ≤ 75; by agreement for D/t > 75	0.015D for D/t ≤ 75; by agreement for D/t > 75
≥ 168.3 (6.625) to 610 (24.000)	±0.0075D	±0.0075D, but maximum of ±3.2 (0.125)	±0.005D, but maximum of ±1.6 (0.063)		0.020D	0.015D
≥ 610 (24.000) to 1422 (56.000)	±0.01D	±0.005D, but maximum of ±14.0 (0.063)	±2.0 (0.079)	± 1.6 (0.063)	0.015D, but maximum of 15 (0.6) for D/t ≤ 75; by agreement for D/t > 75	0.01D, but maximum of 13 (0.5) for D/t ≤ 75; by agreement for D/t > 75
> 1422 (56.000)	As agreed					

<sup>a</sup> The pipe end includes a length of 100 mm (4.0 in.) at each of the pipe extremities.  
<sup>b</sup> For SMLS pipe, the tolerances apply for t < 25.0 mm (0.984 in.), and the tolerances for thicker pipe shall be as agreed.  
<sup>c</sup> For expanded pipe with D ≥ 219.1 mm (8.625 in.) and for nonexpanded pipe, the diameter tolerance and the out-of-roundness tolerance may be determined using the calculated inside diameter (the specified outside diameter minus two times the specified wall thickness) or measured inside diameter rather than the specified outside diameter (see 10.2.8.3).

# Dimensional Tolerances



## 💬 Tolerances for Wall Thickness

Wall Thickness t mm (in.)	Tolerances <sup>a</sup> mm (in.)
<b>SMLS Pipe<sup>b</sup></b>	
≤ 4.0 (0.157)	+0.6 (0.024) -0.5 (0.020)
> 4.0 (0.157) to < 25.0 (0.984)	+0.150t -0.125t
≥ 25.0 (0.984)	+3.7 (0.146) or +0.1t, whichever is the greater -3.0 (0.120) or -0.1t, whichever is the greater
<b>Welded Pipe<sup>c, d</sup></b>	
≤ 5.0 (0.197)	±0.5 (0.020)
> 5.0 (0.197) to < 15.0 (0.591)	±0.1t
≥ 15.0 (0.591)	±1.5 (0.060)
<p><sup>a</sup> If the purchase order specifies a minus tolerance for wall thickness smaller than the applicable value given in this table, the plus tolerance for wall thickness shall be increased by an amount sufficient to maintain the applicable tolerance range.</p> <p><sup>b</sup> For pipe with D ≥ 355.6 mm (14.000 in.) and t ≥ 25.0 mm (0.984 in.), the wall thickness tolerance locally may exceed the plus tolerance for wall thickness by an additional 0.05t, provided that the plus tolerance for mass (see 9.14) is not exceeded.</p> <p><sup>c</sup> The plus tolerance for wall thickness does not apply to the weld area.</p> <p><sup>d</sup> See 9.13.2 for additional restrictions.</p>	

# Dimensional Tolerances



## 🗨️ Tolerance for Length

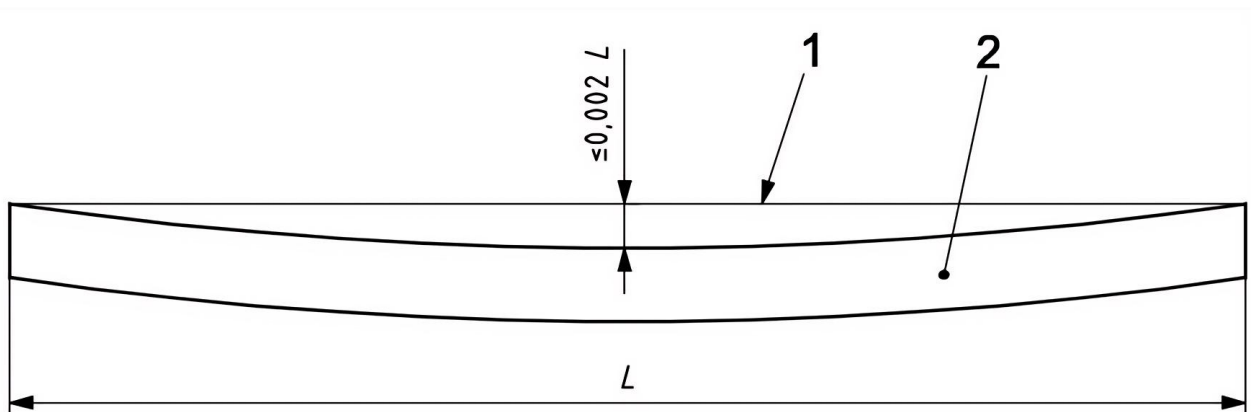
Approximate lengths shall be delivered within a tolerance of  $\pm 500$  mm (20 in.).

Tolerances for **random length**:

Random Length Designation m (ft)	Minimum Length m (ft)	Minimum Average Length for Each Order Item m (ft)	Maximum Length m (ft)
<b>Threaded-and-coupled Pipe</b>			
6 (20)	4.88 (16.0)	5.33 (17.5)	6.86 (22.5)
9 (30)	4.11 (13.5)	8.00 (26.2)	10.29 (33.8)
12 (40)	6.71 (22.0)	10.67 (35.0)	13.72 (45.0)
<b>Plain-end Pipe</b>			
6 (20)	2.74 (9.0)	5.33 (17.5)	6.86 (22.5)
9 (30)	4.11 (13.5)	8.00 (26.2)	10.29 (33.8)
12 (40)	4.27 (14.0)	10.67 (35.0)	13.72 (45.0)
15 (50)	5.33 (17.5)	13.35 (43.8)	16.76 (55.0)
18 (60)	6.40 (21.0)	16.00 (52.5)	19.81 (65.0)
24 (80)	8.53 (28.0)	21.34 (70.0)	25.91 (85.0)

## 🗨️ Tolerance for Straightness

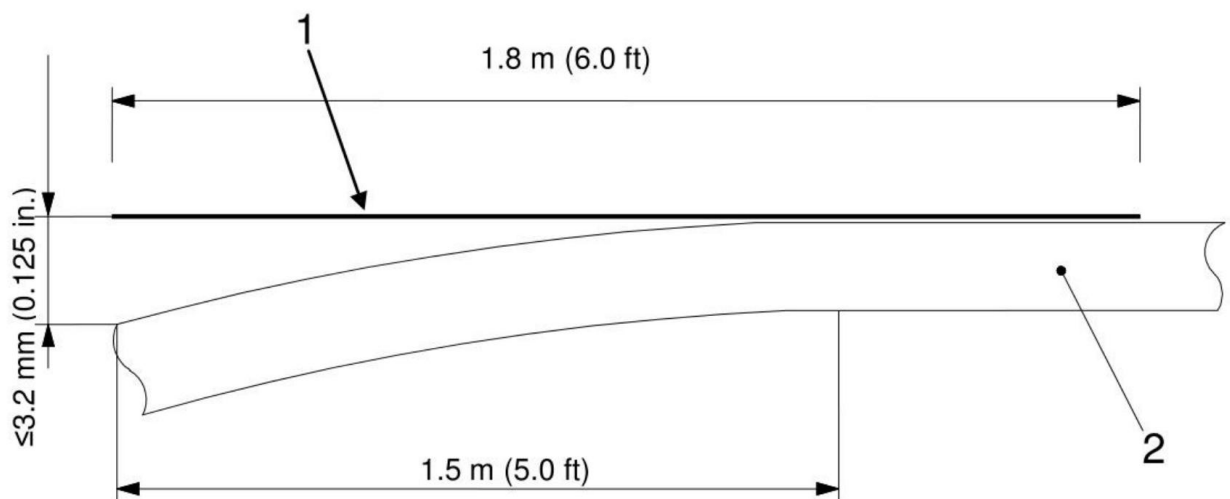
Straightness deviation over the entire length of the tube:  $\leq 0.200 L$ ;



# Dimensional Tolerances



Straightness deviation of 1.5 m (5.0 ft) pipe end of steel pipe:  $\leq 3.2\text{mm}$  (0.125 in.).

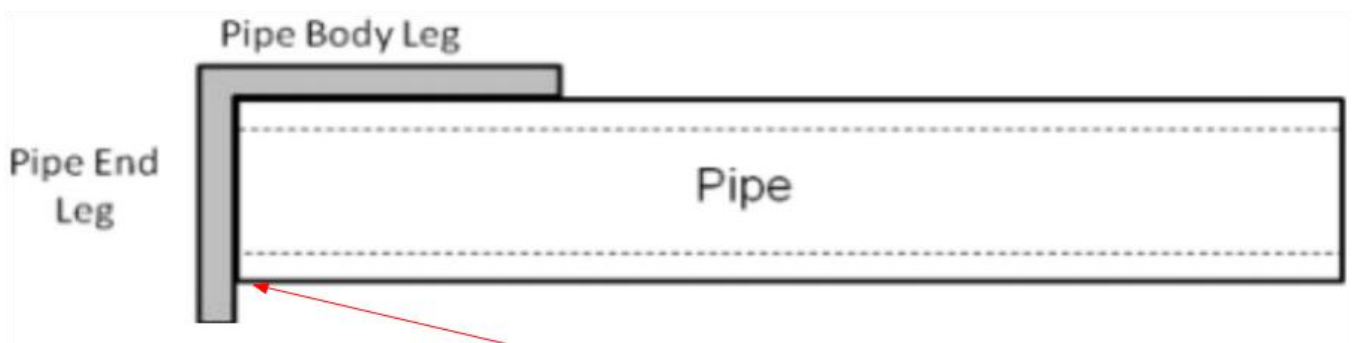


- Key**
- 1 straight line
  - 2 pipe

Figure 2—Measuring End Straightness

## 🗨️ Tolerance for Straightness

The out-of-squareness shall be  $< 1.6\text{ mm}$  (0.063 in.). The out-of-squareness is measured as the gap between the end of the pipe and the pipe end leg.



# Dimensional Tolerances



## Tolerances for the Weld Seam

**Maximum Permissible Radial Offset** for SAW and COW Pipe.

Specified Wall Thickness t mm (in.)	Maximum Permissible Radial Offset <sup>a</sup> mm (in.)
≤ 15.0 (0.590)	1.5 (0.060)
> 15.0 (0.590) to 25.0 (0.984)	0.1t
> 25.0 (0.984)	2.5 (0.098)

<sup>a</sup> These limits apply also to strip/plate end welds

**Maximum Permissible Weld Bead Height** for SAW and COW Pipe (Except at Pipe Ends).

Specified Wall Thickness mm (in.)	Weld Bead Height mm (in.) maxim	
	Internal Bead	External Bead
≤13.0 (0.512)	3.5 (0.138)	3.5 (0.138)
>13.0 (0.512)	3.5 (0.138)	4.5 (0.177)

The weld shall have a smooth transition to the surface of the adjacent steel pipe. Pipe end welds are to be ground to a length of 100 mm (4.0 in.) with a residual weld height of ≤ 0.5 mm (0.020 in.).

# Dimensional Tolerances



## Tolerances for Mass

### Each steel pipe:

- a) for special light size pipe: -5.0% - +10.0%;
- b) for pipe in Grade L175, L175P, A25, and A25P: -5.0% - +10.0%;
- c) for all other pipes: -3.5% - +10.0%.

### Pipe per lot ( $\geq$ 18 tons (20 tons) for order lot):

- a) for grades L175, L175P, A25, and A25P: -3.5 %;
- b) for all other grades: -1.75 %.



## API 5L X65 Applications



**API 5L X65** steel pipe is a high-strength steel pipe used primarily in the oil and gas industry, especially in long-distance transmission pipelines and high-pressure applications.

- 🔗 **Long-distance transportation pipelines:** Commonly used for long-distance oil and gas transportation pipelines, these pipelines need to withstand high pressure and extreme environmental conditions.
- 🔗 **Crossing pipelines:** Where pipelines need to cross rivers, mountains, or other obstacles, the high strength properties of API 5L X65 steel pipe make it ideal.
- 🔗 **Offshore platform:** In offshore oil and gas extraction, used to connect a drilling platform to a land terminal or to transfer hydrocarbons between offshore facilities.
- 🔗 **Industrial piping systems:** Used in petrochemicals, refineries, and other industrial facilities to transport a variety of media, such as crude oil, natural gas, chemical raw materials, etc.

## API 5L X65 Equivalent Material



API 5L X65 equivalents usually refer to steel pipe materials with similar chemical composition, mechanical properties, and applications, the following are some of the equivalent material standards and grades:

- 📄 ISO 3183: L450;
- 📄 EN 10208-2: L450MB;
- 📄 JIS G3454: STPG450;
- 📄 DNV OS-F101: S450;

## Our Supply Range



- ★ Standard: API 5L or ISO 3183;
- ★ PSL1: X65 or L450;
- ★ PSL2: X65Q, X65M or L450Q, L450M;
- ★ Pipe Type: Welded Carbon Steel Pipe;
- ★ Manufacturing Process: LSAW, SAWL or DSAW;
- ★ Outer Diameter: 350 – 1500;
- ★ Wall Thickness: 8 - 80mm;
- ★ Length: Approximate lengths or random length;
- ★ Pipe Schedules: SCH10, SCH20, SCH30, SCH40, SCH60, SCH80, SCH100, SCH120, SCH140 and SCH160.
- ★ Identification: STD, XS, XXS;
- ★ Coating: Paint, varnish, 3LPE, FBE, 3LPP, HDPE, galvanized, epoxy zinc-rich, cement weighted, etc.
- ★ Packing: Waterproof cloth, wooden case, steel belt or steel wire bundling, plastic or iron pipe end protector, etc. Customized.
- ★ Matching Products: Bends, flanges, pipe fittings, and other matching products are available.

## Our Supply Range



In addition to high quality API 5L X65 steel pipe, we can also provide a wide range of pipe coatings to meet the needs of different projects.



## Our Supply Range



Several different packaging methods for steel tubes:

