

SPECIFICATIONS

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KS (JIS)

Specification		KS D 3517 (JIS G 3445)																						
Classification		STKM 11A	STKM 12A	STKM 12B	STKM 12C	STKM 13A	STKM 13B	STKM 13C	STKM 14A	STKM 14B	STKM 14C	STKM 15A	STKM 15C	STKM 16A	STKM 16C	STKM 17A	STKM 17C	STKM 18A	STKM 18B	STKM 18C	STKM 19A	STKM 19C	STKM 20A	
Name of specification		Carbon steel Tubes for machine structural purposes																						
Chemical composition(%)	C(Max.)	0.12	0.20		0.25	0.30	0.25 - 0.35	0.35 - 0.45	0.45 - 0.55	0.18	0.25	0.25												
	Si(Max.)	0.35	0.35		0.35	0.35	0.35	0.40	0.40	0.55	0.55	0.55												
	Mn(Max.)	0.60	0.60		0.30 - 0.90	0.30 - 1.00	0.30 - 1.00	0.40 - 1.00	0.40 - 1.00	1.50	1.50	1.60												
	P(Max.)	0.040	0.040		0.040	0.040	0.040	0.40	0.40	0.040	0.040	0.040												
	S(Max.)	0.040	0.040		0.040	0.040	0.040	0.40	0.40	0.040	0.040	0.040												
Mechanical properties	Others	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Nb or V 0.15 below	
	Tensile strength (min.)	kgf/mm ²	30	35	40	48	38	45	52	42	51	56	48	59	52	63	56	66	45	50	52	50	56	55
		N/mm ²	290	340	390	470	370	440	510	410	500	550	470	580	510	620	550	650	440	490	510	490	550	540
	Yield point (min.)	kgf/mm ²	-	18	28	36	22	31	39	25	36	42	28	44	33	47	35	49	28	32	39	32	42	40
		N/mm ²	-	175	275	356	215	305	380	245	355	410	275	430	325	460	345	480	275	315	380	315	410	390
Flattening test	Elongation (min.) (%)	No.11 specimen	35	35	25	20	30	20	15	25	15	15	22	12	20	12	20	10	25	23	15	23	15	23
		No.12 Specimen																						
		No. 5 specimen	30	30	20	15	25	15	10	20	10	10	17	7	15	7	15	5	20	18	10	18	10	18
Bending test	H : Distance between Flattening plates(mm)																							
	D : Outside diameter of the pipe(mm)																							
Hydrostatic test	t : Wall thickness of the pipe(mm)	H = 1/2D	H = 2/3D	H = 2/3D	-	H = 2/3D	H = 3/4D	-	H = 3/4D	H = 7/8D	-	H = 3/4D	-	H = 7/8D	-	H = 7/8D	H = 7/8D	-	H = 7/8D	H = 7/8D	-	H = 7/8D	H = 7/8D	
	Bending angle X Inside radius (D : Outside diameter of the pipe)	180° X 4D	90° X 6D	90° X 6D	-	90° X 6D	90° X 6D	-	90° X 6D	90° X 8D	-	90° X 6D	-	90° X 6D	-	90° X 6D	90° X 8D	-	90° X 6D	90° X 8D	-	90° X 6D	90° X 6D	
Non-destructive Test	Hydrostatic test pressure (kgf/cm ²)																							
	Ultrasonic test or eddy current test																							
Others		-																						

KS (JIS)

Specification		KS D 3566 (JIS G 3444)					KS F 4602 (JIS A 5525)		KS D 3780 (JIS G 3474)		
Classification		STK 290 (STK 290)	STK 400 (STK 400)	STK 500 (STK 500)	STK 490 (STK490)	STK 540 (STK 540)	SPS 400 (SKK 400)	SPS 490 (SKK 490)	STKT 540 (STKT 540)	STKT 590 (STKT 590)	
Name of specification		Carbon steel tubes for general structural purposes					Steel pipe piles		High tensile strength steel for tower structural purposes		
Chemical composition(%)	C(Max.)	-	0.25	0.24	0.18	0.23	0.25	0.18	0.23	0.12	
	Si(Max.)	-	-	0.35	0.55	0.55	-	0.55	0.55	0.40	
	Mn(Max.)	-	-	0.30 - 1.30	1.50	1.50	-	1.50	1.50	2.00	
	P(Max.)	0.050	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.030	
	S(Max.)	0.050	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.030	
Mechanical properties	Others	-	-	-	-	-	-	-	-	0.15 (Nb+V)	
	Tensile strength (min.)	kgf/mm ²	30	41	51	50	55	41	50	55	60 - 70
		N/mm ²	290	400	500	490	540	400	490	540	590 - 740
	Yield point (min.)	kgf/mm ²	-	24	36	32	40	24	32	40	45
		N/mm ²	-	235	356	315	390	235	315	390	440
Flattening test	Elongation (min.) (%)	No.11 specimen	30	23	15	23	20	23	23	20	20
		No.12 Specimen									
		No. 5 specimen	25	18	10	18	16	18	18	16	16
Bending test	H : Distance between Flattening plates(mm)	H = 2/3D	H = 2/3D	H = 7/8D	H = 7/8D	H = 7/8D	H = 2/3D	H = 7/8D	H = 7/8D	H = 3/4D	
	D : Outside diameter of the pipe(mm)										
Hydrostatic test	t : Wall thickness of the pipe(mm)										
	Bending angle X Inside radius (D : Outside diameter of the pipe)	90° X 6D	90° X 6D	90° X 8D	90° X 6D	90° X 6D					
Non-destructive Test	Hydrostatic test pressure (kgf/cm ²)			By agreement				By agreement		By agreement	
	Ultrasonic test or eddy current test or radiographic test			By agreement				By agreement		By agreement	
Others				Tensile strength test for welded part (Arc welded steel pipes 350mm or above)				Tensile strength test for welded part (Arc welded steel pipes)		- Tensile strength test for welded part (Arc welded steel pipes 350mm or above) - Impact test (STKT590) - 0.40% or less for carbon unit quantity	