



PT INDONESIA STEEL TUBE WORKS

MANUFACTURER OF PRIME QUALITY MECHANICAL TUBES, BLACK PIPES AND GALVANIZED PIPES

MECHANICAL PROPERTIES
CHEMICAL COMPOSITIONS
TOLERANCE ON OUTSIDE DIAMETERS
TOLERANCE ON WALL THICKNESS



MECHANICAL PROPERTY

GRADE		DESIGNATION	TENSILE STRENGTH (N/MM²)	YIELD POINT OR PROOF STRESS (N/MM²)	ELONGATION (%)		FLATTENING STRENGTH	BENDING STRENGTH	
					NO.4, NO. 11, NO. 12 TEST PIECES LONGITUDINAL DIRECTION	NO.4, NO. 5, TEST PIECES TRANSVERCE DIRECTION	DISTANCE BETWEEN FLAT PLATES (H) (D: OUTSIDE DIAMETER OF THE TUBE)	BEND ANGLE	INSIDE RADIUS (D: OUTSIDE DIAMETER OF THE TUBE)
GRADE 11	A	STKM 11 A	290 MIN.	-	35 MIN.	30 MIN.	1/2 D	180°	4 D
GRADE 12	A	STKM 12 A	340 MIN.	175 MIN.	35 MIN.	30 MIN.	2/3 D	90°	6 D
	B	STKM 12 B	390 MIN.	275 MIN.	25 MIN.	20 MIN.	2/3 D	90°	6 D
	C	STKM 12 C	470 MIN.	355 MIN.	20 MIN.	15 MIN.	-	-	-
GRADE 13	A	STKM 13 A	370 MIN.	215 MIN.	30 MIN.	25 MIN.	2/3 D	90°	6 D
	B	STKM 13 B	440 MIN.	305 MIN.	20 MIN.	15 MIN.	3/4 D	90°	6 D
	C	STKM 13 C	510 MIN.	380 MIN.	15 MIN.	10 MIN.	-	-	-
GRADE 14	A	STKM 14 A	410 MIN.	245 MIN.	25 MIN.	20 MIN.	3/4 D	90°	6 D
	B	STKM 14 B	500 MIN.	355 MIN.	15 MIN.	10 MIN.	7/8 D	90°	8 D
	C	STKM 14 C	550 MIN.	410 MIN.	15 MIN.	10 MIN.	-	-	-
GRADE 15	A	STKM 15 A	470 MIN.	275 MIN.	22 MIN.	17 MIN.	3/4 D	90°	6 D
	C	STKM 15 C	580 MIN.	430 MIN.	12 MIN.	7 MIN.	-	-	-
GRADE 16	A	STKM 16 A	510 MIN.	325 MIN.	20 MIN.	15 MIN.	7/8 D	90°	8 D
	C	STKM 16 C	620 MIN.	460 MIN.	12 MIN.	7 MIN.	-	-	-
GRADE 17	A	STKM 17 A	550 MIN.	345 MIN.	20 MIN.	15 MIN.	7/8 D	90°	8 D
	C	STKM 17 C	650 MIN.	480 MIN.	10 MIN.	5 MIN.	-	-	-
GRADE 18	A	STKM 18 A	440 MIN.	275 MIN.	25 MIN.	20 MIN.	7/8 D	90°	6 D
	B	STKM 18 B	490 MIN.	315 MIN.	23 MIN.	18 MIN.	7/8 D	90°	8 D
	C	STKM 18 C	510 MIN.	380 MIN.	15 MIN.	10 MIN.	-	-	-
GRADE 19	A	STKM 19 A	490MIN.	315 MIN.	23 MIN.	18 MIN.	7/8 D	90°	6 D
	C	STKM 19 C	550 MIN.	410 MIN.	15 MIN.	10 MIN.	-	-	-
GRADE 20	A	STKM 20 A	540 MIN.	390 MIN	23 MIN.	18 MIN.	7/8 D	90°	6 D

CHEMICAL COMPOSITION

GRADE	DESIGNATION		CHEMICAL COMPOSITION %MAX					
			C	Si	Mn	P	S	Nb or V
GRADE 11	A	STKM 11 A	0.12	0.35	0.60	0.040	0.040	-
GRADE 12	A	STKM 12 A	0.20	0.35	0.60	0.040	0.040	-
	B	STKM 12 B						
	C	STKM 12 C						
GRADE 13	A	STKM 13 A	0.25	0.35	0.30 to 0.90	0.040	0.040	-
	B	STKM 13 B						
	C	STKM 13 C						
GRADE 14	A	STKM 14 A	0.30	0.35	0.30 to 1.00	0.040	0.040	-
	B	STKM 14 B						
	C	STKM 14 C						
GRADE 15	A	STKM 15 A	0.25 to 0.35	0.35	0.30 to 1.00	0.040	0.040	-
	C	STKM 15 C						
GRADE 16	A	STKM 16 A	0.35 to 0.45	0.40	0.40 to 1.00	0.040	0.040	-
	C	STKM 16 C						
GRADE 17	A	STKM 17 A	0.45 to 0.55	0.40	0.40 to 1.00	0.040	0.040	-
	C	STKM 17 C						
GRADE 18	A	STKM 18 A	0.18	0.55	1.50	0.040	0.040	-
	B	STKM 18 B						
	C	STKM 18 C						
GRADE 19	A	STKM 19 A	0.25	0.55	1.50	0.040	0.040	-
	C	STKM 19 C						
GRADE 20	A	STKM 20 A	0.25	0.55	1.60	0.040	0.040	0.15

TOLERANCES ON OUTSIDE DIAMETER

DIVISION	TOLERANCES ON OUTSIDE DIAMETER	
NO. 1	< 50 mm	±0.55 mm
	≥ 50 mm	±1%
NO. 2	< 50 mm	±0.25 mm
	≥ 50 mm	±0.5 %
NO. 3	< 25 mm	±0.12 mm
	25 mm ≤D < 40mm	±0.15 mm
	40 mm ≤D < 50mm	±0.18 mm
	50 mm ≤ D < 60mm	±0.20 mm
	60 mm ≤D < 70mm	±0.23 mm
	70 mm ≤D < 80mm	±0.25 mm
	80 mm ≤ D < 90mm	±0.30 mm
	90 mm ≤D < 100mm	±0.40 mm
	≥ 100 mm	±0.5 %

TOLERANCES ON WALL THICKNESS

DIVISION	TOLERANCES ON OUTSIDE DIAMETER	
NO. 1	< 4 mm	±0.6 mm
		- 0.5 mm
	≥ 4 mm	+ 15 %
NO. 2		- 12.5 %
	< 3 mm	±0.3 mm
	≥ 3 mm	±10 %
NO. 3	< 2 mm	±0.15 mm
	≥ 2 mm	±8 %