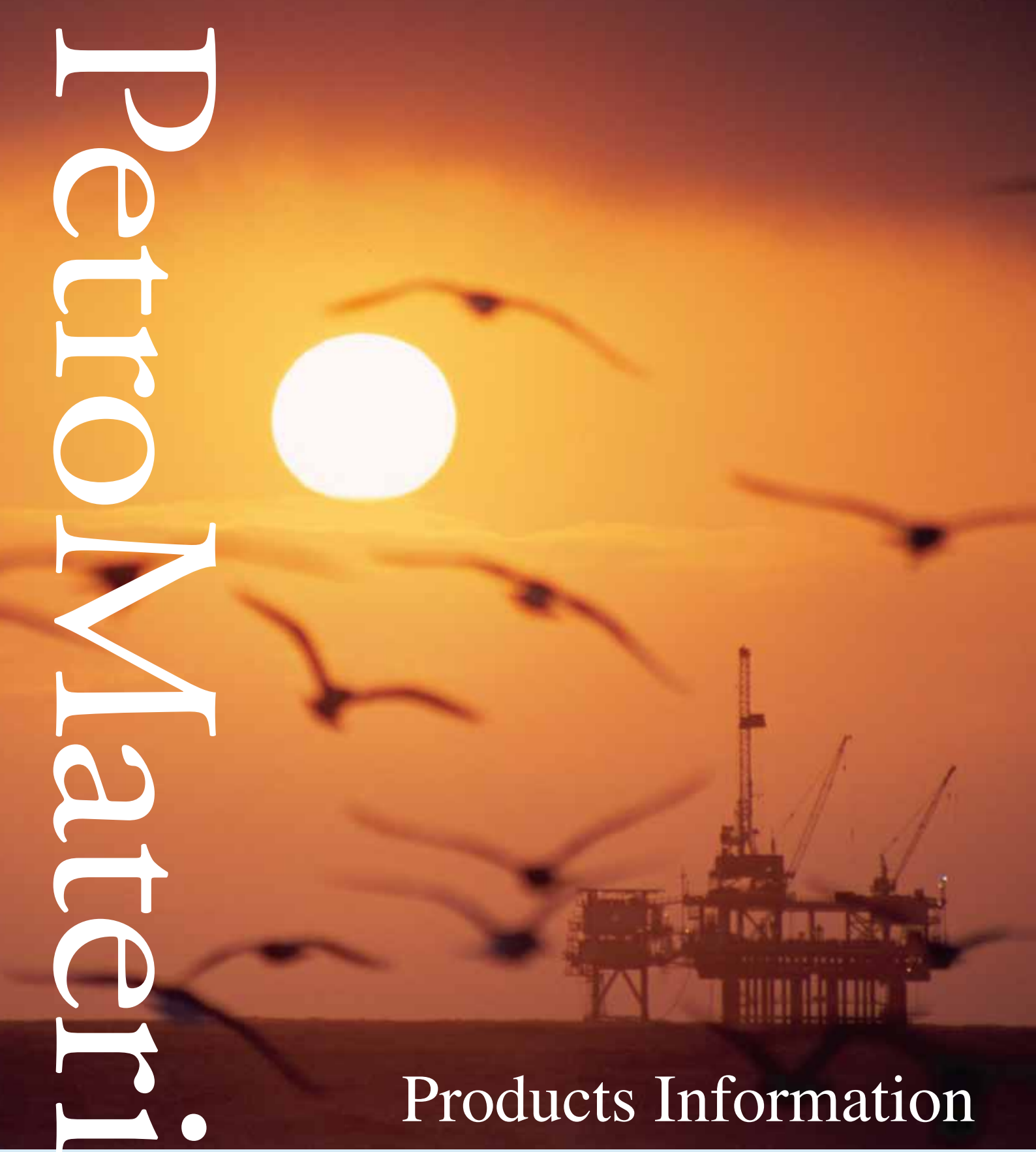
PetroMaterials.



Products Information

PetroMaterials Corporation

PetroMaterials®

PetroMaterials Corporation ("PMC"), is a major oil tubular goods manufacture and supplier for oil and gas drilling and exploration industry.

With over 25 year’ s industrial experience, PMC offers a wide range of tubular goods including Drill Pipe, Drill Collar, Heavy Weight Drill Pipe, Casing, and Tubing. Our products are manufactured from finest quality steel from well-known mills in Japan and USA. By using specially designed machines and Japanese manufacturing technology, we process those materials into stabile high quality products.

The key equipment using in PMC facility was designed or developed by our life experienced technician. Those equipments were made in Japan specially.

PMC products cover full API grade and size, and also provide sour service drill pipe or high torque tool joint.

From well design to running pipe stage, PMC technical and sales team is always ready to give professional support to our customer.

Best quality born of best techniques

We believe technical ability is the core value of us, and a premium quality is the reflection of technical ability.

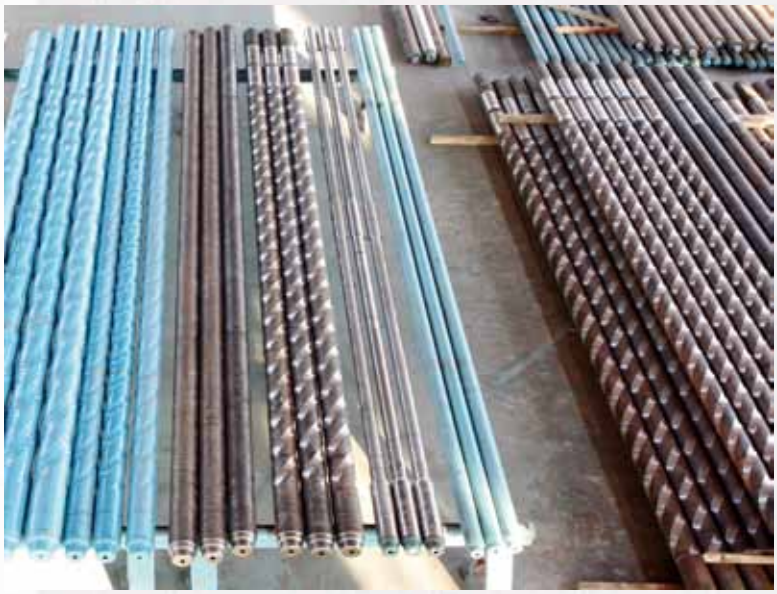
PMC is committed to total quality and customer satisfaction, and endeavors to continuously improve its technical skills and quality.

All mills of PMC have been assessed and certified by API (American Petroleum Institute) and being fully in compliance with ISO Quality System. We independently developed a tailored software called Enterprise Resource Planning (ERP) designed to provide the highest level of quality assurance program. Experienced Japanese engineers and experts perform their operations in mills on a long-team basis to improve and update our technical skills and quality assurance program. PMC endeavors to provide the best products and services to meet the exact needs of its customers in quality, cost, technical properties and delivery.

Our marketing and technical teams have successfully established interactive connections with customers to understand and meet their exacting needs.

PMC has successfully expanded its business from Japan to all over the world.

Products



API Drill Pipe

Size : 2-3/8" ~ 6-5/8"
Grade : E75,X95,G105,S135

API Tool Joint

Size : 2-3/8" ~ 6-5/8"
Grade : SS75,SS95,SS105

Tool Joint

Size : NC26 ~ NC50
5-1/2FH,6-5/8FH
Grade : API-120Ksi grade

DSHT Tool Joint

Size : NC26 ~ NC50
5-1/2FH,6-5/8FH
Grade : API-120Ksi grade

Sour Service Tool Joint

Size : NC26 ~ NC50
5-1/2FH,6-5/8FH
Grade : SS-110Ksi grade

Drill Collar

Size : 2-7/8 " ~ 11"
Grade : AISI4145HM
Non-Magnetic(DNM110)

Heavy Weight Drill Pipe

Integral Type

Size : 2-7/8" ~ 6-5/8"
Grade : AISI 4145HM

Friction Weld Type

Size : 2-7/8" ~ 6-5/8"
TJ Grade : AISI 4145HM
Pipe Grade : AISI 1340 or Equivalent

Casing

Size : 4-1/2” ~ 20”
Grade : H40,J55,K55,N80,L80,T95,P110
End Finish : STC,LTC,BTC

Premium Connection

Size : 4-1/2” ~ 13-3/8”

Tubing

Size : 2-3/8” ~ 4-1/2”
Grade : H40,J55,N80,L80,T95,P110
End Finish : NUE,EUE

Drill Pipe Plant

Upsetter Machine

Size : 2-3/8” ~ 6-5/8”
Upset Force : 500Ton

Quench & Temper Furnace

Size : 2-3/8” ~ 6-5/8”
Type : Walking Beam Type
Capacity : 5Ton/Hour

Rotary Straightener

Size : 2-3/8” ~ 6-5/8”
Type : 10 Rolls Hot Straightener

Ultrasonic Inspection Machine

Size : 2-3/8” ~ 6-5/8”
Inspection : Outer/Inner Surface
Longitudinal/Circumferential
Wall Thickness

NC Lathe

OD Turning & ID Boring
for Upset Area

Rotary Friction Welder for Drill Pipe & Heavy Weight Drill Pipe

Size : 2-3/8" ~ 6-5/8"
Motor : 132KW Inverter Motor
Upset Force : Max 1,500KN

Induction Heater

Water Quenching & Tempering
for Weld Zone
Capacity : 150KW for Quenching
100KW for Tempering

Ultrasonic Inspection for Weld Zone

Casing & Tubing Plant

20” NC Lathe

Size : 7” ~ 20”

Hydrostatic Pressure Test Machine

Size : 7” ~ 20”

Coupling Make-up Machine

Size : 7” ~ 20”

7” NC Lathe

Size : 2-3/8” ~ 7”

Hydrostatic Pressure Test Machine

Size : 2-3/8” ~ 7”

Coupling Make-up Machine

Size : 2-3/8” ~ 7”

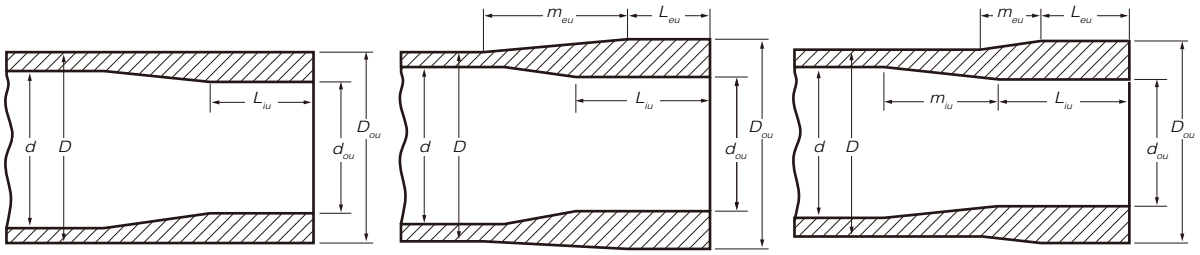
Automatic Weighing & Coating Equipment

Upset Drill Pipe

Sizes and Grades

Size	Weight Designation	Calculated Plain-End Weight, Wpe		Outside Diameter (D)		Wall Thickness (t)		Grade	Upset Ends,for Weld-on Tool Joints		
									Int.Upset	Ext.Upset	Int.-Ext.Upset
in	lb/ft	lb/ft	kg/m	in	mm	in	mm		IU	EU	IEU
2 3/8	6.65	6.27	9.33	2.375	60.3	0.280	7.11	E, X, G, S	-	○	-
2 7/8	10.40	9.72	14.47	2.875	73.0	0.362	9.19	E, X, G, S	○	○	-
3 1/2	9.50	8.81	13.12	3.500	88.9	0.254	6.45	E	○	○	-
	13.30	12.32	18.34	3.500	88.9	0.368	9.35	E, X, G, S	○	○	-
	15.50	14.64	21.79	3.500	88.9	0.449	11.40	E	○	○	-
	15.50	14.64	21.79	3.500	88.9	0.449	11.40	X, G, S	-	○	○
4	14.00	12.95	19.27	4.000	101.6	0.330	8.38	E, X, G, S	○	○	-
4 1/2	13.75	12.25	18.23	4.500	114.3	0.271	6.88	E	○	○	-
	16.60	15.00	22.32	4.500	114.3	0.337	8.56	E, X, G, S	-	○	○
	20.00	18.71	27.84	4.500	114.3	0.430	10.92	E, X, G, S	-	○	○
5	16.25	14.88	22.16	5.000	127.0	0.296	7.52	X, G, S	○	-	-
	19.50	17.95	26.70	5.000	127.0	0.362	9.19	E	-	-	○
	19.50	17.95	26.70	5.000	127.0	0.362	9.19	X, G, S	-	○	○
	25.60	24.05	35.80	5.000	127.0	0.500	12.70	E	-	-	○
	25.60	24.05	35.80	5.000	127.0	0.500	12.70	X, G, S	-	○	○
5 1/2	21.90	19.83	29.52	5.500	139.7	0.361	9.17	E, X, G, S	-	-	○
	24.70	22.56	33.57	5.500	139.7	0.415	10.54	E, X, G, S	-	-	○
6 5/8	25.20	22.21	33.04	6.625	168.3	0.330	8.38	E, X, G, S	-	-	○
	27.72	24.24	36.06	6.625	168.3	0.362	9.19	E, X, G, S	-	-	○

○: For All Grades ▲: For Grades X, G, S



Inetrnal Upstet　　External Upstet　　Internal-External Upstet

API Drill Pipe and Tool Joint Combinations

DRILL PIPE						TOOL JOINT				
Outside Dia. Of Pipe (OD)	Wall Thichness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp)
in	Weight Designation	in	in				in	mm	in	mm	in
2 3/8	6.65	0.280	1.815	EU	E75	NC26 2-3/8IF	3 3/8	85.7	1 3/4	44.5	10
					X95		3 3/8	85.7	1 3/4	44.5	10
					G105		3 3/8	85.7	1 3/4	44.5	10
					S135		3 3/8	85.7	1 3/4	44.5	10
2 7/8	10.40	0.362	2.151	EU	E75	NC31 2-7/8IF	4 1/8	104.8	2 1/8	54.0	10 1/2
					X95		4 1/8	104.8	2	50.8	10 1/2
					G105		4 1/8	104.8	2	50.8	10 1/2
					S135		4 3/8	111.1	1 5/8	41.3	10 1/2
3 1/2	9.50	0.254	2.992	EU	E75	NC38	4 3/4	120.7	2 11/16	68.3	11 1/2
3 1/2	13.30	0.368	2.764	EU	E75	NC38 3-1/2IF	4 3/4	120.7	2 11/16	68.3	12
					X95		5	127.0	2 9/16	65.1	12
					G105		5	127.0	2 7/16	61.9	12
					S135		5	127.0	2 1/8	54.0	12
3 1/2	15.50	0.449	2.602	EU	E75	NC38 3-1/2IF	5	127.0	2 9/16	65.1	12
					X95		5	127.0	2 7/16	61.9	12
					G105		5	127.0	2 1/8	54.0	12
3 1/2	15.50	0.449	2.602	EU	S135	NC40	5 1/2	139.7	2 1/4	57.2	11 1/2
4	14.00	0.330	3.340	IU	E75	NC40	5 1/4	133.4	2 13/16	71.4	11 1/2
					X95		5 1/4	133.4	2 11/16	68.3	11 1/2
					G105		5 1/2	139.7	2 7/16	61.9	11 1/2
					S135		5 1/2	139.7	2	50.8	11 1/2
4	14.00	0.330	3.340	EU	E75	NC46	6	152.4	3 1/4	82.6	11 1/2
					X95		6	152.4	3 1/4	82.6	11 1/2
					G105		6	152.4	3 1/4	82.6	11 1/2
					S135		6	152.4	3	76.2	11 1/2
4 1/2	13.75	0.271	3.958	IU	E75	NC46	6	152.4	3 3/8	85.7	11 1/2
4 1/2	13.75	0.271	3.958	EU	E75	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2
4 1/2	16.60	0.337	3.826	IEU	E75	NC46	6 1/4	158.8	3 1/4	82.6	11 1/2
					X95		6 1/4	158.8	3	76.2	11 1/2
					G105		6 1/4	158.8	3	76.2	11 1/2
					S135		6 1/4	158.8	2 3/4	69.9	11 1/2
4 1/2	16.60	0.337	3.826	EU	E75	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2
					X95		6 5/8	168.3	3 3/4	95.3	11 1/2
					G105		6 5/8	168.3	3 3/4	95.3	11 1/2
					S135		6 5/8	168.3	3 1/2	88.9	11 1/2
4 1/2	20.00	0.430	3.640	IEU	E75	NC46	6 1/4	158.8	3	76.2	11 1/2
					X95		6 1/4	158.8	2 3/4	69.9	11 1/2
					G105		6 1/4	158.8	2 1/2	63.5	11 1/2
					S135		6 1/4	158.8	2 1/4	57.2	11 1/2
4 1/2	20.00	0.430	3.640	EU	E75	NC50	6 5/8	168.3	3 5/8	92.1	11 1/2
					X95		6 5/8	168.3	3 1/2	88.9	11 1/2
					G105		6 5/8	168.3	3 1/2	88.9	11 1/2
					S135		6 5/8	168.3	3	76.2	11 1/2

				MECHANICAL PROPERIES						
Pin Tong space (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommennd Make-up Torque
in	in	in	in	lbs	psi (Min WT-12.5%)	psi	ft-lbs	ft-lbs	ft-lbs	ft-lbs
7	8	15	2 9/16	138,000	15,470	15,600	6,250	6,875	1.10	4,130
7	8	15	2 9/16	175,000	19,600	19,760	7,920	6,875	0.87	4,130
7	8	15	2 9/16	194,000	21,660	21,840	8,750	6,875	0.79	4,130
7	8	15	2 9/16	249,000	27,850	28,080	11,250	6,875	0.61	4,130
7	9	16	3 3/16	214,000	16,530	16,510	11,550	11,871	1.03	7,120
7	9	16	3 3/16	272,000	20,930	20,910	14,640	13,196	0.90	7,920
7	9	16	3 3/16	300,000	23,140	23,110	16,180	13,196	0.82	7,920
7	9	16	3 3/16	386,000	29,750	29,720	20,800	16,946	0.81	10,170
8	10 1/2	18 1/2	3 7/8	194,000	9,530	10,000	14,150	18,107	0.91	10,860
8	10 1/2	18 1/2	3 7/8	272,000	13,800	14,110	18,550	18,107	0.98	10,860
8	10 1/2	18 1/2	3 7/8	344,000	17,480	17,880	23,500	20,327	0.86	12,200
8	10 1/2	18 1/2	3 7/8	380,000	19,320	19,760	25,970	22,213	0.86	13,330
8	10 1/2	18 1/2	3 7/8	489,000	24,840	25,400	33,390	26,516	0.79	15,910
8	10 1/2	18 1/2	3 7/8	323,000	16,840	16,770	21,090	20,327	0.96	12,200
8	10 1/2	18 1/2	3 7/8	409,000	21,330	21,250	26,710	22,213	0.83	13,330
8	10 1/2	18 1/2	3 7/8	452,000	23,570	23,480	29,520	26,516	0.90	15,910
7	10	17	3 7/8	581,000	30,310	30,190	37,950	32,944	0.87	19,770
7	10	17	4 3/16	285,000	10,830	11,350	23,290	23,487	1.01	14,090
7	10	17	4 3/16	361,000	13,720	14,380	29,500	25,673	0.87	15,400
7	10	17	4 3/16	400,000	15,160	15,900	32,600	30,114	0.92	18,070
7	10	17	4 3/16	514,000	19,490	20,140	41,920	36,363	0.87	21,820
7	10	17	4 1/2	285,000	10,830	11,350	23,290	33,626	1.44	20,180
7	10	17	4 1/2	361,000	13,720	14,380	29,500	33,626	1.14	20,180
7	10	17	4 1/2	400,000	15,160	15,900	32,600	33,626	1.03	20,180
7	10	17	4 1/2	514,000	19,490	20,140	41,920	39,230	0.94	23,540
7	10	17	4 11/16	270,000	7,900	7,170	25,910	30,656	1.18	18,390
7	10	17	5	270,000	7,900	7,170	25,910	38,060	1.47	22,840
7	10	17	4 11/16	331,000	9,830	10,390	30,810	33,994	1.10	20,400
7	10	17	4 11/16	419,000	12,450	12,760	39,020	39,659	1.02	23,800
7	10	17	4 11/16	463,000	13,760	13,820	43,130	39,659	0.92	23,800
7	10	17	4 11/16	595,000	17,690	16,770	55,450	44,872	0.81	26,920
7	10	17	5	331,000	9,830	10,390	30,810	38,060	1.24	22,840
7	10	17	5	419,000	12,450	12,760	39,020	38,060	0.98	22,840
7	10	17	5	463,000	13,760	13,820	43,130	38,060	0.88	22,840
7	10	17	5	595,000	17,690	16,770	55,450	45,128	0.81	27,080
7	10	17	4 11/16	412,000	12,540	12,960	36,900	39,659	1.07	23,800
7	10	17	4 11/16	522,000	15,890	16,420	46,740	44,872	0.96	26,920
7	10	17	4 11/16	577,000	17,560	18,150	51,660	49,631	0.96	29,780
7	10	17	4 11/16	742,000	22,580	23,330	66,420	53,937	0.81	32,360
7	10	17	5	412,000	12,540	12,960	36,900	41,655	1.13	24,990
7	10	17	5	522,000	15,890	16,420	46,740	45,128	0.97	27,080
7	10	17	5	577,000	17,560	18,150	51,660	45,128	0.87	27,080
7	10	17	5	742,000	22,580	23,330	66,420	57,801	0.87	34,680

API Drill Pipe and Tool Joint Combinations

DRILL PIPE						TOOL JOINT					
Outside Dia. Of Pipe (OD)	Wall Thichness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp)
in	Weight Designation	in	in				in	mm	in	mm	in
5	19.50	0.326	4.276	IEU	E75	NC50	6 5/8	168.3	3 3/4	95.3	11 1/2
					X95		6 5/8	168.3	3 1/2	88.9	11 1/2
					G105		6 5/8	168.3	3 1/4	82.6	11 1/2
					S135		6 5/8	168.3	2 3/4	69.9	11 1/2
5	25.60	0.500	4.000	IEU	E75	NC50	6 5/8	168.3	3 1/2	88.9	11 1/2
					X95		6 5/8	168.3	3	76.2	11 1/2
					G105		6 5/8	168.3	2 3/4	69.9	11 1/2
5	19.50	0.362	4.276	IEU	E75	5 1/2FH	7	177.8	3 3/4	95.3	13
					X95		7	177.8	3 3/4	95.3	13
					G105		7	177.8	3 3/4	95.3	13
					S135		7 1/4	184.2	3 1/2	88.9	13
5	25.60	0.500	4.000	IEU	E75	5 1/2FH	7	177.8	3 1/2	88.9	13
					X95		7	177.8	3 1/2	88.9	13
					G105		7 1/4	184.2	3 1/2	88.9	13
					S135		7 1/4	184.2	3 1/4	82.6	13
5 1/2	21.90	0.361	4.778	IEU	E75	5 1/2FH	7	177.8	4	101.6	13
					X95		7	177.8	3 3/4	95.3	13
					G105		7 1/4	184.2	3 1/2	88.9	13
					S135		7 1/2	190.5	3	76.2	13
5 1/2	24.70	0.415	4.670	IEU	E75	5 1/2FH	7	177.8	4	101.6	13
					X95		7 1/4	184.2	3 1/2	88.9	13
					G105		7 1/4	184.2	3 1/2	88.9	13
					S135		7 1/2	190.5	3	76.2	13
6 5/8	25.20	0.330	5.965	IEU	E75	6 5/8FH	8	203.2	5	127.0	13
					X95		8	203.2	5	127.0	13
					G105		8 1/4	209.6	4 3/4	120.7	13
					S135		8 1/2	215.9	4 1/4	108.0	13
6 5/8	27.70	0.362	5.901	IEU	E75	6 5/8FH	8	203.2	5	127.0	13
					X95		8 1/4	209.6	4 3/4	120.7	13
					G105		8 1/4	209.6	4 3/4	120.7	13
					S135		8 1/2	215.9	4 1/4	108.0	13

				MECHANICAL PROPERIES						
Pin Tong Spase (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommennd Make-up Torque
in	in	in	in	lbs	psi (Min WT-12.5%)	psi	ft-lbs	ft-lbs	ft-lbs	ft-lbs
7	10	17	5 1/8	396,000	9,500	10,070	41,170	38,060	0.92	22,840
7	10	17	5 1/8	501,000	12,040	12,020	52,140	45,128	0.87	27,080
7	10	17	5 1/8	554,000	13,300	13,000	57,630	51,708	0.90	31,020
7	10	17	5 1/8	712,000	17,100	15,670	74,100	63,407	0.86	38,040
7	10	17	5 1/8	530,000	13,130	13,500	52,260	45,128	0.86	27,080
7	10	17	5 1/8	672,000	16,630	17,100	66,190	57,801	0.87	34,680
7	10	17	5 1/8	742,000	18,380	18,900	73,160	63,407	0.87	38,040
8	10	18	5 1/8	396,000	9,500	10,070	41,170	62,903	1.53	37,740
8	10	18	5 1/8	501,000	12,040	12,020	52,140	62,903	1.21	37,740
8	10	18	5 1/8	554,000	13,300	13,000	57,630	62,903	1.09	37,740
8	10	18	5 1/8	712,000	17,100	15,670	74,100	72,484	0.98	43,490
8	10	18	5 1/8	530,000	13,130	13,500	52,260	62,903	1.20	37,740
8	10	18	5 1/8	672,000	16,630	17,100	66,190	62,903	0.95	37,740
8	10	18	5 1/8	742,000	18,380	18,900	73,160	72,484	0.99	43,490
8	10	18	5 1/8	954,000	23,630	24,300	94,060	78,716	0.84	47,230
8	10	18	5 11/16	437,000	8,610	5,440	50,710	55,934	1.10	33,560
8	10	18	5 11/16	554,000	10,910	7,850	64,230	62,903	0.98	37,740
8	10	18	5 11/16	612,000	12,060	9,060	70,990	72,484	1.02	43,490
8	10	18	5 11/16	787,000	15,510	12,670	91,280	87,171	0.95	52,300
8	10	18	5 11/16	497,000	9,900	10,460	56,570	55,934	0.99	33,560
8	10	18	5 11/16	630,000	12,540	10,910	71,660	72,484	1.01	43,490
8	10	18	5 11/16	696,000	13,860	12,440	79,200	72,484	0.92	43,490
8	10	18	5 11/16	895,000	17,830	17,020	101,830	87,171	0.86	52,300
8	11	19	6 15/16	489,000	6,540	1,550	70,580	73,662	1.04	44,200
8	11	19	6 15/16	620,000	8,280	2,920	89,400	73,662	0.82	44,200
8	11	19	6 15/16	685,000	9,150	3,610	98,810	86,238	0.87	51,740
8	11	19	6 15/16	881,000	11,770	6,040	127,050	109,227	0.86	65,540
8	11	19	6 15/16	534,000	7,170	2,740	76,300	73,662	0.97	44,200
8	11	19	6 15/16	677,000	9,080	4,430	96,640	86,238	0.89	51,740
8	11	19	6 15/16	748,000	10,040	5,270	106,810	86,238	0.81	51,740
8	11	19	6 15/16	962,000	12,910	7,810	137,330	109,227	0.80	65,540

Sour Service Drill Pipe

Tensile Properties

Grade	Yield Strength (Mpa/Ksi)		Tensile Strength (Mpa/Ksi)	
	Min	Max	Min	Max
SS75	517 / 75	655 / 95	655 / 95	793 / 115
SS95	665 / 95	758 / 110	724 / 105	896 / 130
SS105	724 / 105	827 / 120	793 / 115	965 / 140

Hardness (HRC)

Grade	Average	Individual	
	Max	Max	Min
SS75	22.0	24.0	-
SS95	25.0	27.0	18.0
SS105	28.0	29.0	21.0

Impact (Charpy V-notch TypeA)

Grade	Min	
	Joules	Ft-Lbs
SS75	70	50
SS95	80	59
SS105	80	59

Tool Joint Tensile Properties (Mpa/Ksi)

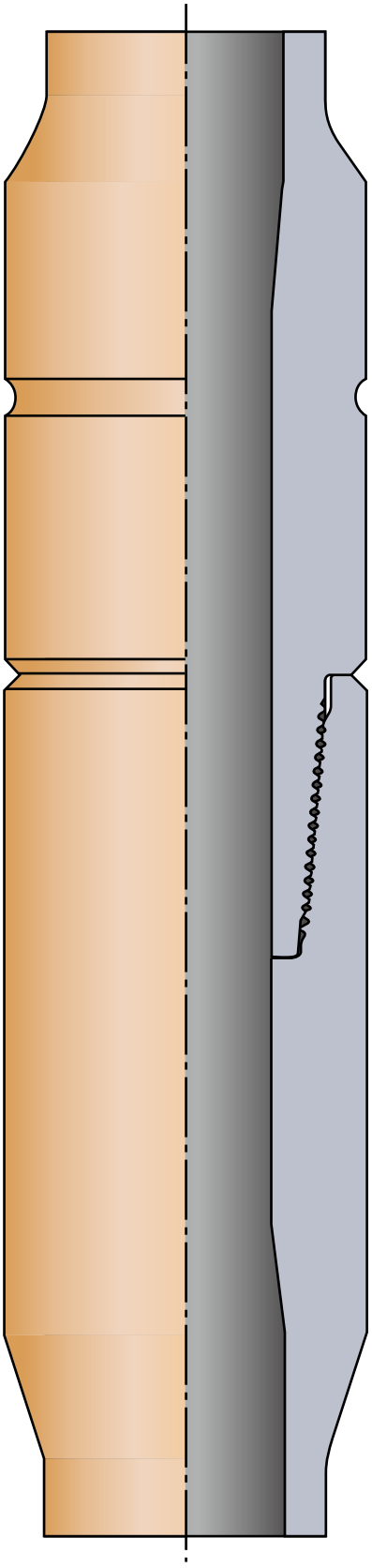
	Min	Max
Yield Strength	758 / 110	862 / 125
Tensile Strength	862 / 125	1000 / 145

Tool Joint Weld Zone Impact

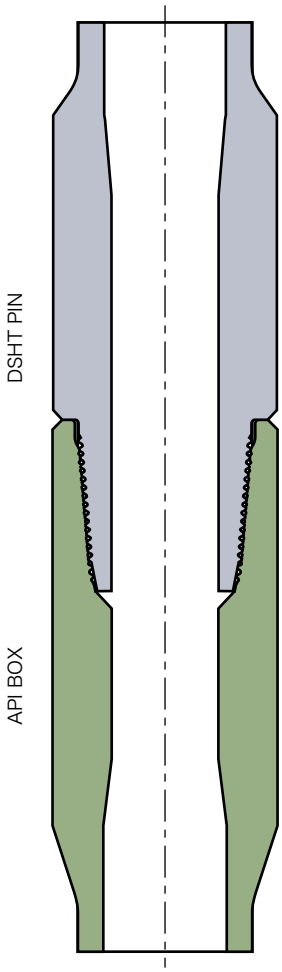
	Impact Min Ave(Jule)	Impact Min Av(Ft-lb)
Tool Joint	90	66
Weld Zone	27	20

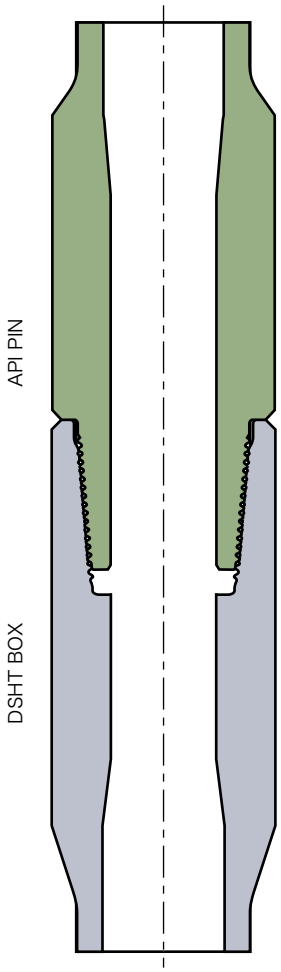
DSHT™

Double Shoulder High Torque Tool Joint



- High torsional yield strength
  Internal/External double shoulder
- Minimum tensile stress on PIN thread
  reduce SSC failure
- Large Tool Joint ID increase mud flow
- Interchangeable with API products
  Drill collar/HW drill pipe/kelly etc,
- Easy repair in the world





DSHT Tool Joint / API Tool Joint Mechanical Properties

DRILL PIPE						TOOL JOINT						
Outside Dia. Of Pipe (OD)	Wall Thichness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	API or DSHT	Connection Number or Size	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp)
in	Weight Designation	in	in					in	mm	in	mm	in
2 3/8	6.65	0.280	1.815	EU	X95	DSHT	NC26 2-3/8IF	3 3/8	85.7	1 5/8	41.3	10
					X95	API		3 3/8	85.7	1 3/4	44.5	10
					G105	DSHT		3 3/8	85.7	1 5/8	41.3	10
					G105	API		3 3/8	85.7	1 3/4	44.5	10
					S135	DSHT		3 3/8	85.7	1 5/8	41.3	10
					S135	API		3 3/8	85.7	1 3/4	44.5	10
2 7/8	10.40	0.362	2.151	EU	X95	DSHT	NC31 2-7/8IF	4 1/8	104.8	1 49/65	44.6	10.5
					X95	API		4 1/8	104.8	2	50.8	10.5
					G105	DSHT		4 1/8	104.8	1 49/65	44.6	10.5
					G105	API		4 1/8	104.8	2	50.8	10.5
					S135	DSHT		4 3/8	111.1	1 49/65	44.6	10.5
					S135	API		4 3/8	111.1	1 5/8	41.3	10.5
3 1/2	13.30	0.368	2.764	EU	X95	DSHT	NC38 3-1/2IF	5	127	2 7/16	61.9	12
					X95	API		5	127	2 9/16	65.1	12
					G105	DSHT		5	127	2 7/16	61.9	12
					G105	API		5	127	2 7/16	61.9	12
					S135	DSHT		5	127	2 17/60	58.0	12
					S135	DSHT		5	127	2 17/83	56.0	12
					S135	API		5	127	2 1/8	54.0	12
3 1/2	15.50	0.449	2.602	EU	X95	DSHT	NC38 3-1/2IF	5	127	2 7/16	61.9	12
					X95	API		5	127	2 7/16	61.9	12
					G105	DSHT		5	127	2 25/69	60.0	12
					G105	API		5	127	2 1/8	54.0	12
3 1/2	15.50	0.449	2.602	EU	S135	DSHT	NC40	5 1/2	139.7	2 15/34	62.0	11.5
					S135	API		5 1/2	139.7	2 1/4	57.2	11.5
4	14.00	0.330	3.340	IU	X95	DSHT	NC40	5 1/4	133.4	2 15/34	62.0	11.5
					X95	API		5 1/4	133.4	2 11/16	68.3	11.5
					G105	DSHT		5 1/2	139.7	2 15/34	62.0	11.5
					G105	API		5 1/2	139.7	2 7/16	61.9	11.5
					S135	DSHT		5 1/2	139.7	2 15/34	62.0	11.5
					S135	API		5 1/2	139.7	2	50.8	11.5
4	14.00	0.330	3.340	EU	S135	DSHT	NC46	6	152.4	3	76.2	11.5
					S135	API		6	152.4	3	76.2	11.5
4 1/2	16.60	0.337	3.826	EU	G105	DSHT	NC46	6 1/4	158.8	3	76.2	11.5
					G105	API		6 1/4	158.8	3	76.2	11.5
					S135	DSHT		6 1/4	158.8	3	76.2	11.5
					S135	API		6 1/4	158.8	2 3/4	69.9	11.5
4 1/2	16.60	0.337	3.826	EU	S135	DSHT	NC50	6 5/8	168.3	3 17/52	84.5	11.5
					S135	API		6 5/8	168.3	3 1/2	88.9	11.5
4 1/2	20.00	0.430	3.640	EU	G105	DSHT	NC50	6 5/8	168.3	3 17/52	84.5	11.5
					G105	API		6 5/8	168.3	3 1/2	88.9	11.5
					S135	DSHT		6 5/8	168.3	3 1/4	82.6	11.5
					S135	API		6 5/8	168.3	3	76.2	11.5

				MECHANICAL PROPERIES						
Pin Tong Space (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommennd Make-up Torque
in	in	in	in	lbs	psi	psi	ft-lbs	ft-lbs		ft-lbs
7	8	15	2 9/16	175,000	21,280	19,760	7,920	10,251	1.29	6,150
7	8	15	2 9/16	175,000	21,280	19,760	7,920	6,875	0.87	4,130
7	8	15	2 9/16	194,000	23,520	21,840	8,750	10,251	1.17	6,150
7	8	15	2 9/16	194,000	23,520	21,840	8,750	6,875	0.79	4,130
7	8	15	2 9/16	249,000	30,240	28,080	11,250	10,251	0.91	6,150
7	8	15	2 9/16	249,000	30,240	28,080	11,250	6,875	0.61	4,130
7	9	16	3 3/16	272,000	22,730	20,910	14,640	21,773	1.49	13,060
7	9	16	3 3/16	272,000	22,730	20,910	14,640	13,196	0.90	7,920
7	9	16	3 3/16	300,000	25,120	23,110	16,180	21,773	1.35	13,060
7	9	16	3 3/16	300,000	25,120	23,110	16,180	13,196	0.82	7,920
7	9	16	3 3/16	386,000	32,300	29,720	20,800	23,510	1.13	14,110
7	9	16	3 3/16	386,000	32,300	29,720	20,800	16,946	0.81	10,170
8	10.5	18.5	3 7/8	344,000	18,980	17,880	23,500	31,372	1.33	18,820
8	10.5	18.5	3 7/8	344,000	18,980	17,880	23,500	20,327	0.86	12,200
8	10.5	18.5	3 7/8	380,000	20,980	19,760	25,970	31,372	1.21	18,820
8	10.5	18.5	3 7/8	380,000	20,980	19,760	25,970	22,213	0.86	13,330
8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	35,761	1.07	21,460
8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	37,894	1.13	22,740
8	10.5	18.5	3 7/8	489,000	26,970	25,400	33,390	26,516	0.79	15,910
8	10.5	18.5	3 7/8	409,000	23,160	21,250	26,710	31,372	1.17	18,820
8	10.5	18.5	3 7/8	409,000	23,160	21,250	26,710	22,213	0.83	13,330
8	10.5	18.5	3 7/8	452,000	25,590	23,480	29,520	33,553	1.14	20,130
8	10.5	18.5	3 7/8	452,000	25,590	23,480	29,520	26,516	0.90	15,910
7	10	17	3 7/8	581,000	32,910	30,190	37,950	43,374	1.14	26,020
7	10	17	3 7/8	581,000	32,910	30,190	37,950	32,944	0.87	19,770
7	10	17	4 3/16	361,000	14,890	14,380	29,500	42,509	1.44	25,510
7	10	17	4 3/16	361,000	14,890	14,380	29,500	25,673	0.87	15,400
7	10	17	4 3/16	400,000	16,460	15,900	32,600	43,374	1.33	26,020
7	10	17	4 3/16	400,000	16,460	15,900	32,600	30,114	0.92	18,070
7	10	17	4 3/16	514,000	21,160	20,140	41,920	43,374	1.03	26,020
7	10	17	4 3/16	514,000	21,160	20,140	41,920	36,363	0.87	21,820
7	10	17	4 1/2	514,000	21,160	20,140	41,920	56,701	1.35	34,020
7	10	17	4 1/2	514,000	21,160	20,140	41,920	39,230	0.94	23,540
7	10	17	4 11/16	463,000	14,940	13,820	43,130	57,322	1.33	34,390
7	10	17	4 11/16	463,000	14,940	13,820	43,130	39,659	0.92	23,800
7	10	17	4 11/16	595,000	19,210	16,770	55,450	57,322	1.03	34,390
7	10	17	4 11/16	595,000	19,210	16,770	55,450	44,872	0.81	26,920
7	10	17	5	595,000	19,210	16,770	55,450	72,586	1.31	43,550
7	10	17	5	595,000	19,210	16,770	55,450	45,128	0.81	27,080
7	10	17	5	577,000	19,060	18,150	51,660	72,586	1.41	43,550
7	10	17	5	577,000	19,060	18,150	51,660	45,128	0.87	27,080
7	10	17	5	742,000	24,510	23,330	66,420	76,524	1.15	45,910
7	10	17	5	742,000	24,510	23,330	66,420	57,801	0.87	34,680

DSHT Tool Joint / API Tool Joint Mechanical Properties

DRILL PIPE						TOOL JOINT							
Outside Dia. Of Pipe (OD)	Wall Thichness of Pipe (WT)		Inside Dia. Of Pipe (ID)	UPSET END	Grade	Connection Number or Size	API or DSHT	Outside Dia. Of Pin and Box (D)		Inside Dia. Of PIN (d)		Total Length ToolJoint Pin (Lp)	
in	Weight Designation	in	in					in	mm	in	mm	in	
5	19.50	0.362	4.276	IEU	X95	DSHT	NC50	6 5/8	168.3	3 17/52	84.5	11.5	
					X95	API		6 5/8	168.3	3 1/2	88.9	11.5	
					G105	DSHT		6 5/8	168.3	3 17/52	84.5	11.5	
					G105	DSHT		6 5/8	168.3	3 1/4	82.6	11.5	
					G105	API		6 5/8	168.3	3 1/4	82.6	11.5	
					S135	DSHT		6 5/8	168.3	3 1/4	82.6	11.5	
					S135	DSHT		6 5/8	168.3	3 3/20	80.0	11.5	
					S135	API		6 5/8	168.3	2 3/4	69.9	11.5	
5	25.60	0.500	4.000	IEU	X95	DSHT	NC50	6 5/8	168.3	3 1/4	82.6	11.5	
					X95	API		6 5/8	168.3	3	76.2	11.5	
					G105	DSHT		6 5/8	168.3	3 1/4	82.6	11.5	
					G105	API		6 5/8	168.3	2 3/4	69.9	11.5	
5	19.50	0.362	4.276	IEU	G105	DSHT	5 1/2FH	7	177.8	3 3/4	95.3	13	
					G105	API		7	177.8	3 3/4	95.3	13	
					S135	DSHT		7 1/4	184.2	3 3/4	95.3	13	
					S135	API		7 1/4	184.2	3 1/2	88.9	13	
5	25.60	0.500	4.000	IEU	G105	DSHT	5 1/2FH	7 1/4	184.2	3 3/4	95.3	13	
					G105	API		7 1/4	184.2	3 1/2	88.9	13	
					S135	DSHT		7 1/4	184.2	3 1/2	88.9	13	
					S135	API		7 1/4	184.2	3 1/4	82.6	13	
5 1/2	21.90	0.361	4.778	IEU	X95	DSHT	5 1/2FH	7	177.8	3 3/4	95.3	13	
					X95	API		7	177.8	3 3/4	95.3	13	
					G105	DSHT		7 1/4	184.2	3 3/4	95.3	13	
					G105	API		7 1/4	184.2	3 1/2	88.9	13	
					S135	DSHT		7 1/2	190.5	3 3/4	95.3	13	
					S135	API		7 1/2	190.5	3	76.2	13	
5 1/2	24.70	0.415	4.670	IEU	G105	DSHT	5 1/2FH	7 1/4	184.2	3 3/4	95.3	13	
					G105	API		7 1/4	184.2	3 1/2	88.9	13	
					S135	DSHT		7 1/2	190.5	3 1/2	88.9	13	
					S135	API		7 1/2	190.5	3	76.2	13	
6 5/8	25.20	0.330	5.965	IEU	G105	DSHT	6 5/8FH	8 1/4	209.6	4 3/4	120.7	13	
					G105	API		8 1/4	209.6	4 3/4	120.7	13	
					S135	DSHT		8 1/2	215.9	4 21/43	114.0	13	
					S135	API		8 1/2	215.9	4 1/4	108.0	13	
6 5/8	27.70	0.362	5.901	IEU	G105	DSHT	6 5/8FH	8 1/4	209.6	4 3/4	120.7	13	
					G105	API		8 1/4	209.6	4 3/4	120.7	13	
					S135	DSHT		8 1/2	215.9	4 21/43	114.0	13	
					S135	API		8 1/2	215.9	4 1/4	108.0	13	

				MECHANICAL PROPERIES						
Pin Tong Space (Lpb)	Box Tong Space (Lb)	Combined Length of Pin and Box (L)	Dia. Of Elevator Upset (DPE/DTE)	Pipe Tensile Strength	Pipe Internal Pressure	Pipe Collapse Pressure	Pipe Torsional Strength	Torsional Yield Strength of Tool Joint	Torsional Ratio TJ to Drill Pipe	Recommennd Make-up Torque
in	in	in	in	lbs	psi	psi	ft-lbs	ft-lbs		ft-lbs
7	10	17	5 1/8	501,000	13,070	12,020	52,140	72,586	1.39	43,550
7	10	17	5 1/8	501,000	13,070	12,020	52,140	45,128	0.87	27,080
7	10	17	5 1/8	554,000	14,440	13,000	57,630	72,586	1.26	43,550
7	10	17	5 1/8	554,000	14,440	13,000	57,630	76,524	1.33	45,910
7	10	17	5 1/8	554,000	14,440	13,000	57,630	51,708	0.90	31,020
7	10	17	5 1/8	712,000	18,570	15,670	74,100	76,424	1.03	45,850
7	10	17	5 1/8	712,000	18,570	15,670	74,100	81,535	1.10	48,920
7	10	17	5 1/8	712,000	18,570	15,670	74,100	63,364	0.86	38,020
7	10	17	5 1/8	672,000	18,050	17,100	66,190	76,424	1.15	45,850
7	10	17	5 1/8	672,000	18,050	17,100	66,190	57,801	0.87	34,680
7	10	17	5 1/8	742,000	19,950	18,900	73,160	76,424	1.04	45,850
7	10	17	5 1/8	742,000	19,950	18,900	73,160	63,407	0.87	38,040
8	10	18	5 1/8	554,000	14,440	13,000	57,630	90,771	1.58	54,460
8	10	18	5 1/8	554,000	14,440	13,000	57,630	62,903	1.09	37,740
8	10	18	5 1/8	712,000	18,570	15,670	74,100	92,735	1.25	55,640
8	10	18	5 1/8	712,000	18,570	15,670	74,100	72,484	0.98	43,490
8	10	18	5 1/8	742,000	19,950	18,900	73,160	92,735	1.27	55,640
8	10	18	5 1/8	742,000	19,950	18,900	73,160	72,484	0.99	43,490
8	10	18	5 1/8	954,000	25,650	24,300	94,060	108,358	1.15	65,020
8	10	18	5 1/8	954,000	25,650	24,300	94,060	78,716	0.84	47,230
8	10	18	5 11/16	554,000	11,850	10,020	64,230	90,771	1.41	54,460
8	10	18	5 11/16	554,000	11,850	10,020	64,230	62,903	0.98	37,740
8	10	18	5 11/16	612,000	13,090	10,500	70,990	92,735	1.31	55,640
8	10	18	5 11/16	612,000	13,090	10,500	70,990	72,484	1.02	43,490
8	10	18	5 11/16	787,000	16,840	12,670	91,280	93,587	1.03	56,150
8	10	18	5 11/16	787,000	16,840	12,670	91,280	87,171	0.95	52,300
8	10	18	5 11/16	696,000	15,050	14,010	79,200	92,735	1.17	55,640
8	10	18	5 11/16	696,000	15,050	14,010	79,200	72,484	0.92	43,490
8	10	18	5 11/16	895,000	19,350	17,020	101,830	109,354	1.07	65,610
8	10	18	5 11/16	895,000	19,350	17,020	101,830	87,171	0.86	52,300
8	11	19	6 15/16	685,000	9,940	5,500	98,810	124,672	1.26	74,800
8	11	19	6 15/16	685,000	9,940	5,500	98,810	86,238	0.87	51,740
8	11	19	6 15/16	881,000	12,780	6,040	127,050	149,639	1.18	89,780
8	11	19	6 15/16	881,000	12,780	6,040	127,050	109,227	0.86	65,540
8	11	19	6 15/16	748,000	10,900	7,100	106,810	124,672	1.17	74,800
8	11	19	6 15/16	748,000	10,900	7,100	106,810	86,238	0.81	51,740
8	11	19	6 15/16	962,000	14,020	7,810	137,330	149,639	1.09	89,780
8	11	19	6 15/16	962,000	14,020	7,810	137,330	109,227	0.80	65,540

Drill Collar

Material AISI4145HM, Non Mag(DNM110)
Type Slick, Spiral

Sizes and Mechanical Properties

Drill Collar Number	Outside Diameter D inch (mm)	Bore Diameter d inch (mm)	B.S.R Round Number	Tensile Strength			Impact Value	Hardness
				Lehgth,ft ±6in	Yield Strength	Tensile Strength	Elongation		
				ft	(0.25% offset)			Charpy V	Brinnel
NC23-31	3 1/8 (79.4)	1 1/4 (31.8)	2.57 : 1	30	min. 110,000 psi (≧758N/㎟)	min. 140,000 psi (≧965N/㎟)	min. 13%	min. 59 ft-lbs (≧80J)	285~341
NC26-35 (2-3/8 IF)	3 1/2 (88.9)	1 1/2 (38.1)	2.42 : 1	30					
NC31-41 (2 7/8 IF)	4 1/4 (104.8)	2 (50.8)	2.43 : 1	30 or 31					
NC35-47	4 3/4 (120.7)	2 (50.8)	2.58 : 1	30 or 31					
NC38-50 (3 1/2 IF)	5 (127.0)	2 1/4 (57.2)	2.38 : 1	30 or 31					
NC44-60	6 (152.4)	2 1/4 (57.2)	2.49 : 1	30 or 31					
NC44-60	6 (152.4)	2 13/16 (71.4)	2.84 : 1	30 or 31					
NC44-62	6 1/4 (158.8)	2 1/4 (57.2)	2.91 : 1	30 or 31					
NC46-62 (4 IF)	6 1/4 (158.8)	2 13/16 (71.4)	2.63 : 1	30 or 31					
NC46-65 (4 IF)	6 1/2 (165.1)	2 1/4 (57.2)	2.76 : 1	30 or 31					
NC46-65 (4 IF)	6 1/2 (165.1)	2 13/16 (71.4)	3.05 : 1	30 or 31					
NC46-67 (4 IF)	6 3/4 (171.5)	2 1/4 (57.2)	3.18 : 1	30 or 31					
NC50-67 (4 1/2 IF)	6 3/4 (171.5)	2 13/16 (71.4)	2.37 : 1	30 or 31					
NC50-70 (4 1/2 IF)	7 (177.8)	2 1/4 (57.2)	2.54 : 1	30 or 31	min. 100,000 psi (≧689N/㎟)	min. 135,000 psi (≧931N/㎟)	min. 13%	min. 59 ft-lbs (≧80J)	285~341
NC50-70 (4 1/2 IF)	7 (177.8)	2 13/16 (71.4)	2.27 : 1	30 or 31					
NC50-72 (4 1/2 IF)	7 1/4 (184.2)	2 13/16 (71.4)	3.12 : 1	30 or 31					
NC56-77	7 3/4 (196.9)	2 13/16 (71.4)	2 70 : 1	30 or 31					
NC56-80	8 (203.2)	2 13/16 (71.4)	3.02 : 1	30 or 31					
6 5/8REG	8 1/4 (209.6)	2 13/16 (71.4)	2 93 : 1	30 or 31					
NC61-90	9 (228.6)	2 13/16 (71.4)	3.17 : 1	30 or 31					
7 5/8REG	9 1/2 (241.3)	3 (76.2)	2.81 : 1	30 or 31					
NC70-97	9 3/4 (247.7)	3 (76.2)	2.57 : 1	30 or 31					
NC70-100	10 (254.0)	3 (76.2)	2.81 : 1	30 or 31					
8 5/8 REG	11 (279.4)	3 (76.2)	2.84 : 1	30 or 31					

Heavy Weight Drill Pipe

Type Integral Type and Friction Weld Type

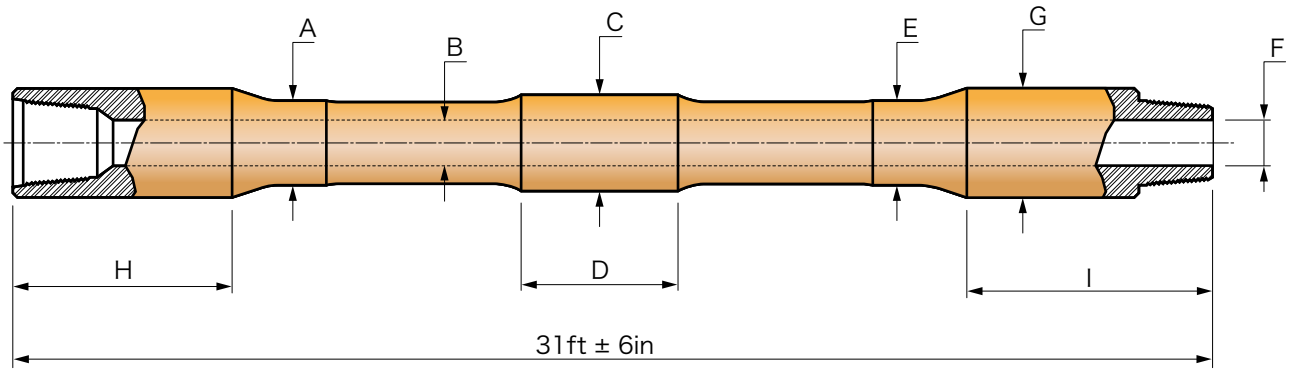
Grade Integral Type AISI4145HM

Friction Weld Type Tool Joint : AISI 4145HM

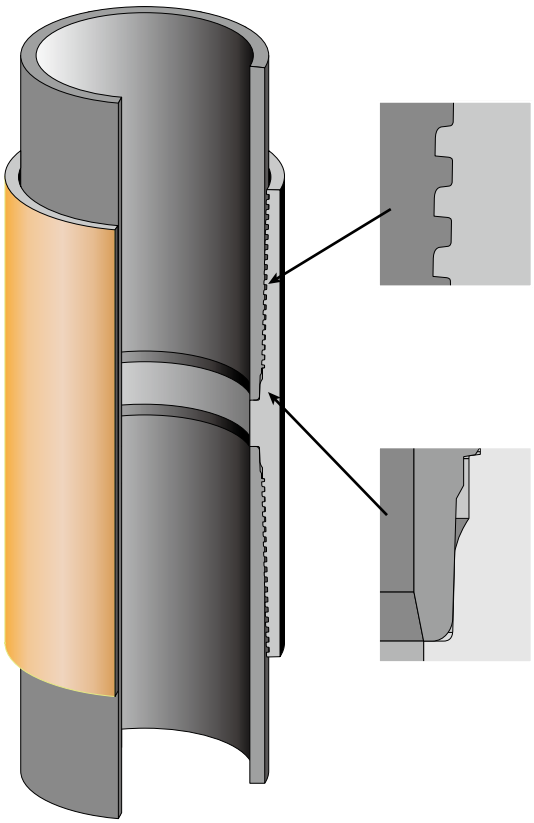
Tube : AISI 1340 or Equivalent

Sizes

Size		Tube				Tool Joint					Min Drift Dia.
		Tube ID	Center Upset Dia.	Upset Length	Max Elevator Upset	Connection Number	Tool Joint OD	Tool Joint ID	Pin Length	Box Length	
A		B	C	D	E		G	F	I	H	
in	mm	in	in	in	in		in	in	in	in	
3 1/2	88.9	2 1/4	4	25	3 7/8	NC38	4 3/4 (4 7/8) (5)	2 1/4	27	21	2
		2 1/16						2 1/16			1 13/16
4	101.6	2 1/2	4 1/2	25	4 3/16	NC40	5 1/4	2 1/2	27	21	2 1/4
		2 9/16						2 9/16			2 5/16
4 1/2	114.3	2 11/16	5	25	4 11/16	NC46	6 1/4	2 11/16	27	21	2 7/16
		2 3/4						2 3/4			2 1/2
		2 13/16						2 13/16			2 9/16
5	127.0	3	5 1/2	25	5 1/8	NC50	6 5/8	3	27	21	2 3/4
5 1/2	139.7	3 1/4	6	25	5 11/16	5 1/2FH	7 (7 1/4) (7 1/2)	3 1/4	27	21	3
		3 3/8						3 3/8			3 1/8
		3 7/8						3 7/8			3 5/8
		4						4			3 3/4
5 7/8	149.2	4	6 3/8	25	6	5 1/2FH	7	4	27	21	3 3/4
6 5/8	168.3	4	7 1/8	25	6 15/16	6 5/8FH	8 (8 1/4) (8 1/2)	4	27	21	3 3/4
		4 1/2						4 1/2			4 1/4
		5						5			4 3/4



PMC Connection



Design Concept

- Threaded and Coupled Connection
  applied
  Non-upset Pipe
- Two Metal to Metal Seals
  Main Seal with Sliding Type
  Internal torque stop seal
- Excellent sealing capability
- Fully Inter-Changeable to BTC(API
  Buttress Connection)
  Thread Form same as API-BTC
- Positive Torque Stop in Internal
  Shoulder
- Internal Flush Smooth
- Easy Repair Connection
  BTC Threading Insert can be
  used.
- Tapered and Run-out Type Thread
  Thread Taper 1/16 on Diameter

PMC Casing Size

OD NOMINAL	OD		WEIGH	Wall		NOM. ID		DRIFT DIA		Coupling OD	Length	Make-up Loss	Pipe Section
inch	inch	mm	lbs/ft	inch	mm	inch	mm	inch	mm	mm	mm	mm	Sq.in
4 1/2	4.500	114.3	11.60	0.250	6.35	4.000	101.60	3.875	98.43	127.00	234.70	107.35	3.338
	4.500	114.3	13.50	0.291	7.39	3.918	99.52	3.795	96.39				3.848
	4.500	114.3	15.10	0.337	8.56	3.826	97.18	3.701	94.01				4.407
	4.500	114.3	16.90	0.380	9.65	3.740	95.00	3.615	91.82				4.918
	4.500	114.3	21.60	0.500	12.70	3.500	88.90	3.375	85.73				6.283
5	5.000	127.0	15.00	0.296	7.52	4.408	111.96	4.283	108.79	141.30	235.90	107.98	4.374
	5.000	127.0	18.00	0.362	9.19	4.276	108.61	4.151	105.44				5.275
	5.000	127.0	20.30	0.408	10.36	4.184	106.27	4.059	103.10				5.886
	5.000	127.0	23.20	0.478	12.14	4.044	102.72	3.919	99.54				6.791
	5.000	127.0	24.20	0.500	12.70	4.000	101.60	3.875	98.43				7.069
5 1/2	5.500	139.7	15.50	0.275	6.99	4.950	125.73	4.825	122.56	153.70	240.70	110.37	4.514
	5.500	139.7	17.00	0.304	7.72	4.892	124.26	4.767	121.08				4.962
	5.500	139.7	20.00	0.361	9.17	4.778	121.36	4.653	118.19				5.828
	5.500	139.7	23.00	0.415	10.54	4.670	118.62	4.545	115.44				6.630
	5.500	139.7	26.00	0.476	12.09	4.548	115.52	4.423	112.34				7.513
6 5/8	6.625	168.3	20.00	0.288	7.32	6.049	153.64	5.924	150.47	187.70	250.20	115.13	5.734
	6.625	168.3	24.00	0.352	8.94	5.921	150.39	5.796	147.22				6.937
	6.625	168.3	28.00	0.417	10.59	5.791	147.09	5.666	143.92				8.133
	6.625	168.3	32.00	0.475	12.07	5.675	144.15	5.550	140.97				9.177
7	7.000	177.8	23.00	0.317	8.05	6.366	161.70	6.241	158.52	194.50	261.40	120.70	6.656
	7.000	177.8	26.00	0.362	9.19	6.276	159.41	6.151	156.24				7.549
	7.000	177.8	29.00	0.408	10.36	6.184	157.07	6.059	153.90				8.449
	7.000	177.8	32.00	0.453	11.51	6.094	154.79	5.969	151.61				9.317
	7.000	177.8	35.00	0.498	12.65	6.004	152.50	5.879	149.33				10.172
	7.000	177.8	38.00	0.540	13.72	5.920	150.37	5.795	147.19				10.959
	7.000	177.8	41.00	0.590	14.99	5.820	147.83	5.695	144.65				11.881
7 5/8	7.625	193.7	26.40	0.328	8.33	6.969	177.01	6.844	173.84	215.90	270.90	125.46	7.519
	7.625	193.7	29.70	0.375	9.53	6.875	174.63	6.750	171.45				8.541
	7.625	193.7	33.70	0.430	10.92	6.765	171.83	6.640	168.66				9.720
	7.625	193.7	39.00	0.500	12.70	6.625	168.28	6.500	165.10				11.192
	7.625	193.7	42.80	0.562	14.27	6.501	165.13	6.376	161.95				12.470
	7.625	193.7	45.30	0.595	15.11	6.435	163.45	6.310	160.27				13.141
	7.625	193.7	47.10	0.624	15.85	6.377	161.98	6.252	158.80				13.724
8 5/8	8.625	219.1	28.0	0.304	7.72	8.017	203.63	7.894	200.49	244.50	277.20	128.63	7.947
	8.625	219.1	32.0	0.352	8.94	7.921	201.19	7.798	198.06				9.149
	8.625	219.1	36.0	0.400	10.16	7.825	198.76	7.702	195.62				10.336
	8.625	219.1	40.0	0.450	11.43	7.725	196.22	7.602	193.08				11.557
	8.625	219.1	44.0	0.500	12.70	7.625	193.68	7.502	190.54				12.763
	8.625	219.1	49.0	0.557	14.15	7.511	190.78	7.388	187.64				14.118
	8.625	219.1	52.0	0.595	15.11	7.435	188.85	7.312	185.71				15.010
9 5/8	9.625	244.5	36.0	0.352	8.94	8.921	226.59	8.765	222.62	269.90	277.20	128.63	10.254
	9.625	244.5	40.0	0.395	10.03	8.835	224.41	8.679	220.44				11.454
	9.625	244.5	43.5	0.435	11.05	8.755	222.38	8.599	218.41				12.559
	9.625	244.5	47.0	0.472	11.99	8.681	220.50	8.525	216.53				13.572
	9.625	244.5	53.5	0.545	13.84	8.535	216.79	8.379	212.82				15.547
	9.625	244.5	58.4	0.595	15.11	8.435	214.25	8.279	210.28				16.879
	9.625	244.5	61.1	0.625	15.88	8.375	212.73	8.219	208.76				17.672
10 3/4	10.750	273.1	40.5	0.350	8.89	10.050	255.27	9.894	251.30	298.50	277.20	128.63	11.435
	10.750	273.1	45.5	0.400	10.16	9.950	252.73	9.794	248.76				13.006
	10.750	273.1	51.0	0.450	11.43	9.850	250.19	9.694	246.22				14.561
	10.750	273.1	55.5	0.495	12.57	9.760	247.90	9.604	243.94				15.947
	10.750	273.1	60.7	0.545	13.84	9.660	245.36	9.504	241.40				17.473
	10.750	273.1	65.7	0.595	15.11	9.560	242.82	9.404	238.86				18.982
11 3/4	11.750	298.5	47.0	0.375	9.53	11.000	279.40	10.844	275.43	323.80	277.20	128.63	13.401
	11.750	298.5	54.0	0.435	11.05	10.880	276.35	10.724	272.38				15.463
	11.750	298.5	60.0	0.489	12.42	10.772	273.61	10.616	269.64				17.300
	11.750	298.5	65.0	0.534	13.56	10.682	271.32	10.526	267.35				18.816
13 3/8	13.375	339.7	54.5	0.380	9.65	12.615	320.42	12.459	316.45	365.10	277.20	128.63	15.514
	13.375	339.7	61.0	0.430	10.92	12.515	317.88	12.359	313.91				17.487
	13.375	339.7	68.0	0.480	12.19	12.415	315.34	12.259	311.37				19.445
	13.375	339.7	72.0	0.514	13.06	12.347	313.61	12.191	309.65				20.768

Casing

Sizes and Grades

Outside Diameter	Nominal Weight	Outside Diameter D	Wall Thickness T		Type of End Finish					
					Grade					
in	lb/ft	mm	in	mm	H-40	J-55 K-55	L-80 C-95	N-80	C-90 T-95	P-110
4 1/2	9.50	114.3	0.205	5.21	S	S	-	-	-	-
	10.50	114.3	0.224	5.69	-	SB	-	-	-	-
	11.60	114.3	0.250	6.35	-	SLB	LB	LB	LB	LB
	13.50	114.3	0.290	7.37	-	-	LB	LB	LB	LB
5	11.50	127.0	0.220	5.59	-	S	-	-	-	-
	13.00	127.0	0.253	6.43	-	SLB	-	-	-	-
	15.00	127.0	0.296	7.52	-	SLB	LB	LB	LB	LB
	18.00	127.0	0.362	9.19	-	-	LB	LB	LB	LB
	21.40	127.0	0.437	11.10	-	-	LB	LB	LB	LB
	23.20	127.0	0.478	12.14	-	-	LB	LB	LB	LB
	24.10	127.0	0.500	12.70	-	-	LB	LB	LB	LB
5 1/2	14.00	139.7	0.244	6.20	S	S	-	-	-	-
	15.50	139.7	0.275	6.99	-	SLB	-	-	-	-
	17.00	139.7	0.304	7.72	-	SLB	LB	LB	LB	LB
	20.00	139.7	0.361	9.17	-	-	LB	LB	LB	LB
	23.00	139.7	0.415	10.54	-	-	LB	LB	LB	LB
6 5/8	20.00	168.3	0.288	7.32	S	SLB	-	-	-	-
	24.00	168.3	0.352	8.94	-	SLB	LB	LB	LB	LB
	28.00	168.3	0.417	10.59	-	-	LB	LB	LB	LB
	32.00	168.3	0.475	12.07	-	-	LB	LB	LB	LB
7	17.00	177.8	0.231	5.87	S	-	-	-	-	-
	20.00	177.8	0.272	6.91	S	S	-	-	-	-
	23.00	177.8	0.317	8.05	-	SLB	LB	LB	LB	-
	26.00	177.8	0.362	9.19	-	SLB	LB	LB	LB	LB
	29.00	177.8	0.408	10.36	-	-	LB	LB	LB	LB
	32.00	177.8	0.453	11.51	-	-	LB	LB	LB	LB
	35.00	177.8	0.498	12.65	-	-	LB	LB	LB	LB
	38.00	177.8	0.540	13.72	-	-	LB	LB	LB	LB
7 5/8	24.00	193.7	0.300	7.62	S	-	-	-	-	-
	26.40	193.7	0.328	8.33	-	SLB	LB	LB	LB	-
	29.70	193.7	0.375	9.53	-	-	LB	LB	LB	LB
	33.70	193.7	0.430	10.92	-	-	LB	LB	LB	LB
	39.00	193.7	0.500	12.70	-	-	LB	LB	LB	LB
	42.80	193.7	0.562	14.27	-	-	LB	LB	LB	LB
	45.30	193.7	0.595	15.11	-	-	LB	LB	LB	LB
	47.10	193.7	0.625	15.88	-	-	LB	LB	LB	LB

Sizes and Grades

Outside Diameter	Nominal Weight	Outside Diameter D	Wall Thickness T		Type of End Finish					
					Grade					
in	lb/ft	mm	in	mm	H-40	J-55 K-55	L-80 C-95	N-80	C-90 T-95	P-110
8 5/8	24.00	219.1	0.264	6.71	-	S	-	-	-	-
	28.00	219.1	0.304	7.72	S	-	-	-	-	-
	32.00	219.1	0.352	8.94	S	SLB	-	-	-	-
	36.00	219.1	0.400	10.16	-	SLB	LB	LB	LB	
	40.00	219.1	0.450	11.43	-	-	LB	LB	LB	LB
	44.00	219.1	0.500	12.70	-	-	LB	LB	LB	LB
	49.00	219.1	0.557	14.15	-	-	LB	LB	LB	LB
9 5/8	32.30	244.5	0.312	7.92	S	-	-	-	-	-
	36.00	244.5	0.352	8.94	S	SLB	-	-	-	-
	40.00	244.5	0.395	10.03	-	SLB	LB	LB	LB	
	43.50	244.5	0.435	11.05	-	-	LB	LB	LB	LB
	47.00	244.5	0.472	11.99	-	-	LB	LB	LB	LB
	53.50	244.5	0.545	13.84	-	-	LB	LB	LB	LB
	58.40	244.5	0.595	15.11	-	-	LB	LB	LB	LB
10 3/4	32.75	273.1	0.279	7.09	S	-	-	-	-	-
	40.50	273.1	0.350	8.89	S	SB	-	-	-	-
	45.50	273.1	0.400	10.16	-	SB	-	-	-	-
	51.00	273.1	0.450	11.43	-	SB	SB	SB	SB	SB
	55.50	273.1	0.495	12.57	-	-	SB	SB	SB	SB
	60.70	273.1	0.545	13.84	-	-	-	-	SB	SB
	65.70	273.1	0.595	15.11	-	-	-	-	SB	SB
11 3/4	42.00	298.5	0.333	8.46	S	-	-	-	-	-
	47.00	298.5	0.375	9.53	-	SB	-	-	-	-
	54.00	298.5	0.435	11.05	-	SB	-	-	-	-
	60.00	298.5	0.489	12.42	-	SB	SB	SB	SB	SB
13 3/8	48.00	339.7	0.330	8.38	S	-	-	-	-	-
	54.50	339.7	0.380	9.65	-	SB	-	-	-	-
	61.00	339.7	0.430	10.92	-	SB	-	-	-	-
	68.00	339.7	0.480	12.19	-	SB	SB	SB	SB	SB
	72.00	339.7	0.514	13.06	-	-	SB	SB	SB	SB
16	65.00	406.4	0.375	9.53	S	-	-	-	-	-
	75.00	406.4	0.438	11.13	-	SB	-	-	-	-
	84.00	406.4	0.495	12.57	-	SB	-	-	-	-
18 5/8	87.50	473.1	0.435	11.05	S	SB	-	-	-	-
20	94.00	508.0	0.438	11.13	SL	SLB	-	-	-	-
	106.50	508.0	0.500	12.70	-	SLB	-	-	-	-
	133.00	508.0	0.635	16.13	-	SLB	-	-	-	-

S = Short Round Thread L = Long Round Thread B = Buttress Thread

Tubing

Sizes and Grades

Outside Diameter	lb/ft		Outside Diameter	Wall Thickness t		Type of End-Finish Grade						
	T&C											
	Non Upset	Upset										
in			mm	in	mm	H-40	J-55	L-80	N-80	C-90	T-95	P-110
2 3/8	4.00	-	60.3	0.167	4.24	N	N	N	N	N	N	-
	4.60	4.70	60.3	0.190	4.83	NU	NU	NU	NU	NU	NU	NU
	5.80	5.95	60.3	0.254	6.45	-	-	NU	NU	NU	NU	NU
	7.35	7.45	60.3	0.336	8.53	-	-	U	-	U	U	-
2 7/8	6.40	6.50	73.0	0.217	5.51	NU	NU	NU	NU	NU	NU	NU
	7.80	7.90	73.0	0.276	7.01	-	-	NU	NU	NU	NU	NU
	8.60	8.70	73.0	0.308	7.82	-	-	NU	NU	NU	NU	NU
	9.35	9.45	73.0	0.340	8.64	-	-	U	-	U	U	-
3 1/2	7.70	-	88.9	0.216	5.49	N	N	N	N	N	N	-
	9.20	9.30	88.9	0.254	6.45	NU	NU	NU	NU	NU	NU	NU
	10.20	-	88.9	0.289	7.34	N	N	N	N	N	N	-
	12.70	12.95	88.9	0.375	9.52	-	-	NU	NU	NU	NU	NU
4	9.50	-	101.6	0.226	5.74	N	N	N	N	N	N	-
	10.70	11.00	101.6	0.262	6.65	U	U	U	U	U	U	-
4 1/2	12.60	12.75	114.3	0.271	6.88	NU	NU	NU	NU	NU	NU	-

N = Non-Upset Tubing U = External-Upset Tubing

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