PETROL CHIMICA
SISTEMI PRODUTTIVI

DRILL PIPE

Made in Italy

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Drill Pipe and Tool Joint Grades

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Drill Pipe		Friction welded Tool Joints	
Internal Upset	IU	Numbered Connections	NC
External Upset	EU	Internal Flush	IF
Internal-External Upset	IEU	Full Hole	FH

acc. to API Spec. 5DP PSL 1/PSL 2 and PSL 3

Additional requirements can be designed and supplied on request.

DRILL PIPE AND TOOL JOINT GRADES

Mechanical properties of API drill pipe grades					
Grade	**Yield strength** psi N/mm² min.	psi N/mm² max.	**Tensile strength** psi N/mm² min.	**Elongation**[1] in 2 inches % min.	**API**
E	**75 000** 515	**105 000** 725	**100 000** 690	see footnote	Spec. 5 DP
X	**95 000** 655	**125 000** 860	**105 000** 725		Spec. 5 DP
G	**105 000** 725	**135 000** 930	**115 000** 795		Spec. 5 DP
S	**135 000** 930	**165 000** 1 140	**145 000** 1 000		Spec. 5 DP

Mechanical properties of API tool joint grades					
Yield strength psi N/mm² min.	psi N/mm² max.	**Tensile strength** psi N/mm² min.	**Elongation** in 2 inches % min.	**Box** Hardness Brinell min.	**API**
120 000 827	**165 000** 1138	**140 000** 965	**13**	**285**	Spec. 5DP

Chemical composition requirements		
	Phosphorus max. %	Sulfur max. %
Pipe body grade E	0.030	0.020
Pipe body grades X, G and S	0.020	0.015
Tool joint	0.020	0.015

[1] The minimum elongation in 2 inches (50.80 mm) shall be that determined by the following formula:

$$e = 625.000 \frac{A^{02}_{09}}{U}$$

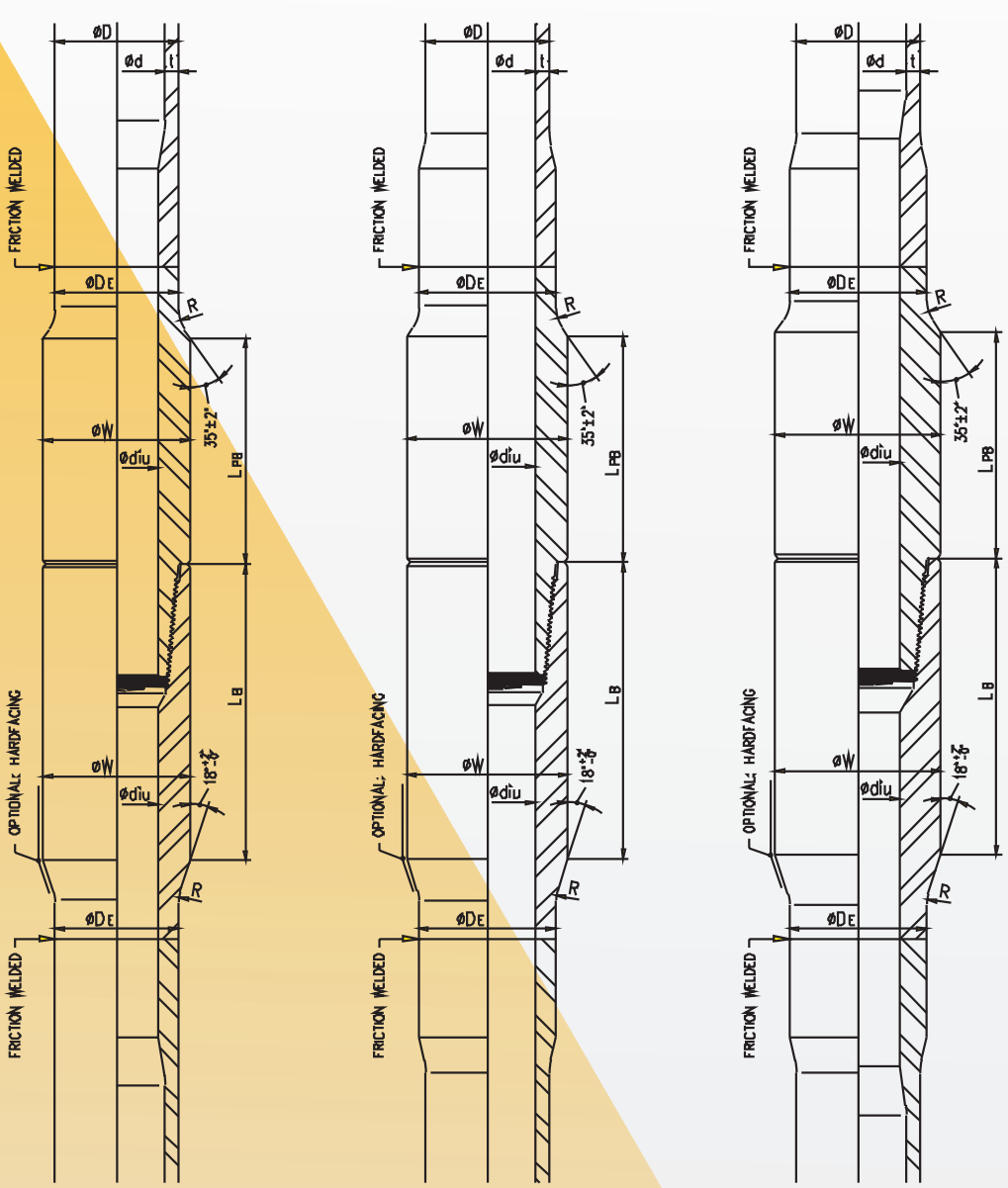
where:

e = minimum elongation in 2 inches (50.80 mm) in percent rounded to nearest 1/2 percent.

A = cross sectional area of the tensile test specimen in square inches, baased on specified outside diameter or nominal specimen width, and specified wall thickness, rounded to the nearest 0.01 sq.in., or 0.75 sq.in., whichever is smaller.

U = specified tensile strength, psi.

Dimensions of Drill Pipe with Weld-On Tool Joints



Treatment of Thread Surfaces

The tool joint threads are phosphated and in connection with the thread dope, according to API BUL 7A1, this provides an excellent surface treatment to avoid galling during make-up and break-out.

As an alternative copper plated threads can be supplied on request.

TPS Drill Pipe and Tool Joint Grades

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Since well designs arising continous complicated, with multiple deviation sections and deep drilling, drill pipe ability has to be improved simultanously. The internal upset runout is an area where stresses from rotating through deviated well sections and/or vibration causing the most fatigue. Well drilling is always forced by the time schedule. If time loss is fetched back by engreased drilling speed, fatigue in the drill pipe upset runout section may result in washouts. Large drill pipe sizes (4“ and larger) causing more fatigue versus smaller sizes. Each serious drill pipe standard (e. g. API SPEC. 5DP, Fearnly Procter NS-1, T H Hill Standard DS-1) includes obligations regarding this facts. Internal upset runouts in Petrolchimica drill pipe are always longer than the minimum requirements for extended internal upset runout acc. to todays standards. Petrolchimica provides drill pipe with potential for high drilling efficiency an/or potential for an extended drill pipe life.

Standard marking on tool joints and drill pipe

manufacturer
tool-joint designation *(e.g. NC50)*
ISO 11961 *and/or* Specification 5DP
API-logo *and* license no.
month *and* year (e.g. 911)
SR20 *(if applicable)*
L2 *or* L3 *(if PSL-2 or PSL-3)*
heat code *(lot traceable)*
drawing no.
(applied in one or more lines by die stamping)

manufacturer
ISO 11961 *and/or* Specification 5DP
API-logo *and* license no.
welding month *and* year *(e.g. 1011)*
size designation *(lable 1)*
mass designation *(lable 2)*
grade of drill pipe body
SR information applicable to drill pipe
L2 *or* L3 *(if PSL-2 or PSL-3)*
heat code
(applied in one or more lines by paint stanceling)

manufacturer
tool-joint designation *(e.g. NC50)*
ISO 11961 *and/or* Specification 5DP
API-logo *and* license no.
month *and* year *(e.g. 911)*
SR20 *(if applicable)*
L2 *or* L3 *(if PSL-2 or PSL-3)*
heat code *(lot traceable)*
drawing no.
(applied in one or more lines by die stamping)

drill pipe manufacturer
welded month *and* year *(e.g. 1011)*
drill pipe body manufacturer
drill pipe grade
drill pipe mass code *(e.g. G 2)*
tool-joint designation *(e.g. NC50)*
pin-serial no.
(add. codes as applicable)
(applied in one or more lines by die stamping)

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp XImgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_g	Tmti Mrxivrep]miph Tviwwyvi T_m	Tmti Xirwmpi]miph	Tmti Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xssp Nsmrx Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
2 3/8 :407	**6.65** =0=4	**0.280** ;055	**1.815** 8:054	**1.8429** 550<=	IY	I	**15 600** 5 4;:	**15 470** 5 4:;	**138 220** :59	**6 250** < 8;4	**313 681** 5 7=:	**6 875** = 764
					IY	\	**19 760** 5 7:6	**19 600** 5 795	**175 080** ;;=	**7 920** 54 ;84	**313 681** 5 7=:	**6 875** = 764
					IY	K	**21 840** 5 94:	**21 660** 5 8=7	**193 500** <:5	**8 750** 55 <:4	**313 681** 5 7=:	**6 875** = 764
2 7/8 ;704	**6.85** 5405=	**0.217** 9095	**2.441** :6044	**1.8120** 550:=	IY	I	**10 467** ;66	**9 907** :<7	**135 902** :49	**8 083** 54 =:4	**447 130** 5 ==4	**12 053** 5: 784
					IY	\	**12 940** <=6	**12 548** <:9	**172 143** ;::	**10 238** 57 <<4	**447 130** 5 ==4	**12 053** 5: 784
					IY	K	**14 020** =:;	**13 869** =9:	**190 263** <8;	**11 316** 59 784	**447 130** 5 ==4	**12 053** 5: 784
2 7/8 ;704	**8.60** 560<4	**0.308** ;0<6	**2.260** 9;084	**2.4831** 5:046	IY	I	**14 348** =<=	**14 061** =;4	**186 290** <6=	**10 413** 58 564	**313 681** 5 7=:	**6 875** = 764
											447 130 5 ==4	**12 053** 5: 784
					IY	\	**18 174** 5 697	**17 810** 5 66<	**235 967** 5 494	**13 190** 5; <<4	**313 681** 5 7=:	**6 875** = 764
											447 130 5 ==4	**12 053** 5: 784
					IY	K	**20 087** 5 7<9	**19 685** 5 79;	**260 805** 5 5:5	**14 578** 5= ;:4	**313 681** 5 7=:	**6 875** = 764
											447 130 5 ==4	**12 053** 5: 784
					IY	W	**25 826** 5 ;<5	**25 310** 5 ;89	**335 321** 5 8=6	**18 743** 69 854	**495 726** 6 64:	**13 389** 5< 594
2 7/8 ;704	**10.40** 5908<	**0.362** =05=	**2.151** 980:8	**2.8579** 5<088	IY	I	**16 509** 5 57<	**16 526** 5 57=	**214 345** =98	**11 550** 59 ::4	**447 130** 5 ==4	**12 053** 5: 784
					IY	\	**20 911** 5 886	**20 933** 5 887	**271 504** 5 64<	**14 635** 5= <84	**495 726** 6 64:	**13 389** 5< 594
											447 130 5 ==4	**12 053** 5: 784
					IY	K	**23 112** 5 9=8	**23 137** 5 9=9	**300 083** 5 779	**16 176** 65 =74	**495 726** 6 64:	**13 389** 5< 594
					IY	W	**29 716** 6 48=	**29 747** 6 495	**385 821** 5 ;5;	**20 800** 6< 644	**623 844** 6 ;::	**17 170** 67 6<4
3 1/2 <<0=	**9.50** 58058	**0.254** :089	**2.992** ;:044	**2.5902** 5:0;5	IY	I	**10 001** :=4	**9 530** :9;	**194 265** <:9	**14 146** 5= 5<4	**419 797** 5 <:<	**12 813** 5; 7;4
											587 308 6 :58	**18 107** 68 994
					IY	\	**12 080** <77	**12 070** <76	**246 069** 5 4=9	**17 918** 68 6=4	**587 308** 6 :58	**18 107** 68 994
					IY	K	**13 060** =44	**13 340** =64	**271 971** 5 654	**19 805** 6: <94	**587 308** 6 :58	**18 107** 68 994
					IY	W	**15 750** 5 4<:	**17 150** 5 5<6	**349 677** 5 99:	**25 463** 78 964	**587 308** 6 :58	**18 107** 68 994

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr Xjti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmxj	Xsxep Hmwtpegi1 qirx..
	Syxwmhi [	Mrwmhi h_{my}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq [6]		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
NC 26 (23/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**2 9/16** :905	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**7.05** 5409	**4 125** 9 9=4	**1.09**	**0.134** 50::8	**0.241** 60==7
NC 26 (2 3/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**2 9/16** :905	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**7.05** 5409	**4 125** 9 9=4	**0.86**	**0.134** 50::8	**0.241** 60==7
NC 26 (2 3/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**2 9/16** :905	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**7.05** 5409	**4 125** 9 9=4	**0.78**	**0.134** 50::8	**0.241** 60==7
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**7.73** 5509	**7 122** = ::4	**1.47**	**0.238** 60=:	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**7.73** 5509	**7 122** = ::4	**1.16**	**0.238** 60=:	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**7.73** 5509	**7 122** = ::4	**1.05**	**0.238** 60=:	**0.356** 8086
NC 26 (2 3/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**3** ;:06	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**9.33** 570=	**4 125** 9 9=4	**0.52**	**0.201** 608=;	**0.343** 806:4
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**9.81** 580:	**7 122** = ::4	**1.14**	**0.206** 609:	**0.356** 8086
NC 26 (2 3/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**3** ;:06	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**9.33** 570=	**4 125** 9 9=4	**0.5**	**0.201** 6094	**0.343** 806:
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**9.81** 580:	**7 122** = ::4	**0.90**	**0.206** 609:	**0.356** 8086
NC 26 (2 3/8 IF)	**3 3/8** <90;	**1 3/4** 8808	**3** ;:06	**7** 5;;0<	**8** 64706	**2.531** 5:077	**2.457** 590<9	**9.33** 570=	**4 125** 9 9=4	**0.47**	**0.201** 6094	**0.343** 806:
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**9.81** 580:	**7 122** = ::4	**0.81**	**0.206** 609:	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2** 940<	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**4.032** 6:045	**4.337** 6;0=<	**9.93** 580<	**7 918** 54 ;84	**0.70**	**0.204** 6097	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**10.96** 5:07	**7 122** = ::4	**1.03**	**0.189** 6078<	**0.356** 80866
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2** 940<	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**4.032** 6:045	**4.337** 6;0=<	**11.08** 5:09	**7 918** 54 ;84	**0.90**	**0.187** 6076	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2 1/8** 9804	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**3.627** 67084	**4.337** 6;0=<	**10.96** 5:07	**7 122** = ::4	**0.81**	**0.189** 6079	**0.356** 8086
NC 31 (2 7/8 IF)	**4 1/8** 5480<	**2** 940<	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**4.032** 6:045	**4.337** 6;0=<	**11.08** 5:09	**7 918** 54 ;84	**0.82**	**0.187** 6076	**0.356** 8086
NC 31 (2 7/8 IF)	**4 3/8** 55505	**1 5/8** 8507	**3 3/16** <504	**7** 5;;0<	**9** 66<0:	**5.099** 760=4	**6.006** 7<0;9	**11.72** 5;08	**10 167** 57 ;<4	**0.81**	**0.184** 606=	**0.363** 8095
NC 38****	**4 3/4** 5640:	**3** ;:06	**3 7/8** =<08	**8** 64706	**10.5** 6::0;	**3.378** 650;=	**5.052** 7609=	**10.46** 590:	**7 688** 54 864	**0.91**	**0.366** 8098:	**0.525** :0965
NC 38 (3 1/2 IF)	**4 3/4** 5640:	**2 11/16** :<07	**3 7/8** =<08	**8** 64706	**10.5** 6::0;	**4.774** 740<4	**5.052** 7609=	**10.91** 5:06	**10 864** 58 ;74	**1.28**	**0.359** 808:	**0.525** :096
NC 38 (3 1/2 IF)	**4 3/4** 5640:	**2 11/16** :<07	**3 7/8** =<08	**8** 64706	**10.5** 6::0;	**4.774** 740<4	**5.052** 7609=	**10.91** 5:06	**10 864** 58 ;74	**1.01**	**0.359** 808:	**0.525** :096
NC 38 (3 1/2 IF)	**4 3/4** 5640:	**2 11/16** :<07	**3 7/8** =<08	**8** 64706	**10.5** 6::0;	**4.774** 740<4	**5.052** 7609=	**10.91** 5:06	**10 864** 58 ;74	**0.91**	**0.359** 808:	**0.525** :096
NC 38 (3 1/2 IF)	**4 3/4** 5640:	**2 11/16** :<07	**3 7/8** =<08	**8** 64706	**10.5** 6::0;	**4.774** 740<4	**5.052** 7609=	**10.91** 5:06	**10 864** 58 ;74	**0.71**	**0.359** 808:	**0.525** :096

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp Xlmgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	Xʖti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_q	Mrxivrep]miph Tviwwyvi T_m	Xirwmpi]miph	Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
3 1/2	**13.30**	**0.368**	**2.764**	**3.6209**	IY	I	**14 110**	**13 800**	**271 570**	**18 551**	**587 308**	**18 107**
<<0=	5=0;=	=079	;4065	6707:			=;7	=96	5 64=	69 594	6 :58	68 994
					IY	\	**17 880**	**17 480**	**343 989**	**23 498**	**649 158**	**20 326**
							5 677	5 649	5 975	75 <:4	6 <<=	6; 9:4
											587 308	**18 107**
											6 :58	68 994
					IY	K	**19 760**	**19 320**	**380 198**	**25 972**	**708 063**	**22 213**
							5 7:6	5 776	5 :=6	79 654	7 595	74 564
											649 158	**20 326**
											6 <<=	6; 9:4
											587 308	**18 107**
											6 :58	68 994
					IY	W	**25 400**	**24 840**	**488 826**	**33 393**	**842 440**	**26 515**
							5 ;95	5 ;57	6 5;9	89 6;4	7 ;8=	79 =94
											708 063	**22 213**
											7 595	74 564
											776 406	**25 673**
											7 899	78 <54
											838 257	**27 760**
											7 ;74	7; :84
3 1/2	**15.50**	**0.449**	**2.602**	**4.3037**	IY	I	**16 770**	**16 840**	**322 776**	**21 086**	**649 158**	**20 326**
<<0=	6704;	55084	::04=	6;0;;			5 59:	5 5:5	5 87:	6< 9=4	6 <<=	6; 9:4
											708 063	**22 213**
											7 595	74 564
											649 158	**19 173**
											6 <<=	6: 444
											708 063	**19 173**
											7 595	6: 444
					IY	\	**21 250**	**21 330**	**408 849**	**26 708**	**649 158**	**20 326**
							5 8:9	5 8;5	5 <5=	7: 654	6 <<=	6; 9:4
											708 063	**22 213**
											7 595	74 564
					IY	K	**23 480**	**23 570**	**451 886**	**29 520**	**842 440**	**26 515**
							5 :5=	5 :69	6 455	84 464	7 ;8=	79 =94
											708 063	**22 213**
											7 595	74 564
											838 257	**27 760**
											7 ;74	7; :84
					IY	W	**30 190**	**30 310**	**580 996**	**37 954**	**979 996**	**32 943**
							6 4<6	6 4=4	6 9<9	95 8:4	8 7:5	88 ::4

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Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr Xjti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh[	Mrwmhh_{my}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq ^{6}		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
	NC 38 (3 1/2 IF)	**4 3/4**	**2 11/16**	**3 7/8**	**8**	**10.5**	**4.774**	**5.052**	**14.08**	**10 864**	**0.98**	**0.310**	**0.525**
		5640:	:<07	=<08	64706	6::0;	740<4	7609=	6504	58 ;74		70<95	:0965
	NC 38 (3 1/2 IF)	**5**	**2 9/16**	**3 7/8**	**8**	**10.5**	**5.290**	**6.966**	**14.60**	**12 196**	**0.87**	**0.308**	**0.531**
		56;04	:905	=<08	64706	6::0;	78057	880=8	650;	5: 974		70<7	:0:4
	NC 38 (3 1/2 IF)	**4 3/4**	**2 11/16**	**3 7/8**	**8**	**10.5**	**4.774**	**5.052**	**14.08**	**10 864**	**0.77**	**0.310**	**0.525**
		5640:	:<07	=<08	64706	6::0;	740<4	7609=	6504	58 ;74		70<9	:096
	NC 38 (3 1/2 IF)	**5**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**6.966**	**14.75**	**13 328**	**0.86**	**0.305**	**0.531**
		56;04	:50=	=<08	64706	6::0;	7;074	880=8	6604	5< 4;4		70;=	:0:4
	NC 38 (3 1/2 IF)	**5**	**2 9/16**	**3 7/8**	**8**	**10.5**	**5.290**	**6.966**	**14.60**	**12 196**	**0.78**	**0.308**	**0.531**
		56;04	:905	=<08	64706	6::0;	78057	880=8	650;	5: 974		70<7	:0:4
	NC 38 (3 1/2 IF)	**4 3/4**	**2 11/16**	**3 7/8**	**8**	**10.5**	**4.774**	**5.052**	**14.08**	**10 864**	**0.70**	**0.310**	**0.525**
		5640:	:<07	=<08	64706	6::0;	740<4	7609=	6504	58 ;74		70<9	:096
	NC 38 (3 1/2 IF)	**5**	**2 1/8**	**3 7/8**	**8**	**10.5**	**6.900**	**6.966**	**15.10**	**15 909**	**0.79**	**0.3**	**0.531**
		56;04	9804	=<08	64706	6::0;	88096	880=8	6609	65 9;4		70;7	:0:4
	NC 38 (3 1/2 IF)	**5**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**6.966**	**14.75**	**13 328**	**0.67**	**0.305**	**0.531**
		56;04	:50=	=<08	64706	6::0;	7;074	880=8	6604	5< 4;4		70;=	:0:4
	NC 40 (4 FH)	**5 1/4**	**2 11/16**	**3 7/8**	**7**	**10**	**6.342**	**7.260**	**14.83**	**15 404**	**0.77**	**0.31**	**0.537**
		57707	:<07	=<08	5;;0<	69804	840=6	8:0<8	6605	64 <<4		70<9	:0:;
	NC 40 (4 FH)	**5 1/4**	**2 9/16**	**3 7/8**	**7**	**10**	**6.857**	**7.260**	**14.99**	**16 656**	**0.83**	**0.308**	**0.537**
		57707	:905	=<08	5;;0<	69804	88068	8:0<8	6607	66 9<4		70<7	:0:;
	NC 38 (3 1/2 IF)	**5**	**2 9/16**	**3 7/8**	**8**	**10.5**	**5.290**	**6.966**	**16.68**	**12 196**	**0.96**	**0.276**	**0.531**
		56;04	:905	=<08	64706	6::0;	78057	880=8	680<	5: 974		7086<	:09=:
	NC 38 (3 1/2 IF)	**5**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**6.966**	**16.84**	**13 328**	**1.05**	**0.273**	**0.531**
		56;04	:50=	=<08	64706	6::0;	7;074	880=8	6905	5< 4;4		707=	:0:4
	NC 38 (3 1/2 IF)	**4 3/4**	**2 9/16**	**3 7/8**	**8**	**10.5**	**5.290**	**5.052**	**16.33**	**11 504**	**0.91**	**0.276**	**0.525**
		5640:	:905	=<08	64706	6::0;	78057	7609=	6807	59 :44		7087	:096
	NC 38 (3 1/2 IF)	**4 3/4**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**5.052**	**16.49**	**11 504**	**0.91**	**0.273**	**0.525**
		5640:	:50=	=<08	64706	6::0;	7;074	7609=	6809	59 :44		707=	:096
	NC 38 (3 1/2 IF)	**5**	**2 9/16**	**3 7/8**	**8**	**10.5**	**5.290**	**6.966**	**16.68**	**12 196**	**0.76**	**0.276**	**0.531**
		56;04	:905	=<08	64706	6::0;	78057	880=8	680<	5: 974		7087	:0:4
	NC 38 (3 1/2 IF)	**5**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**6.966**	**16.84**	**13 328**	**0.83**	**0.273**	**0.531**
		56;04	:50=	=<08	64706	6::0;	7;074	880=8	6905	5< 4;4		707=	:0:4
	NC 38 (3 1/2 IF)	**5**	**2 1/8**	**3 7/8**	**8**	**10.5**	**6.900**	**6.966**	**17.19**	**15 909**	**0.90**	**0.268**	**0.531**
		56;04	9804	=<08	64706	6::0;	88096	880=8	690:	65 9;4		7077	:0:4
	NC 38 (3 1/2 IF)	**5**	**2 7/16**	**3 7/8**	**8**	**10.5**	**5.781**	**7.966**	**16.84**	**13 328**	**0.75**	**0.273**	**0.531**
		56;04	:50=	=<08	64706	6::0;	7;074	880=8	6905	5< 4;4		707=	:0:4
	NC 40 (4 FH)	**5 1/4**	**2 9/16**	**3 7/8**	**7**	**10**	**6.857**	**7.260**	**17.08**	**16 656**	**0.94**	**0.276**	**0.537**
		57707	:905	=<08	5;;0<	69804	88068	8:0<8	6908	66 9<4		7087	:0:;
	NC 40 (4 FH)	**5 1/2**	**2 1/4**	**3 7/8**	**7**	**10**	**8.038**	**9.371**	**17.81**	**19 766**	**0.87**	**0.271**	**0.543**
		57=0;	9;05	=<08	5;;0<	69804	950<:	:408:	6:09	6: <44		707;	:0;8

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv	Rsqmrep [imklx	[epp XImgoriww	Mrwmhi Hmeqixiv	Wigxmsr Evie Tmti Fsh}	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw					
							Tmti				Xssp Nsmrx	
							Gsppetwi Viwmwxergi	Mrxivrep]miph Tviwwyvi	Xirwmpi]miph	Xsvwmsrep]miph	Xirwmpi]miph	Xsvwmsrep]miph
H		x	h	E			T_q	T_m				
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
4 5450:	**14.00** 640<7	**0.330** <07<	**3.340** <80<8	**3.8048** 68099	MY	I	**11 350** ;<7	**10 830** ;8;	**285 359** 5 6;4	**23 288** 75 9;4	**711 611** 7 5:;	**23 487** 75 <84
					IY	I	**11 350** ;<7	**10 830** ;8;	**285 359** 5 6;4	**23 288** 75 9;4	**901 164** 8 454	**33 625** 89 9=4
											901 164 8 454	**33 257** 89 4=4
					MY	\	**14 380** ==6	**13 720** =8:	**361 455** 5 :4=	**29 498** 7= ==4	**776 406** 7 899	**25 673** 78 <54
											711 611 7 5:;	**23 487** 75 <84
					IY	\	**14 380** ==6	**13 720** =8:	**361 455** 5 :4=	**29 498** 7= ==4	**901 164** 8 454	**33 625** 89 9=4
											901 164 8 454	**33 257** 89 4=4
					MY	K	**15 900** 5 4=:	**15 160** 5 489	**399 503** 5 ;;<	**32 603** 88 644	**897 161** 7 ==6	**30 114** 84 <74
											776 406 7 899	**25 673** 78 <54
					IY	K	**15 900** 5 4=:	**15 160** 5 489	**399 503** 5 ;;<	**32 603** 88 644	**901 164** 8 454	**33 625** 89 9=4
											901 164 8 454	**33 257** 89 4=4
					MY	W	**20 140** 5 7<=	**19 490** 5 788	**513 647** 6 6<:	**41 918** 9: <74	**1080 137** 8 <4;	**36 363** 8= 744
											838 257 7 ;74	**27 760** 7; :84
					IY	W	**20 140** 5 7<=	**19 490** 5 788	**513 647** 6 6<:	**41 918** 9: <74	**1048 429** 8 :::	**39 230** 97 5=4
											1048 429 8 :::	**34 057** 8: 5;4
4 1/2 55807	**13.75** 6408:	**0.271** :0<<	**3.958** 544097	**3.6004** 67067	MY	I	**7 170** 8=8	**7 900** 989	**270 034** 5 646	**25 908** 79 574	**823 118** 7 ::7	**30 655** 85 9:4
					IY	I	**7 170** 8=8	**7 900** 989	**270 034** 5 646	**25 908** 79 574	**849 268** 7 ;;=	**33 824** 89 <:4

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
	Tool Joint Data							**Drill Pipe Data**				
Gsrrigxmsr X}ti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmhi [	Mrwmhi h_{my}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq ^{6}		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
	NC 40 (4 FH)	**5 1/4** 57707	**2 13/16** ;508	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**5.802** 7;087	**7.260** 8:0<8	**15.37** 660=	**14 092** 5= 554	**1.01**	**0.443** 90947	**0.678** <0866
	NC 46 (4 IF)	**6** 59608	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**9.853** :709;	**16.05** 670=	**20 175** 6; 794	**1.44**	**0.453** 90:7	**0.699** <0:<
	NC 46 (4 IF)	**5 3/4** 58:05	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**7.546** 8<0:<	**15.65** 6707	**19 954** 6; 494	**1.43**	**0.453** 90:7	**0.693** <0:5
	NC 40 (4 FH)	**5 1/4** 57707	**2 11/16** :<07	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**6.342** 840=6	**7.260** 8:0<8	**15.53** 6705	**15 404** 64 <<4	**0.87**	**0.441** 908<	**0.678** <086
	NC 40 (4 FH)	**5 1/4** 57707	**2 13/16** ;508	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**5.802** 7;087	**7.260** 8:0<8	**15.37** 660=	**14 092** 5= 554	**0.80**	**0.443** 9094	**0.678** <086
	NC 46 (4 IF)	**6** 59608	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**9.853** :709;	**16.05** 670=	**20 175** 6; 794	**1.14**	**0.453** 90:7	**0.699** <0:<
	NC 46 (4 IF)	**5 3/4** 58:05	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**7.546** 8<0:<	**15.65** 6707	**19 954** 6; 494	**1.13**	**0.453** 90:7	**0.693** <0:5
	NC 40 (4 FH)	**5 1/2** 57=0;	**2 7/16** :50=	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**7.348** 8;085	**9.371** :408:	**16.20** 6805	**18 068** 68 944	**0.92**	**0.436** 9086	**0.683** <08<
	NC 40 (4 FH)	**5 1/4** 57707	**2 11/16** :<07	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**6.342** 840=6	**7.260** 8:0<8	**15.53** 6705	**15 404** 64 <<4	**0.79**	**0.441** 908<	**0.678** <086
	NC 46 (4 IF)	**6** 59608	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**9.853** :709;	**16.05** 670=	**20 175** 6; 794	**1.03**	**0.453** 90:7	**0.699** <0:<
	NC 46 (4 IF)	**5 3/4** 58:05	**3 1/4** <609	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**7.363** 8;094	**7.546** 8<0:<	**15.65** 6707	**19 954** 6; 494	**1.02**	**0.453** 90:7	**0.693** <0:5
	NC 40 (4 FH)	**5 1/2** 57=0;	**2** 940<	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**8.873** 9;069	**9.371** :408:	**16.65** 680<	**21 818** 6= 9<4	**0.87**	**0.429** 9077	**0.683** <08<
	NC 40 (4 FH)	**5 1/4** 57707	**2 9/16** :905	**4 3/16** 54:08	**7** 5;;0<	**10** 69804	**6.857** 88068	**7.260** 8:0<8	**15.68** 6707	**16 656** 66 9<4	**0.66**	**0.438** 9088	**0.678** <086
	NC 46 (4 IF)	**6** 59608	**3** ;:06	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**8.590** 99086	**9.853** :709;	**16.43** 6809	**23 538** 75 =54	**0.94**	**0.448** 909:	**0.699** <0:<
	NC 46 (4 IF)	**5 3/4** 58:05	**3** ;:06	**4 1/2** 55807	**7** 5;;0<	**10** 69804	**8.590** 99086	**7.546** 8<0:<	**16.02** 670<	**20 434** 6; ;44	**0.81**	**0.448** 909:	**0.693** <0:5
	NC 46 (4 IF)	**6** 59608	**3 3/8** <90;	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**6.712** 87074	**9.853** :709;	**15.50** 6705	**18 393** 68 =84	**1.18**	**0.623** ;0;7<	**0.860** 540:<6
	NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 7/8** =<08	**5** 56;04	**7** 5;;0<	**10** 69804	**6.917** 880:7	**9.044** 9<079	**15.25** 660;	**20 294** 6; 964	**1.31**	**0.637** ;0=5	**0.870** 540<5

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp Xlmgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_g	Tmti Mrxivrep]miph Tviwwyvi T_m	Tmti Xirwmpi]miph	Tmti Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xssp Nsmrx Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
4 1/2 55807	**16.60** 680;4	**0.337** <09:	**3.826** =;05<	**4.4074** 6<087	MIY	I	**10 390** ;5:	**9 830** ::<	**330 559** 5 8;5	**30 807** 85 ;;4	**901 167** 8 454	**33 994** 8: 4=4
											901 164 8 454	**33 625** 89 9=4
					IY	I	**10 390** ;5:	**9 830** ::<	**330 559** 5 8;5	**30 807** 85 ;;4	**939 098** 8 5;=	**37 676** 95 4<4
											939 098 8 5;=	**37 485** 94 <64
					MIY	I	**10 390** ;5:	**9 830** ::<	**330 559** 5 8;5	**30 807** 85 ;;4	**976 156** 8 788	**34 780** 8; 594
											976 158 8 788	**34 384** 8: :64
					IEU	**X**	**12 760** <<4	**12 450** <9<	**418 708** 5 <:7	**39 022** 96 =54	**1048 429** 8 :::	**39 659** 97 ;:4
											901 167 8 454	**33 994** 8: 4=4
											901 164 8 454	**33 625** 89 9=4
					EU	**X**	**12 760** <<4	**12 450** <9<	**418 708** 5 <:7	**39 022** 96 =54	**939 098** 8 5;=	**37 676** 95 4<4
											939 098 8 5;=	**37 485** 94 <64
					IEU	**X**	**12 760** <<4	**12 450** <9<	**418 708** 5 <:7	**39 022** 96 =54	**976 158** 8 788	**34 780** 8; 594
											976 158 8 788	**34 384** 8: :64
					IEU	**G**	**13 820** =97	**13 760** =8=	**462 782** 6 49=	**43 130** 9< 8<4	**1048 429** 8 :::	**39 659** 97 ;:4
											1048 429 8 :::	**39 230** 97 5=4
					EU	**G**	**13 820** =97	**13 760** =8=	**462 782** 6 49=	**43 130** 9< 8<4	**939 098** 8 5;=	**37 676** 95 4<4
											939 098 8 5;=	**37 485** 94 <64
					IEU	**G**	**13 820** =97	**13 760** =8=	**462 782** 6 49=	**43 130** 9< 8<4	**976 158** 8 788	**34 780** 8; 594
											976 158 8 788	**34 384** 8: :64
					IEU	**S**	**16 770** 5 59:	**17 690** 5 664	**595 005** 6 :8<	**55 453** ;9 5<4	**1183 911** 9 6:<	**44 871** :4 <84
											1048 429 8 :::	**39 659** 97 ;:4
					EU	**S**	**16 770** 5 59:	**17 690** 5 664	**595 005** 6 :8<	**55 453** ;9 5<4	**1109 923** 8 =7=	**44 673** :4 9;4
											1109 923 8 =7=	**44 166** 9= <<4
					IEU	**S**	**16 770** 5 59:	**17 690** 5 664	**595 005** 6 :8<	**55 453** ;9 5<4	**1235 340** 9 8=;	**44 769** :4 :44
											976 158 8 788	**34 780** 8; 594
											976 158 8 788	**34 384** 8: :64

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Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr Xyti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh\ [	Mrwmh\ h_{mv}	Ipizexsv Ytwix H_t	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq [6]		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
NC 46 (4 IF)	**6 1/4** 59<0<	**3 1/4** <609	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.363** 8;094	**12.258** ;=04<	**18.62** 6;0;	**20 396** 6; :94	**1.10**	**0.582** ;066=	**0.867** 540;:=
NC 46 (4 IF)	**6** 59608	**3 1/4** <609	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.363** 8;094	**9.853** :709;	**18.19** 6;05	**20 175** 6; 794	**0.86**	**0.582** ;067	**0.860** 540:<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.18** 6;05	**22 606** 74 :94	**1.22**	**0.596** ;084	**0.873** 540<8
NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**9.044** 9<079	**17.97** 6:0;	**22 491** 74 8=4	**1.22**	**0.596** ;084	**0.870** 540<5
4 1/2 FH	**6** 59608	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**10.320** ::09<	**18.58** 6;0;	**20 868** 6< 6=4	**1.13**	**0.576** ;059	**0.860** 540:<
4 1/2 FH	**5 3/4** 58:05	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**8.013** 950;4	**18.18** 6;05	**20 630** 6; =;4	**1.12**	**0.576** ;059	**0.854** 540:5
NC 46 (4 IF)	**6 1/4** 59<0<	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**8.590** 99086	**12.258** ;=04<	**18.99** 6<07	**23 795** 76 6:4	**1.02**	**0.577** ;05;	**0.867** 540;;
NC 46 (4 IF)	**6 1/4** 59<0<	**3 1/4** <609	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.363** 8;094	**12.258** ;=04<	**18.62** 6;0;	**20 396** 6; :94	**0.87**	**0.582** ;067	**0.867** 540;;
NC 46 (4 IF)	**6** 59608	**3 1/4** <609	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.363** 8;094	**9.853** :709;	**18.19** 6;05	**20 175** 6; 794	**0.86**	**0.582** ;067	**0.860** 540:<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.18** 6;05	**22 606** 74 :94	**0.97**	**0.596** ;084	**0.873** 540<8
NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**9.044** 9<079	**17.97** 6:0;	**22 491** 74 8=4	**0.96**	**0.596** ;084	**0.870** 540<5
4 1/2 FH	**6** 59608	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**10.320** ::09<	**18.58** 6;0;	**20 868** 6< 6=4	**0.89**	**0.576** ;059	**0.860** 540:<
4 1/2 FH	**5 3/4** 58:05	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**8.013** 950;4	**18.18** 6;05	**20 630** 6; =;4	**0.88**	**0.576** ;059	**0.854** 540:5
NC 46 (4 IF)	**6 1/4** 59<0<	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**8.590** 99086	**12.258** ;=04<	**18.99** 6<07	**23 795** 76 6:4	**0.92**	**0.577** ;05;	**0.867** 540;;
NC 46 (4 IF)	**6** 59608	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**8.590** 99086	**9.853** :709;	**18.55** 6;0:	**23 538** 75 =54	**0.91**	**0.577** ;05;	**0.860** 540:<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.18** 6;05	**22 606** 74 :94	**0.87**	**0.596** ;084	**0.873** 540<8
NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 3/4** =906	**5** 56;04	**7** 5;;0<	**10** 69804	**7.665** 8=089	**9.004** 9<04=	**17.97** 6:0;	**22 491** 74 8=4	**0.87**	**0.596** ;084	**0.870** 540<5
4 1/2 FH	**6** 59608	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**10.320** ::09<	**18.58** 6;0;	**20 868** 6< 6=4	**0.81**	**0.576** ;059	**0.860** 540:<
4 1/2 FH	**5 3/4** 58:05	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**8.013** 950;4	**18.18** 6;05	**20 630** 6; =;4	**0.80**	**0.576** ;059	**0.854** 540:5
NC 46 (4 IF)	**6 1/4** 59<0<	**2 3/4** :=0<	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**9.719** :60;4	**12.258** ;=04<	**19.32** 6<0<	**26 923** 7: 944	**0.81**	**0.572** ;054	**0.867** 540;;
NC 46 (4 IF)	**6 1/4** 59<0<	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**8.590** 99086	**12.258** ;=04<	**18.99** 6<07	**23 795** 76 6:4	**0.72**	**0.577** ;05;	**0.867** 540;;
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 1/2** <<0=	**5** 56;04	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**10.284** ::079	**18.62** 6;0;	**26 804** 7: 784	**0.81**	**0.589** ;076	**0.873** 540<8
NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 1/2** <<0=	**5** 56;04	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**9.044** 9<079	**18.40** 6;08	**26 500** 79 =74	**0.80**	**0.589** ;076	**0.870** 540<5
4 1/2 FH	**6 1/4** 59<0<	**2 1/2** :709	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**10.079** :9047	**12.725** <6054	**19.66** 6=07	**26 861** 7: 864	**0.81**	**0.566** ;047	**0.867** 540;;
4 1/2 FH	**6** 59608	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**10.320** ::09<	**18.58** 6;0;	**20 868** 6< 6=4	**0.63**	**0.576** ;059	**0.860** 540:<
4 1/2 FH	**5 3/4** 58:05	**3** ;:06	**4 11/16** 55=05	**7** 5;;0<	**10** 69804	**7.919** 9504=	**8.013** 950;4	**18.18** 6;05	**20 630** 6; =;4	**0.62**	**0.576** ;059	**0.854** 540:5

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

PETROL CHIMICA
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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv	Rsqmrep [imklx	[epp Xlmgoriww	Mrwmhi Hmeqixiv	Wigxmsr Evie Tmti Fsh}	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw					
							Tmti				Xssp Nsmrx	
							Gsppetwi Viwmwxergi	Mrxivrep]miph Tviwwyvi	Xirwmpi]miph	Xsvwmsrep]miph	Xirwmpi]miph	Xsvwmsrep]miph
H		x	h	E			T_q	T_m				
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
4 1/2	**20.00**	**0.430**	**3.640**	**5.4981**	**IEU**	**E**	**12 960**	**12 540**	**412 359**	**36 901**	**1048 429**	**39 659**
55807	6=0;:	540=6	=608:	7908;			<=8	<:9	5 <79	94 474	8 :::	97 ;;4
											1048 429	**39 230**
											8 :::	97 5=4
					EU	**E**	**12 960**	**12 540**	**412 359**	**36 901**	**1025 983**	**41 235**
							<=8	<:9	5 <79	94 474	8 9::	99 =54
											1025 983	**41 025**
											8 9::	99 :64
					MIY	I	**12 960**	**12 540**	**412 359**	**36 901**	**976 158**	**34 780**
							<=8	<:9	5 <79	94 474	8 788	8; 594
					MIY	\	**16 420**	**15 890**	**522 321**	**46 741**	**1183 911**	**44 871**
							5 576	5 4=:	6 768	:7 7;4	9 6:<	:4 <84
											1048 429	**39 659**
											8 :::	97 ;;4
					IY	\	**16 420**	**15 890**	**522 321**	**46 741**	**1025 983**	**41 235**
							5 576	5 4=:	6 768	:7 7;4	8 9::	99 =54
											1109 923	**44 673**
											8 =7=	:4 9;4
					MIY	\	**16 420**	**15 890**	**522 321**	**46 741**	**1235 340**	**44 265**
							5 576	5 4=:	6 768	:7 7;4	9 8=;	:4 454
					MIY	K	**18 150**	**17 560**	**577 302**	**51 661**	**1307 611**	**49 630**
							5 695	5 655	6 9:=	;4 484	9 <5=	:; 6=4
											1235 340	**44 265**
											9 8=;	:4 454
											1048 429	**39 659**
											8 :::	97 ;;4
					IY	K	**18 150**	**17 560**	**577 302**	**51 661**	**1109 923**	**44 673**
							5 695	5 655	6 9:=	;4 484	8 =7=	:4 9;4
											1268 966	**50 484**
											9 :8;	:< 894
					MIY	W	**23 330**	**22 570**	**742 246**	**66 422**	**1419 531**	**53 936**
							5 :4=	5 99:	7 747	=4 494	: 75;	;7 574
											1183 911	**44 871**
											9 6:<	:4 <84
					IY	W	**23 330**	**22 570**	**742 246**	**66 422**	**1416 229**	**50 484**
							5 :4=	5 99:	7 747	=4 494	: 746	:< 894
											1416 229	**57 801**
											: 746	;< 7;4
											1268 966	**50 484**
											9 :8;	:< 894

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
	Tool Joint Data							**Drill Pipe Data**				
Gsrrigxmsr Xjti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh[	Mrwmhh_{my}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq ^{6}		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
	NC 46 (4 IF)	**6 1/4**	**3**	**4 11/16**	**7**	**10**	**8.590**	**12.258**	**22.35**	**23 795**	**1.07**	**0.525**	**0.867**
		59<0<	;:06	55=05	5;;0<	69804	99086	;=04<	7707	76 6:4		:0965	540;:=
	NC 46 (4 IF)	**6**	**3**	**4 11/16**	**7**	**10**	**8.590**	**9.853**	**21.92**	**23 538**	**1.06**	**0.525**	**0.860**
		59608	;:06	55=05	5;;0<	69804	99086	:709;	760:	75 =54		:096	540:<
	NC 50 (4 1/2 IF)	**6 3/8**	**3 5/8**	**5**	**7**	**10**	**8.389**	**10.284**	**21.76**	**24 741**	**1.12**	**0.541**	**0.873**
		5:50=	=605	56;04	5;;0<	69804	98056	::079	7608	77 984		:0;6	540<8
	NC 50 (4 1/2 IF)	**6 1/4**	**3 5/8**	**5**	**7**	**10**	**8.389**	**9.044**	**21.54**	**24 615**	**1.11**	**0.541**	**0.870**
		59<0<	=605	56;04	5;;0<	69804	98056	9<079	7605	77 7;4		:0;6	540<5
	4 1/2 FH	**6**	**3**	**4 11/16**	**7**	**10**	**7.919**	**10.320**	**21.94**	**20 868**	**0.94**	**0.525**	**0.860**
		59608	;:06	55=05	5;;0<	69804	9504=	::09<	760;	6< 6=4		:096	540:<
	NC 46 (4 IF)	**6 1/4**	**2 3/4**	**4 11/16**	**7**	**10**	**9.719**	**12.258**	**22.68**	**26 923**	**0.96**	**0.520**	**0.867**
		59<0<	:=0<	55=05	5;;0<	69804	:60;4	;=04<	770<	7: 944		:08:	540;;
	NC 46 (4 IF)	**6 1/4**	**3**	**4 11/16**	**7**	**10**	**8.590**	**12.258**	**22.35**	**23 795**	**0.85**	**0.525**	**0.867**
		59<0<	;:06	55=05	5;;0<	69804	99086	;=04<	7707	76 6:4		:096	540;;
	NC 50 (4 1/2 IF)	**6 3/8**	**3 5/8**	**5**	**7**	**10**	**8.389**	**10.284**	**21.76**	**24 741**	**0.88**	**0.541**	**0.873**
		5:50=	=605	56;04	5;;0<	69804	98056	::079	7608	77 984		:0;6	540<8
	NC 50 (4 1/2 IF)	**6 3/8**	**3 1/2**	**5**	**7**	**10**	**9.089**	**10.284**	**21.98**	**26 804**	**0.96**	**0.538**	**0.873**
		5:50=	<<0=	56;04	5;;0<	69804	9<0:8	::079	760;	7: 784		:0:<	540<8
	4 1/2 FH	**6**	**2 1/2**	**4 11/16**	**7**	**10**	**10.079**	**10.320**	**22.59**	**26 559**	**0.95**	**0.515**	**0.860**
		59608	:709	55=05	5;;0<	69804	:9047	::09<	770:	7: 454		:084	540:<
	NC 46 (4 IF)	**6 1/4**	**2 1/2**	**4 11/16**	**7**	**10**	**10.750**	**12.258**	**22.98**	**29 778**	**0.96**	**0.516**	**0.867**
		59<0<	:709	55=05	5;;0<	69804	:=079	;=04<	7806	84 7;4		:085	540;;
	4 1/2 FH	**6**	**2 1/2**	**4 11/16**	**7**	**10**	**10.079**	**10.320**	**22.59**	**26 559**	**0.86**	**0.515**	**0.860**
		59608	:709	55=05	5;;0<	69804	:9047	::09<	770:	7: 454		:084	540:<
	NC 46 (4 IF)	**6 1/4**	**3**	**4 11/16**	**7**	**10**	**8.590**	**12.258**	**22.35**	**23 795**	**0.77**	**0.525**	**0.867**
		59<0<	;:06	55=05	5;;0<	69804	99086	;=04<	7707	76 6:4		:096	540;;
	NC 50 (4 1/2 IF)	**6 3/8**	**3 1/4**	**5**	**7**	**10**	**10.414**	**10.284**	**21.98**	**26 804**	**0.98**	**0.532**	**0.873**
		5:50=	<609	56;04	5;;0<	69804	:;05=	::079	760;	7: 784		:0:5	540<8
	NC 50 (4 1/2 IF)	**6 3/8**	**3 1/4**	**5**	**7**	**10**	**10.414**	**10.284**	**22.37**	**30 290**	**0.98**	**0.532**	**0.873**
		5:50=	<609	56;04	5;;0<	69804	:;05=	::079	7707	85 4;4		:0:5	540<8
	NC 46 (4 IF)	**6 1/4**	**2 1/4**	**4 11/16**	**7**	**10**	**11.683**	**12.258**	**23.25**	**32 362**	**0.81**	**0.511**	**0.867**
		59<0<	9;05	55=05	5;;0<	69804	;907;	;=04<	780:	87 <<4		:079	540;;
	NC 46 (4 IF)	**6 1/4**	**2 3/4**	**4 11/16**	**7**	**10**	**9.719**	**12.258**	**22.68**	**26 923**	**0.68**	**0.52**	**0.867**
		59<0<	:=0<	55=05	5;;0<	69804	:60;4	;=04<	770<	7: 944		:08:	540;;
	NC 50 (4 1/2 IF)	**6 3/8**	**3**	**5**	**7**	**10**	**11.642**	**10.284**	**22.73**	**30 290**	**0.76**	**0.526**	**0.873**
		5:50=	;:06	56;04	5;;0<	69804	;9055	::079	770<	85 4;4		:097	540<8
	NC 50 (4 1/2 IF)	**6 5/8**	**3**	**5**	**7**	**10**	**11.642**	**12.836**	**23.20**	**34 681**	**0.87**	**0.526**	**0.880**
		5:<07	;:06	56;04	5;;0<	69804	;9055	<60<5	7809	8; 464		:097	540=7
	NC 50 (4 1/2 IF)	**6 3/8**	**3 1/4**	**5**	**7**	**10**	**10.414**	**10.284**	**22.37**	**30 290**	**0.76**	**0.532**	**0.873**
		5:50=	<609	56;04	5;;0<	69804	:;05=	::079	7707	85 4;4		:0:5	540<8

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

PETROL CHIMICA
SISTEMI PRODUTTIVI

5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv	Rsqmrep [imklx	[epp Xlmgoriww	Mrwmhi Hmeqixiv	Wigxmsr Evie Tmti Fsh}	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw					
							Tmti				Xssp Nsmrx	
							Gsppetwi Viwmwxergi	Mrxivrep]miph Tviwwyvi	Xirwmpi]miph	Xsvwmsrep]miph	Xirwmpi]miph	Xsvwmsrep]miph
H		x	h	E			T_q	T_m				
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
5 56;04	**16.25** 6805<	**0.296** ;096	**4.408** 5550=:	**4.3743** 6<066	MIY	I	**6 940** 8;=	**7 770** 97:	**328 074** 5 8:4	**35 044** 8; 954	**939 098** 8 5;=	**37 676** 95 4<4
					MIY	\	**8 110** 99=	**9 840** ;;<	**415 560** 5 <8=	**44 389** :4 5<4	**939 098** 8 5;=	**37 676** 95 4<4
					MIY	K	**8 620** 9=8	**10 880** ;94	**459 303** 6 488	**49 062** :: 964	**939 098** 8 5;=	**37 676** 95 4<4
					MIY	W	**9 830** ;;<	**13 990** =:9	**590 532** 6 :6<	**63 080** <9 964	**1109 923** 8 =7=	**44 673** :4 9;4
5 56;04	**19.50** 6=046	**0.362** =05=	**4.276** 54<0:5	**5.2746** 78047	MIY	I	**9 960** :<;	**9 500** :99	**395 596** 5 ;:4	**41 167** 99 <54	**939 098** 8 5;=	**37 676** 95 4<4
											939 098 8 5;=	**37 868** 95 784
											939 098 8 5;=	**37 485** 94 <64
					IEU	**X**	**12 030** <6=	**12 040** <74	**501 088** 6 674	**52 144** ;4 ;44	**939 098** 8 5;=	**37 676** 95 4<4
											1109 923 8 =7=	**44 673** :4 9;4
					IEU	**G**	**13 000** <=:	**13 300** =5;	**553 834** 6 8:9	**57 633** ;< 584	**1109 923** 8 =7=	**44 900** :4 <<4
											1109 923 8 =7=	**44 673** :4 9;4
											1268 966 9 :8;	**51 447** := ;94
					IEU	**S**	**15 670** 5 4<4	**17 100** 5 5;=	**712 072** 7 5:=	**74 100** 544 8:4	**1268 966** 9 :8;	**51 447** := ;94
											1416 229 : 746	**56 985** ;; 6:4
											1551 710 : =49	**63 406** <9 =;4
											1619 235 ; 64:	**72 483** =< 6;4

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr Xŋti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh\ [	Mrwmh\ h_{my}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq [6]		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.34** 6;07	**22 606** 74 :94	**1.08**	**0.773** =0:46	**1.053** 5704;=
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.34** 6;07	**22 606** 74 :94	**0.85**	**0.773** =0:4	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**18.34** 6;07	**22 606** 74 :94	**0.77**	**0.773** =0:4	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**10.284** ::079	**18.77** 6;0=	**26 804** 7: 784	**0.71**	**0.766** =095	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**21.10** 7508	**22 606** 74 :94	**0.92**	**0.731** =04<4	**1.053** 5704;=
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**10.414** ::05=	**10.284** ::079	**21.33** 750;	**22 721** 74 <44	**0.92**	**0.731** =04<	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/4** 59<0<	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**9.044** 9<079	**20.89** 7505	**22 491** 74 8=4	**0.91**	**0.731** =04<	**1.050** 57048
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**21.10** 7508	**22 606** 74 :94	**0.72**	**0.731** =04<	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**10.284** ::079	**21.53** 7604	**26 804** 7: 784	**0.86**	**0.724** <0==	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**11.548** ;8094	**21.76** 7608	**26 940** 7: 974	**0.78**	**0.724** <0==	**1.056** 57056
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**10.284** ::079	**21.53** 7604	**26 804** 7: 784	**0.78**	**0.724** <0==	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/4** <609	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**10.414** ::05=	**11.548** ;8094	**22.15** 7704	**30 868** 85 <94	**0.89**	**0.718** <0=6	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/4** <609	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**10.414** ::05=	**11.548** ;8094	**22.15** 7704	**30 868** 85 <94	**0.69**	**0.718** <0=6	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3** ;:06	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**11.642** ;9055	**11.548** ;8094	**22.51** 7709	**34 191** 8: 7:4	**0.77**	**0.712** <0<8	**1.056** 57056
NC 50 (4 1/2 IF)	**6 5/8** 5:<07	**2 3/4** :=0<	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**12.771** <607=	**12.836** <60<5	**23.07** 7807	**38 044** 95 9<4	**0.86**	**0.708** <0;=	**1.060** 5705;
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**23.42** 780=	**43 490** 9< =:4	**0.98**	**0.724** <0==	**1.082** 57088

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

PETROL CHIMICA
SISTEMI PRODUTTIVI

5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp XImgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_g	Mrxivrep]miph Tviwwyvi T_m	Xirwmpi]miph	Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
5 56;04	**25.60** 7<054	**0.500** 560;4	**4.000** 5450:4	**7.0686** 890:4	**IEU**	**E**	**13 500** =75	**13 120** =49	**530 145** 6 79=	**52 257** ;4 <94	**1109 923** 8 =7=	**44 673** :4 9;4
											939 098 8 5;=	**37 676** 95 4<4
					IEU	**X**	**17 100** 5 5;=	**16 620** 5 58:	**671 517** 6 =<<	**66 192** <= ;84	**1109 923** 8 =7=	**44 900** :4 <<4
											1268 966 9 :8;	**51 447** := ;94
											1416 229 : 746	**56 985** ;; 6:4
											1619 235 ; 64:	**62 903** <9 6<4
											1778 278 ; =57	**62 903** <9 6<4
											1619 235 ; 64:	**72 483** =< 6;4
											1778 278 ; =57	**78 716** 54: ;64
					IEU	**G**	**18 900** 5 747	**18 380** 5 6:;	**742 203** 7 747	**73 160** == 5=4	**1268 966** 9 :8;	**51 447** := ;94
											1416 229 : 746	**56 985** ;; 6:4
											1551 710 : =49	**63 406** <9 =;4
											1619 235 ; 64:	**62 903** <9 6<4
											1778 278 ; =57	**62 903** <9 6<4
											1619 235 ; 64:	**72 483** =< 6;4
											1778 278 ; =57	**78 716** 54: ;64
					IEU	**S**	**24 300** 5 :;9	**23 620** 5 :6=	**954 261** 8 68;	**94 062** 56; 974	**1619 235** ; 64:	**62 903** <9 6<4
											1778 278 ; =57	**62 903** <9 6<4
											1619 235 ; 64:	**72 483** =< 6;4
											1778 278 ; =57	**78 716** 54: ;64

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr Xjti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmhi [	Mrwmhi h_{mv}	Ipizexsv Ytwix H_t	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq [6]		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**10.284** ::079	**27.08** 8407	**26 804** 7: 784	**0.85**	**0.639** ;0=7;	**1.053** 5704;=
NC 50 (4 1/2 IF)	**6 3/8** 5:50=	**3 3/4** =906	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**7.665** 8=089	**10.284** ::079	**26.65** 7=0;	**22 606** 74 :94	**0.72**	**0.646** <046	**1.053** 5704<
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/2** <<0=	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**9.089** 9<0:8	**11.548** ;8094	**27.30** 840:	**26 940** 7: 974	**0.68**	**0.639** ;0=8	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/4** <609	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**10.414** ;;05=	**11.548** ;8094	**27.69** 8506	**30 868** 85 <94	**0.78**	**0.633** ;0<:	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3** ;:06	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**11.642** ;9055	**11.548** ;8094	**28.05** 850;	**34 191** 8: 7:4	**0.86**	**0.628** ;0<4	**1.056** 57056
5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**28.39** 8606	**37 742** 95 5;4	**0.95**	**0.640** ;0=9	**1.074** 57078
5 1/2 FH	**7** 5;;0<	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**11.670** ;906=	**28.78** 860<	**37 742** 95 5;4	**0.95**	**0.634** ;0<;	**1.074** 57078
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.94** 8705	**43 490** 9< =:4	**1.10**	**0.640** ;0=9	**1.082** 57088
5 1/2 FH	**7 1/4** 5<805	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**14.468** =7078	**29.33** 870:	**47 230** :8 474	**1.19**	**0.634** ;0<;	**1.082** 57088
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3 1/4** <609	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**10.414** ;;05=	**11.548** ;8094	**27.69** 8506	**30 868** 85 <94	**0.70**	**0.633** ;0<:	**1.056** 57056
NC 50 (4 1/2 IF)	**6 1/2** 5:905	**3** ;:06	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**11.642** ;9055	**11.548** ;8094	**28.05** 850;	**34 191** 8: 7:4	**0.78**	**0.628** ;0<4	**1.056** 57056
NC 50 (4 1/2 IF)	**6 5/8** 5:<07	**2 3/4** :=0<	**5 1/8** 57406	**7** 5;;0<	**10** 69804	**12.771** <607=	**12.836** <60<5	**28.61** 860:	**38 044** 95 9<4	**0.87**	**0.623** ;0;8	**1.060** 5705;
5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**28.39** 8606	**37 742** 95 5;4	**0.86**	**0.640** ;0=9	**1.074** 57078
5 1/2 FH	**7** 5;;0<	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**11.670** ;906=	**28.78** 860<	**37 742** 95 5;4	**0.86**	**0.634** ;0<;	**1.074** 57078
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.94** 8705	**43 490** 9< =:4	**0.99**	**0.640** ;0=9	**1.082** 57088
5 1/2 FH	**7 1/4** 5<805	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**14.468** =7078	**29.33** 870:	**47 230** :8 474	**1.08**	**0.634** ;0<;	**1.082** 57088
5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**28.39** 8606	**37 742** 95 5;4	**0.67**	**0.640** ;0=9	**1.074** 57078
5 1/2 FH	**7** 5;;0<	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**11.670** ;906=	**28.78** 860<	**37 742** 95 5;4	**0.67**	**0.634** ;0<;	**1.074** 57078
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 1/8** 57406	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.94** 8705	**43 490** 9< =:4	**0.77**	**0.640** ;0=9	**1.082** 57088
5 1/2 FH	**7 1/4** 5<805	**3 1/4** <609	**5 1/8** 57406	**8** 64706	**10** 69804	**14.642** =808:	**14.468** =7078	**29.33** 870:	**47 230** :8 474	**0.84**	**0.634** ;0<;	**1.082** 57088

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr X}ti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmhi [	Mrwmhi h_{mv}	Ipizexsv Ytwix H_I	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq ^{6}		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**21.61** 7606	**33 560** 89 944	**1.27**	**0.946** 550;9	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**21.61** 7606	**33 560** 89 944	**1.00**	**0.946** 550;9	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**21.61** 7606	**33 560** 89 944	**0.91**	**0.946** 550;9	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**21.61** 7606	**33 560** 89 944	**0.71**	**0.946** 550;9	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**24.28** 7:05	**33 560** 89 944	**1.10**	**0.906** 550698	**1.277** 590<:6
	5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**24.73** 7:0<	**37 742** 95 5;4	**1.24**	**0.899** 5505;	**1.277** 590<:
	5 1/2 FH	**7 3/8** 5<;07	**4 11/16** 55=05	**6 9/64** 59:04	**8** 64706	**10** 69804	**11.480** ;804:	**10.646** :<0:<	**23.94** 790:	**37 379** 94 :<4	**1.23**	**0.929** 55098	**1.295** 5:04=
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**24.28** 7:05	**33 560** 89 944	**0.87**	**0.906** 55069	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**24.73** 7:0<	**37 742** 95 5;4	**0.98**	**0.899** 5505;	**1.277** 590<:
	5 1/2 IF	**7 3/8** 5<;07	**4 11/16** 55=05	**6 9/64** 59:04	**8** 64706	**10** 69804	**11.480** ;804:	**10.646** :<0:<	**23.94** 790:	**40 837** 99 7;4	**1.06**	**0.929** 55098	**1.295** 5:04=
	5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**24.28** 7:05	**33 560** 89 944	**0.79**	**0.906** 55069	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**24.73** 7:0<	**37 742** 95 5;4	**0.89**	**0.899** 5505;	**1.277** 590<:
	5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**25.70** 7<06	**43 490** 9< =:4	**1.02**	**0.892** 5504<	**1.285** 590=:
	5 1/2 IF	**7 3/8** 5<;07	**4 11/16** 55=05	**6 9/64** 59:04	**8** 64706	**10** 69804	**11.480** ;804:	**10.646** :<0:<	**23.94** 790:	**37 379** 94 :<4	**0.88**	**0.929** 55098	**1.295** 5:04=
	5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**24.73** 7:0<	**37 742** 95 5;4	**0.69**	**0.899** 5505;	**1.277** 590<:
	5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**25.17** 7;09	**37 742** 95 5;4	**0.69**	**0.892** 5504<	**1.277** 590<:
	5 1/2 IF	**7 3/8** 5<;07	**4 11/16** 55=05	**6 9/64** 59:04	**8** 64706	**10** 69804	**11.480** ;804:	**10.646** :<0:<	**23.94** 790:	**37 379** 94 :<4	**0.68**	**0.929** 55098	**1.295** 5:04=
	5 1/2 FH	**7 1/2** 5=409	**3** ;:06	**5 11/16** 58809	**8** 64706	**10** 69804	**15.869** 54607<	**17.365** 556047	**27.01** 8406	**52 302** ;4 =54	**0.95**	**0.881** 540=8	**1.293** 5:04:

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

PETROL CHIMICA
SISTEMI PRODUTTIVI

5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp Xlmgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_q	Mrxivrep]miph Tviwwyvi T_m	Xirwmpi]miph	Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq ^{6}			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
5 1/2 57=0;	**19.20** 6<09;	**0.304** ;0;6	**4.892** 56806:	**4.9624** 76046	**IEU**	**E**	**6 040** 85:	**7 250** 944	**372 182** 5 :9:	**44 074** 9= ;:4	**1265 805** 9 :77	**55 933** ;9 <74
					IEU	**X**	**6 940** 8;=	**9 190** :78	**471 430** 6 4=<	**55 827** ;9 :=4	**1265 805** 9 :77	**55 933** ;9 <74
					IEU	**G**	**7 310** 948	**10 160** ;45	**521 054** 6 75=	**61 703** <7 ::4	**1265 805** 9 :77	**55 933** ;9 <74
					IEU	**S**	**8 090** 99<	**13 060** =44	**669 927** 6 =<5	**79 330** 54; 9:4	**1265 805** 9 :77	**55 933** ;9 <74
5 1/2 57=0;	**21.90** 7609=	**0.361** =05;	**4.778** 56507:	**5.8282** 7;0:4	**IEU**	**E**	**8 410** 9<4	**8 610** 9=8	**437 117** 5 =89	**50 710** :< ;94	**1265 805** 9 :77	**55 933** ;9 <74
											1448 410 : 889	**62 903** <9 6<4
											1401 410 : 67:	**62 298** <8 8:4
					IEU	**X**	**10 020** :=5	**10 910** ;96	**553 682** 6 8:8	**64 233** <; 4=4	**1265 805** 9 :77	**55 933** ;9 <74
											1448 410 : 889	**62 903** <9 6<4
											1401 410 : 67:	**68 062** =6 6<4
					IEU	**G**	**10 750** ;85	**12 060** <76	**611 964** 6 ;67	**70 994** =: 694	**1265 805** 9 :77	**55 933** ;9 <74
											1448 410 : 889	**62 903** <9 6<4
											1619 235 ; 64:	**72 483** =< 6;4
											1401 410 : 67:	**62 298** <8 8:4
					IEU	**S**	**12 680** <;8	**15 510** 5 4:=	**786 811** 7 945	**91 278** 567 ;94	**1448 410** : 889	**62 903** <9 6<4
											1619 235 ; 64:	**62 903** <9 6<4
											1401 410 : 67:	**62 298** <8 8:4
											1925 541 < 9:=	**87 170** 55< 5=4

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv H	Rsqmrep [imklx	[epp Xlmgoriww x	Mrwmhi Hmeqixiv h	Wigxmsr Evie Tmti Fsh} E	X}ti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw Tmti Gsppetwi Viwmwxergi T_g	Mrxivrep]miph Tviwwyvi T_m	Xirwmpi]miph	Xsvwmsrep]miph	Xssp Nsmrx Xirwmpi]miph	Xsvwmsrep]miph
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
5 1/2 57=0;	**24.70** 7:0;:	**0.415** 54098	**4.670** 55<0:6	**6.6296** 860;;	**IEU**	**E**	**10 460** ;65	**9 900** :<7	**497 223** 6 657	**56 574** ;: ;44	**1265 805** 9 :77	**55 933** ;9 <74
											1510 384 : ;65	**62 298** <8 8:4
					IEU	**X**	**12 930** <=6	**12 540** <:9	**629 816** 6 <47	**71 661** =; 5:4	**1265 805** 9 :77	**55 933** ;9 <74
											1448 410 : 889	**62 903** <9 6<4
											1265 805 9 :77	**56 452** ;: 984
											1448 410 : 889	**64 734** <; ;;4
											1619 235 ; 64:	**72 483** =< 6;4
											1510 384 : ;65	**62 298** <8 8:4
					IEU	**G**	**14 010** =::	**13 860** =9:	**696 112** 7 4=<	**79 204** 54; 7<4	**1448 410** : 889	**62 903** <9 6<4
											1619 235 ; 64:	**62 903** <9 6<4
											1448 410 : 889	**64 734** <; ;;4
											1619 235 ; 64:	**72 483** =< 6;4
											1510 384 : ;65	**62 298** <8 8:4
					IEU	**S**	**17 020** 5 5;8	**17 830** 5 66=	**895 001** 7 =<7	**101 833** 57< 4;4	**1619 235** ; 64:	**62 903** <9 6<4
											1778 278 ; =57	**62 903** <9 6<4
											1619 235 ; 64:	**72 483** =< 6;4
											1778 278 ; =57	**78 716** 54: ;64
											1510 384 : ;65	**62 298** <8 8:4
											1925 541 < 9:=	**87 170** 55< 5=4

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Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
Tool Joint Data								**Drill Pipe Data**				
Gsrrigxmsr X}ti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh| [	Mrwmh| h_{my}	Ipizexsv Ytwix H_t	Tmr P_{TF}	Fs| P_F	Tmr E_T	Fs| E_F					
	in. qq					**sq.in.** gq ^{6}		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**26.74** 7=0<	**33 560** 89 944	**0.99**	**0.868** 540;<6	**1.277** 590<:6
5 1/2 IF	**7 3/8** 5<;07	**4 9/16** 5590=	**6 9/64** 59:04	**8** 64706	**10** 69804	**12.389** ;=0=7	**10.646** :<0:<	**26.68** 7=0;	**37 379** 94 :<4	**1.10**	**0.887** 55046	**1.295** 5:04=
5 1/2 FH	**7** 5;;0<	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**11.670** ;906=	**26.74** 7=0<	**33 560** 89 944	**0.78**	**0.868** 540;<	**1.277** 590<:
5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**27.20** 8409	**37 742** 95 5;4	**0.88**	**0.861** 540:=	**1.277** 590<:
5 1/2 FH	**7 1/4** 5<805	**4** 5450:	**5 11/16** 58809	**8** 64706	**10** 69804	**10.371** ::0=5	**14.468** =7078	**27.27** 840:	**33 871** 89 =64	**0.79**	**0.868** 540;<	**1.285** 590=:
5 1/2 FH	**7 1/4** 5<805	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**14.468** =7078	**27.73** 8507	**38 840** 96 ::4	**0.90**	**0.861** 540:=	**1.285** 590=:
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.16** 850=	**43 490** 9< =:4	**1.01**	**0.854** 540:5	**1.285** 590=:
5 1/2 IF	**7 3/8** 5<;07	**4 9/16** 5590=	**6 9/64** 59:04	**8** 64706	**10** 69804	**12.389** ;=0=7	**10.646** :<0:<	**26.68** 7=0;	**37 379** 94 :<4	**0.87**	**0.887** 55046	**1.295** 5:04=
5 1/2 FH	**7** 5;;0<	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**11.670** ;906=	**27.20** 8409	**37 742** 95 5;4	**0.79**	**0.861** 540:=	**1.277** 590<:
5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**27.63** 8505	**37 742** 95 5;4	**0.79**	**0.854** 540:5	**1.277** 590<:
5 1/2 FH	**7 1/4** 5<805	**3 3/4** =906	**5 11/16** 58809	**8** 64706	**10** 69804	**11.893** ;:0;7	**14.468** =7078	**27.73** 8507	**38 840** 96 ::4	**0.82**	**0.861** 540:=	**1.285** 590=:
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.16** 850=	**43 490** 9< =:4	**0.92**	**0.854** 540:5	**1.285** 590=:
5 1/2 IF	**7 3/8** 5<;07	**4 9/16** 5590=	**6 9/64** 59:04	**8** 64706	**10** 69804	**12.389** ;=0=7	**10.646** :<0:<	**26.68** 7=0;	**37 379** 94 :<4	**0.79**	**0.887** 55046	**1.295** 5:04=
5 1/2 FH	**7** 5;;0<	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**11.670** ;906=	**27.63** 8505	**37 742** 95 5;4	**0.62**	**0.854** 540:5	**1.277** 590<:
5 1/2 FH	**7** 5;;0<	**3 1/4** <609	**5 11/16** 58809	**8** 64706	**10** 69804	**14.642** =808:	**11.670** ;906=	**28.02** 850;	**37 742** 95 5;4	**0.62**	**0.848** 54097	**1.277** 590<:
5 1/2 FH	**7 1/4** 5<805	**3 1/2** <<0=	**5 11/16** 58809	**8** 64706	**10** 69804	**13.316** <90=5	**14.468** =7078	**28.16** 850=	**43 490** 9< =:4	**0.71**	**0.854** 540:5	**1.285** 590=:
5 1/2 FH	**7 1/4** 5<805	**3 1/4** <609	**5 11/16** 58809	**8** 64706	**10** 69804	**14.642** =808:	**14.468** =7078	**28.55** 8609	**47 230** :8 474	**0.77**	**0.854** 540:5	**1.285** 590=:
5 1/2 IF	**7 3/8** 5<;07	**4 9/16** 5590=	**6 9/64** 59:04	**8** 64706	**10** 69804	**12.389** ;=0=7	**10.646** :<0:<	**26.68** 7=0;	**37 379** 94 :<4	**0.61**	**0.887** 55046	**1.295** 5:04=
5 1/2 FH	**7 1/2** 5=409	**3** ;:06	**5 11/16** 58809	**8** 64706	**10** 69804	**15.869** 54607<	**17.365** 556047	**29.47** 870=	**52 302** ;4 =54	**0.86**	**0.843** 5408;	**1.293** 5:04:

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

Dimensions and Performance Properties of TPS Drill Pipe

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5	6	7	8	9	:	;	<	=	54	55	56	57
Pipe Data												
Wm~i> Syxwmhi Hmeqixiv	Rsqmrep [imklx	[epp XImgoriww	Mrwmhi Hmeqixiv	Wigxmsr Evie Tmti Fsh}	Xjti Ytwix	Kvehi	Tivjsvqergi Tvstivxmiw					
							Tmti				Xssp Nsmrx	
							Gsppetwi Viwmwxergi	Mrxivrep]miph Tviwwyvi	Xirwmpi]miph	Xsvwmsrep]miph	Xirwmpi]miph	Xsvwmsrep]miph
H		x	h	E			T_q	T_m				
in. qq	**lb/ft** ok3q	**in.** qq		**sq.in.** gq [6]			**psi** fev		**lb** oR	**ft-lb** Rq	**lb** oR	**ft-lb** Rq
6 59608	**22.00** 760;8	**0.324** <067	**5.350** 5790<=	**5.0019** 7606;	**IEU**	**E**	**5 750** 7=:	**7 090** 8<=	**433 011** 5 =6;	**56 119** ;: 4=4	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**X**	**6 560** 896	**8 980** :5=	**548 860** 6 886	**71 084** =: 7<4	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**G**	**6 890** 8;9	**9 920** :<8	**606 635** 6 ;44	**78 567** 54: 964	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**S**	**7 530** 95=	**12 750** <;=	**779 959** 7 8;5	**101 014** 57: =94	**1289 490** 9 ;7<	**61 742** <7 ;54
6 59608	**25.00** 7;065	**0.380** =0:9	**5.240** 577054	**6.7084** 8706<	**IEU**	**E**	**7 880** 987	**8 310** 9;7	**503 190** 6 67=	**63 973** <: ;74	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**X**	**9 330** :87	**10 530** ;6:	**637 374** 6 <7:	**81 033** 54= <:4	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**G**	**9 990** :<=	**11 640** <47	**704 466** 7 579	**89 563** 565 874	**1289 490** 9 ;7<	**61 742** <7 ;54
					IEU	**S**	**11 660** <48	**14 960** 5 475	**905 742** 8 475	**115 152** 59: 564	**1401 410** : 67:	**62 298** <8 8:4
6 5/8 5:<07	**25.20** 7;094	**0.330** <07<	**5.965** 595095	**6.5262** 86054	**IEU**	**E**	**4 790** 774	**6 540** 895	**489 465** 6 5;<	**70 580** =9 :=4	**1448 419** : 88:	**73 661** == <;4
					IEU	**X**	**5 320** 7:;	**8 280** 9;5	**619 989** 6 ;9=	**89 402** 565 654	**1448 419** : 88:	**73 661** == <;4
					IEU	**G**	**5 500** 7;=	**9 150** :75	**685 251** 7 48=	**98 812** 577 =;4	**1448 419** : 88:	**73 661** == <;4
					IEU	**S**	**6 040** 85:	**11 770** <56	**881 037** 7 =65	**127 045** 5;6 694	**1448 419** : 88:	**73 661** == <;4
6 5/8 5:<07	**27.30** 840:7	**0.362** =05=	**5.901** 58=0<=	**7.1226** 890=9	**IEU**	**E**	**5 890** 84:	**7 170** 8=8	**534 199** 6 7;;	**76 295** 547 884	**1448 419** : 88:	**73 661** == <;4
					IEU	**X**	**6 750** 8:9	**9 080** :6:	**676 652** 7 455	**96 640** 575 464	**1448 419** : 88:	**73 661** == <;4
					IEU	**G**	**7 100** 8=4	**10 040** :=6	**747 879** 7 76<	**106 813** 588 <64	**1448 419** : 88:	**73 661** == <;4
					IEU	**S**	**7 810** 97<	**12 910** <=4	**961 558** 8 6;=	**137 331** 5<: 5=4	**1448 419** : 88:	**73 661** == <;4

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Dimensions and Performance Properties of TPS Drill Pipe

58	59	5:	5;	5<	5=	64	65	66	67	68	69	6:
	Tool Joint Data							**Drill Pipe Data**				
Gsrrigxmsr Xƒti	Hmeqixiv sj Tmr erh Fs|			Xsrk Wtegi Pirkxl sj		Gvsww Wigxmsrep Evie sj		Ehnywxih [imklx.	Qeoi1Yt Xsvuyi	Xsvwmsrep Vexms0 Tmr xs Tmti	Getegmx}	Xsxep Hmwtpegi1 qirx..
	Syxwmh\	Mrwmh\	Ipizexsv Ytwix	Tmr	Fs|	Tmr	Fs|					
	[	h_{mv}	H_t	P_{TF}	P_F	E_T	E_F					
	in. qq					**sq.in.** gq [6]		**lb/ft** ok3q	**ft-lb** Rq		**US gal./ft** p3q	
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**23.69**	**37 045**	**1.10**	**1.148**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7907	94 674		58069=	5<0;9:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**23.69**	**37 045**	**0.87**	**1.148**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7907	94 674		5806:	5<0;:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**23.69**	**37 045**	**0.79**	**1.148**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7907	94 674		5806:	5<0;:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**23.69**	**37 045**	**0.61**	**1.148**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7907	94 674		5806:	5<0;:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**26.55**	**37 045**	**0.97**	**1.104**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7=09	94 674		570;57	5<0;9:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**26.55**	**37 045**	**0.76**	**1.104**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7=09	94 674		570;5	5<0;:
	5 1/2 IF	**7 3/8**	**4 13/16**	**6 9/64**	**8**	**10**	**10.548**	**10.646**	**26.55**	**37 045**	**0.69**	**1.104**	**1.510**
		5<;07	56606	59:04	64706	69804	:<049	:<0:<	7=09	94 674		570;5	5<0;:
	5 1/2 IF	**7 3/8**	**4 11/16**	**6 9/64**	**8**	**10**	**11.480**	**10.646**	**26.84**	**37 379**	**0.54**	**1.100**	**1.510**
		5<;07	55=05	59:04	64706	69804	;804:	:<0:<	7=0=	94 :<4		570::	5<0;:
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**27.89**	**44 197**	**1.04**	**1.412**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8509	9= =64		5;097=	660<74
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**27.89**	**44 197**	**0.82**	**1.412**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8509	9= =64		5;098	660<7
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**27.89**	**44 197**	**0.75**	**1.412**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8509	9= =64		5;098	660<7
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**27.89**	**44 197**	**0.58**	**1.412**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8509	9= =64		5;098	660<7
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**29.72**	**44 197**	**0.97**	**1.384**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8806	9= =64		5;05=5	660<74
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**29.72**	**44 197**	**0.76**	**1.384**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8806	9= =64		5;05=	660<7
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**29.72**	**44 197**	**0.69**	**1.384**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8806	9= =64		5;05=	660<7
	6 5/8 FH	**8**	**5**	**6 3/4**	**8**	**10**	**11.863**	**14.162**	**29.72**	**44 197**	**0.54**	**1.384**	**1.838**
		64706	56;04	5;508	64706	69804	;:098	=507;	8806	9= =64		5;05=	660<7

* Weight of the pipe / tool joint assembly is based on the average pipe length of 29.4 ft plus tool joint length. ** Including drill pipe volume.

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Application Samples:

Where well design or rock formations causing extensive loss of tool joint steel, protection for wear should be applied around the Box OD section at runout taper. Additional hardbanding at PIN OD runout is also applicable.

With regards to tong space, hardfacing may cause an extended tool joint length. Recommended extension length for tool joints is two inch, but customer requirements are also applicable for new production.

Petrolchimica offers two specialized product lines:

Products from Arnco Technology Trust Ltd.:

- Arnco 100XT™
  is a crack-free, casing-friendly product exhibiting casing wear percentages among the lowest measured.
- Arnco 150XT™
  is a crack-free, casing-friendly hardbanding, offering an ideal balance between durability and casing wear.
- Arnco 300XT™
  is the most durable casing-friendly hardbanding alloy.

Products from NOV Tuboscope™

- Tuboscope TCS™ 8000
  is designed for good all-around performance and maximum casing protection.
- Tuboscope TCS™ Titanium
  is a popular hardbanding choice features high-stress abrasion resistance and the ability to resist cracking and spalling.

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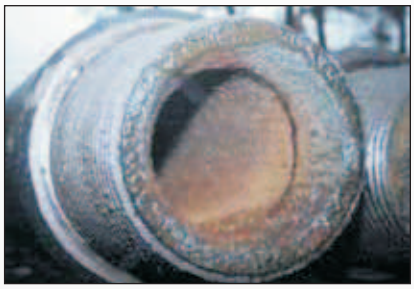
Internal Coating

Petrolchimica offers Coating TK-34P, together with the leader of internal coating application, NOV Tuboscope.

It is a green Powder-Epoxy Novolac. High quality coating with a thickness of 150-500 µm, 100% holiday free, tightly ahered and homogenous. Pressure capability is the same as the pipe yield strengt. Temperature resistance is provided up to 204°C resp. 400°F. This coating serves primary natural and synthetic drilling muds and completion fluids.

Internal coated drill pipe



Drill pipe without internal coating, after acidizing

Drill pipe with internal coating, after acidizing

Causale improvements inside a drill string*:

- Scale mitigation during coating application process.
- No corrosion while drilling.
- No corrosion while running and pulling.
- No corrosion from testing.
- No corrosion from stimulation.
- Preventation for deposits.
- Improved hydraulic efficiency.
- No residual drilling mud after cleaning.
- No corrosion during storage.
- Preventation for corrosion fatigue.
- Preventation for washout failures.

* Internal coating should be applied to all applicable components of a drill string.

Benefits:

- Increased drill pipe life.
- Advanced drill pipe application range.
- Increased reliability.
- Less maintenance.
- Enery saving (9% or more).
- Option for engreased drilling rates.

Archiving internal coating benefits during drill pipe life as long as possible:

- Do not damage drill pipe coating during internal work/service op.
- Tools shall be special prepared for work in coated drill pipe.
- Wires and cables shall be special prepared for work in coated drill pipe.

Conversion Factors for U.S. / British and Metric Units

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Quantity	U.S./British Unit		S.I. Unit
Linear Measures			
	1 inch (in.)	=	25,4 mm
	1 foot (ft) 1ft = 12 in.	=	0,3048 m
	1 Yard (yd) = 3 ft	=	0,9144 m
	1 English Mile	=	1,6093 km
	0,039370 in.	=	1 millimeter (mm)
	0,393701 in.	=	1 centimeter (cm)
	3,280840 ft = 1,093613 yd	=	1 meter (m)
	0,6214 English Mile	=	1 kiolmeter (km)
Square Measures			
	1 square inch (sq.in.)	=	645,160 sq.mm
	1 square inch (sq.in.)	=	6,45160 sq.cm
	1 square foot (sq.ft)	=	9,2903 sq.dm
	1 square yard (sq.yd)	=	0,836127 sq.m
	1 ft◊ = 144 sq.in.	=	0,092903 sq.m
	0,001550 sq.in.	=	1 square millimeter (sq.mm)
	0,155000 sq.in.	=	1 square centimeter (sq.cm)
	10,763910 sq.ft	=	1 square meter (sq.m)
	1,195990 sq.yd	=	1 square meter (sq.m)
Volume			
	1 cubic inch (cu.in.)	=	16,387064 cm
	1 cubic foot (cu.ft)	=	28,316847 dm
	1 ft = 1728 cu.in.	=	0,028317 m
	1 gallon (U.S.)	=	3,7854 dm
	1 gallon (U.K.)	=	4,546 dm
	1 barrel (U.S.)	=	158,987 dm
	0,061024 cu.in.	=	1 cubic centimeter (cu.cm)
	0,035315 cu.ft	=	1 cubic decimeter (cu.dm)
	35,31467 cu.ft	=	1 cubic meter (cu.m)
Weights			
	1 ounce (oz)	=	28,3495 g
	1 pound (lb) = 16 ounces	=	0,45359237 kg
	1 long ton (l ton) = 2240 lb	=	1016,04706 kg
	1 short ton (sh ton) = 2000 lb	=	907,185 kg
	0, 035274 oz	=	1 gramm (g)
	2,204622 lb	=	1 kilogramm (kg)
	0,984206 l ton	=	1 metric ton (t) = 1000 kg
	1,10231 sh ton	=	1 metric ton (t)
Weights per Length			
	1 lb/ft	=	1,488164 kg/m
	1 lb/yd	=	0,496054 kg/m
	0,671969 lb/ft = 2,015907 lb/yd	=	1 kg/m
Force *			
	1 pound-force (lbf)	=	4,448222 Newton (N)
	0,224809 lbf	=	1 N
Pressure / Stress *			
	1 pound - force per square inch (psi)	=	0,06895 bar
	1 lbf/sq.in. (psi) ŕ 1 lb/sq.in.	=	0,006895 N/sq.mm (MPa)
	1 lbf/sq.ft	=	47,88 N/sq.mm
	14,5038 lbf/sq.in.	=	1 bar
	145,038 lbf/sq.in.	=	1 N/sq.mm (MPa)
Density			
	1 lb/ft	=	0,016018 kg/dm
	62,427952 lb/ft	=	1 kg/dm
Torque *			
	1 foot pound - force ft - lbf ŕ 1 ft - lb	=	1,3558 Nm
	0,7376 ft - lbf	=	1 Nm
Energy			
	1 ft - lbf ŕ 1 ft - lb	=	1,355818 Joule (J)
	0,737562 ft - lbf	=	1 J
Speed			
	1 mile per hour (m.p.h.)	=	1,609344 km/h
	1 foot per second (ft/s)	=	0,3048 m/s
	0,621371 m.p.h.	=	1 km/h
	3,28084 ft/s	=	1 m/s
Power *			
	1 ft lbf/s	=	1,35582 W ; J/s ; Nm/s
	1000 ft lbf/s = 1,8182 hp = 1,28182 btu/s	=	1,35582 kW
	737,562 ft lbf/s	=	1 kW = 1,359621617 PS
			1 PS = 0,73549875 kW
Flow Rate			
	1 barrel per day	=	0,158987 m/day
	1 cubic foot per minute (ft/min)	=	0,02831685 m/min = 40,776192 m/day
Temperature			
	Conversion formula °F	to	°C = 5/9 (°F - 32)
	Conversion formula °C	to	°F = °C x 9/5 + 32
	32 °F	=	0 °C
	212 °F	=	100 °C

* Note: 1 pound-force (lbf) ŕ 1 pound (lb)

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