

Drill Pipe Performance Characteristics Sheet

PTECH Drilling Tubulars, LLC

Patent: 9,885,214

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Conroe, TX 77304, U.S.A
Phone: (936) 760-3600

Pipe Size and Weight: 5 19.50 IEU

Pipe Grade: S-135

Range: 3

Tool Joint: 5 7/8 X 3 1/2 PTECH47+

Revision 6 12/3/2021

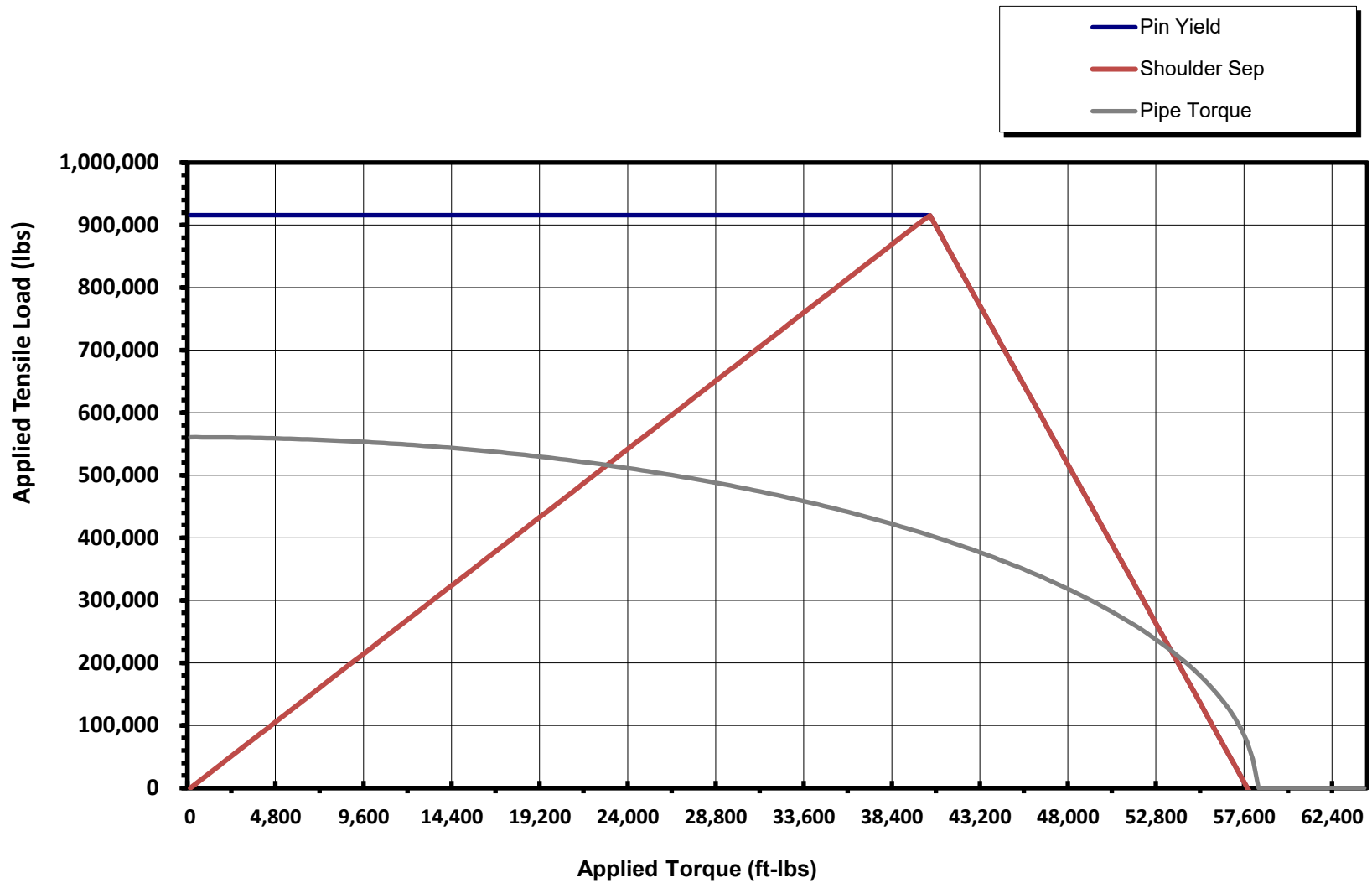
Pipe Body			
	New-API	New-95%RBW	Premium
OD (in)	5.000	5.000	4.855
Wall Thickness (in)	0.362	0.389	0.290
ID (in)	4.276	4.222	4.276
Calculated Plain End weights (lbs/ft)	17.923	19.154	14.114
Note: Premium properties are calculated based on uniform OD and wall thickness.			
Cross sectional area pipe body (in ²)	5.275	5.637	4.154
Cross sectional area OD (in ²)	19.635	19.635	18.514
Cross sectional area ID (in ²)	14.360	13.998	14.360
Section Modulus (in ³)	5.708	6.035	4.476
Polar Section Modulus (in ³)	11.415	12.070	8.953
	New-API	New-95%RBW	Premium
Torsional Strength (ft-lbs)	74,100	78,300	58,100
Tensile Strength (lbs)	712,100	761,000	560,800
80% Torsional Strength (ft-lbs)	59,300	62,600	46,500
Pressure Capacity (psi)	17,105	18,387	15,638
Collapse Capacity (psi)	18,133	19,379	10,024

Tool Joint																
	<p>PTECH47+</p> <p>OD (in) 5 7/8 ID (in) 3 1/2</p> <p>Tool Joint with a Material Yield Strength of 135000 psi</p> <p>Pin Tong length (in) 13 Box Tong length (in) 15</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Friction Factor</th> <th style="text-align: center;">1.0</th> <th style="text-align: center;">1.15</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Torsional Strength (ft-lbs)</td> <td style="text-align: center;">57,620</td> <td style="text-align: center;">66,300</td> </tr> <tr> <td style="text-align: left;">Severe Service Recommended Make-up Torque (ft-lbs) [70%]</td> <td style="text-align: center;">40,300</td> <td style="text-align: center;">46,300</td> </tr> <tr> <td style="text-align: left;">Standard Service Recommended Make-up Torque (ft-lbs) [60%]</td> <td style="text-align: center;">34,600</td> <td style="text-align: center;">39,800</td> </tr> <tr> <td style="text-align: left;">Min Recommended Make-up Torque (ft-lbs)</td> <td style="text-align: center;">28,800</td> <td style="text-align: center;">33,100</td> </tr> </tbody> </table> <p>Balance OD (in) 5.759 Tensile Strength (lbs) 924,800</p> <p>Tool joint/Drill pipe torsional ratio (New pipe) 0.78 Tool joint/Drill pipe torsional ratio (95% New pipe) 0.74 Tool joint/Drill pipe torsional ratio (Prem pipe) 0.99 Min OD for premium class (in) 5.594</p>	Friction Factor	1.0	1.15	Torsional Strength (ft-lbs)	57,620	66,300	Severe Service Recommended Make-up Torque (ft-lbs) [70%]	40,300	46,300	Standard Service Recommended Make-up Torque (ft-lbs) [60%]	34,600	39,800	Min Recommended Make-up Torque (ft-lbs)	28,800	33,100
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Drill Pipe Assembly with PTECH+ Tool Joint	Drill Pipe Bend Radius																					
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">API Adjusted weight (kg/m)(lbs/ft)</td> <td style="width: 10%;">30.60</td> <td style="width: 60%;">20.56</td> </tr> <tr> <td>95% Adjusted weight (kg/m)(lbs/ft)</td> <td>32.34</td> <td>21.73</td> </tr> <tr> <td>Approximate length (M)(ft)</td> <td>13.72</td> <td>45.00</td> </tr> <tr> <td>% Fluid Displacement (CuM/M)(gal/ft)</td> <td>0.00413</td> <td>0.332</td> </tr> <tr> <td>Fluid Displacement (CuM/M)(gal/ft)</td> <td>0.00391</td> <td>0.315</td> </tr> <tr> <td>Fluid Capacity (CuM/M)(gal/ft)</td> <td>0.00902</td> <td>0.726</td> </tr> <tr> <td>Drift Size</td> <td>85.73</td> <td>3.375</td> </tr> </table>	API Adjusted weight (kg/m)(lbs/ft)	30.60	20.56	95% Adjusted weight (kg/m)(lbs/ft)	32.34	21.73	Approximate length (M)(ft)	13.72	45.00	% Fluid Displacement (CuM/M)(gal/ft)	0.00413	0.332	Fluid Displacement (CuM/M)(gal/ft)	0.00391	0.315	Fluid Capacity (CuM/M)(gal/ft)	0.00902	0.726	Drift Size	85.73	3.375	<p>* These calculations are based on new pipe with nominal wall</p> <p style="margin-left: 40px;">Based on Bending Stress (psi) at Pipe OD 15,000</p> <p style="margin-left: 40px;">Radius of Curvature (R) (ft.) (@ OD of pipe) 416.7</p> <p style="margin-left: 40px;">BUR (dogleg) deg/100 ft. 13.8</p>
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TORQUE TENSION COMBINED LOAD CURVE

For PTECH47+ 5 7/8 X 3 1/2 Tool Joint with a Material Strength of 135000 psi, using a Coefficient of Friction factor of 0.08 and a Safety Factor of 1.0. On Pipe: 5 19.50 S-135 Premium Class.



PTECH47+ 5 7/8 X 3 1/2 TOOL JOINT OD WEAR CURVE

