

## Drill Pipe Performance Characteristics Sheet

**PTECH Drilling Tubulars, LLC**

**Pipe Size and Weight:** 2 3/8 6.65 EU

**Pipe Grade:** S-135

**Range:** 2

**Tool Joint:** 3 1/16 X 1 1/2 PTECH23+

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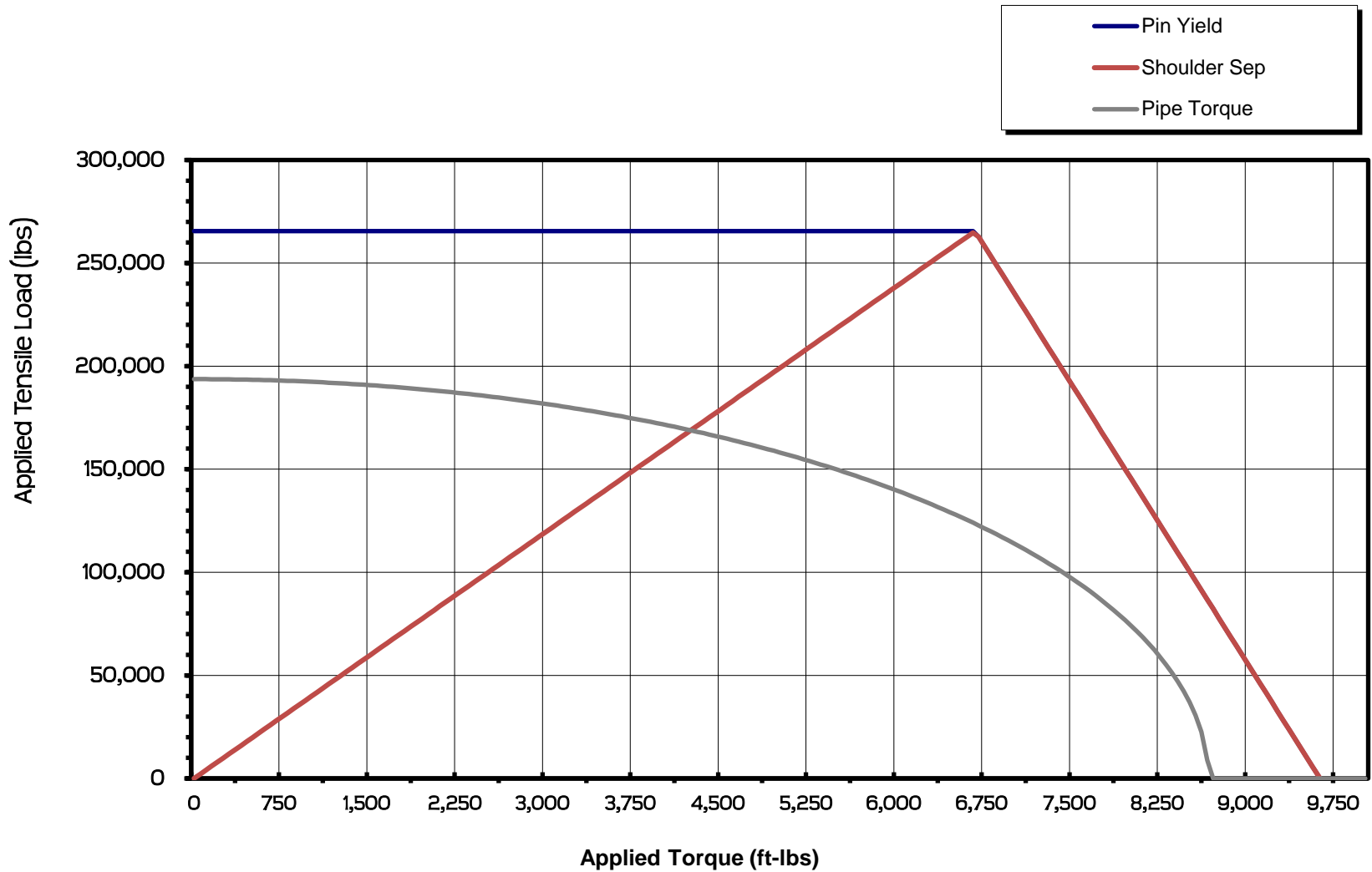
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Revision 1

Pipe Body			
	<b>New-API</b>	<b>New-95%RBW</b>	<b>Premium</b>
OD (in)	2.375	2.375	2.263
Wall Thickness (in)	0.280	0.301	0.224
ID (in)	1.815	1.773	1.815
Calculated Plain End weights (lbs/ft)	6.262	6.664	4.876
<b>Note: Premium properties are calculated based on uniform OD and wall thickness.</b>			
Cross sectional area pipe body (in <sup>2</sup> )	1.843	1.961	1.435
Cross sectional area OD (in <sup>2</sup> )	4.430	4.430	4.022
Cross sectional area ID (in <sup>2</sup> )	2.587	2.469	2.587
Section Modulus (in <sup>3</sup> )	0.867	0.907	0.667
Polar Section Modulus (in <sup>3</sup> )	1.733	1.813	1.334
	<b>New-API</b>	<b>New-95%RBW</b>	<b>Premium</b>
Torsional Strength (ft-lbs)	11,300	11,800	8,700
Tensile Strength (lbs)	248,800	264,800	193,700
80% Torsional Strength (ft-lbs)	9,000	9,400	7,000
Pressure Capacity (psi)	27,853	29,942	25,465
Collapse Capacity (psi)	28,079	29,882	24,080
Tool Joint			
		<b>PTECH23+</b>	
		OD (in)	<b>3 1/16</b>
		ID (in)	<b>1 1/2</b>
<b>Tool Joint with a Material Yield Strength of 135000 psi</b>			
		Pin Tong length (in)	<b>10</b>
		Box Tong length (in)	<b>13</b>
		<b>Torsional Strength (ft-lbs)</b>	<b>9,610</b>
		<b>Recommended Make-up Torque (ft-lbs)</b>	<b>5,800</b>
		<b>Min Recommended Make-up Torque (ft-lbs)</b>	<b>5,200</b>
		Balance OD (in)	3.041
		<b>Tensile Strength (lbs)</b>	<b>269,700</b>
		Tool joint/Drill pipe torsional ratio (New pipe)	0.85
		Tool joint/Drill pipe torsional ratio (95% New pipe)	0.81
		Tool joint/Drill pipe torsional ratio (Prem pipe)	1.10
		Min OD for premium class (in)	2.813
Drill Pipe Assembly with PTECH+ Tool Joint	Drill Pipe Bend Radius		
API Adjusted weight (lbs/ft)	7.26	* These calculations are based on new pipe with nominal wall	
95% Adjusted weight (lbs/ft)	7.63	Based on Bending Stress (psi) at Pipe OD	15,000
Approximate length (ft)	32.00	Radius of Curvature ( R ) (ft.) (@ OD of pipe)	197.9
95% Fluid Displacement (gal/ft)	0.117	BUR (dogleg) deg/100 ft.	29.0
API Fluid Displacement (gal/ft)	0.111		
Fluid Capacity (gal/ft)	0.128		
Drift Size	1.375		

## TORQUE TENSION COMBINED LOAD CURVE

For PTECH23+ 3 1/16 X 1 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: 2.375 6.65 S-135 Premium Class.



### PTECH23+ 3 1/16 X 1 1/2 TOOL JOINT OD WEAR CURVE

