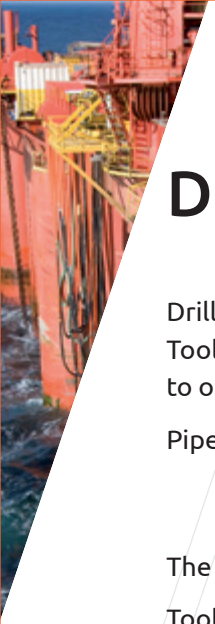

Drill Pipes

Drill pipes are manufactured from upset pipe body and friction-welded tool joints.
Tool joints are forged from chromium molybdenum alloy steel, and uniformly quenched and tempered to obtain API Spec.7-1 properties.

Pipe body standard grades, covered by API Spec. 5DP/ISO 11961 are:

- Grade E
- High-strength grades X, G and S

The type of upsets are: EU, IU, IEU

Tool joints are joined to the pipe body by friction welding.

Each weld is 100% inspected according to API Spec. 5DP.
Drill pipes are also provided with internal coating and customer selected hardbanding.

Mechanical Properties on Tool Joint

Yield Strength psi		Tensile Strength psi	Elongation %	Charpy V Impact ft-lb	Brinell Hardness
min.	max.	min.	min.	min. (+ 70°F)	Min.
120 000	165 000	140 000	13	40 average	285 HB

Mechanical Properties on Pipe Body

Grade	Yield Strength psi		Tensile Strength psi	Elongation %	Charpy V Impact ft-lb
	min.	max.	min.	min.	min. (+ 70°F)
Grade E	75 000	105 000	100 000	a	40 average
Grade X	95 000	125 000	105 000	a	40 average
Grade G	105 000	135 000	115 000	a	40 average
Grade S	135 000	165 000	145 000	a	40 average

a: The minimum elongation is calculated with the formula:

$e = 625000A^{0.2}/U^{0.9}$

A: cross section area of tensile strength (sq.in.)
U: specified tensile strength (psi)