Tenaris

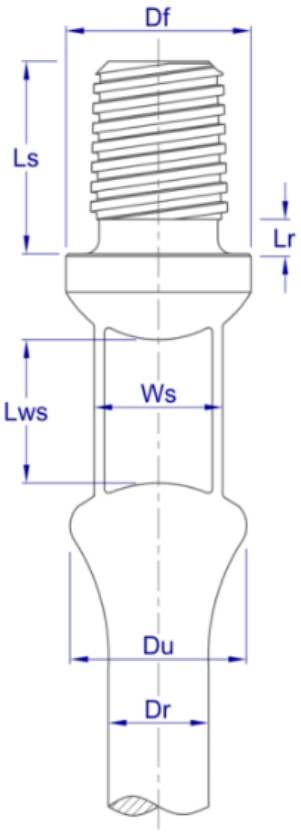
Sucker Rod String: Sucker & Pony Rod
PDS: SRBLAPI
Short Name: R04
Effective Date: 05/12/2023
Previous Revision: 02/11/2017

BlueRod® API grade Sucker & Pony Rod

Dimensions:

The BlueRod® premium sucker rods are a remarkably resistant connection designed for high loads. The connection improves the rod's fatigue life and ensures excellent field performance. Flank-to-flank contact eliminates the gap existing in the conventional profile thread and increasing the interference level, thus reducing the tendency to loosen. Cut-tapered trapezium profile thread with diametrical interference reduces the pre tension in the pin make-up. Lower displacement during make-up and uniform contact between the flanks, allowing a better stress distribution and a reduction in the permanent deformations created in threads during both make-up and operation.

Nominal Size		Units	Dr	Df	Ws	Lws (min)	DU	Lr	Ls
Rod	Pin								
3/4''	7/8''	in	0.75 +0.007 -0.014	1.63 +0 -0.007	1.13 ± 0.031	1.25	1.50 +0.005 -0.125	0.30 +0.01 -0.01	1.65 +0.004 -0.004
		mm	19.05 +0.18 -0.36	41.40 +0 -0.2	28.60 ±0.8	31.75	38.10 +0.13 -3.18	7.50 +0.25 -0.25	42.00 +0.1 -0.1
7/8''		in	0.88 +0.008 -0.016	1.63 +0 -0.007	1.13 ± 0.031	1.25	1.50 +0.005 -0.125	0.30 +0.01 -0.01	1.65 +0.004 -0.004
		mm	22.23 +0.2 -0.41	41.40 +0 -0.2	28.60 ±0.8	31.75	38.10 +0.13 -3.18	7.50 +0.25 -0.25	42.00 +0.1 -0.1
1''		in	1.00 +0.009 -0.018	2.00 +0.004 -0.004	1.31 ± 0.031	1.50	1.91 +0.005 -0.187	0.30 +0.01 -0.01	1.93 +0.004 -0.004
		mm	25.40 +0.23 -0.46	50.80 +0.1 -0.1	33.34 ±0.79	38.10	48.42 +0.13 -4.76	7.50 +0.25 -0.25	49.10 +0.1 -0.1
1 1/8''		in	1.13 +0.01 -0.02	2.26 +0 -0.004	1.50 ± 0.031	1.63	2.19 +0.005 -0.187	0.30 +0.01 -0.01	2.17 +0.004 -0.004
		mm	28.58 +0.25 -0.51	57.50 +0 -0.1	38.10 ±0.79	41.28	55.56 +0.13 -4.76	7.50 +0.25 -0.25	55.20 +0.1 -0.1



Sucker Rods Nominal Lengths: 25, 30 ft (7.62, 9.14 m)

Pony Rods Nominal Lengths:* 2, 4, 6, 8, 10, 12 ft (0.61, 1.22, 1.83, 2.44, 3.05, 3.66 m)

*Other lengths might be available upon request.

Steel Grades:

Different steel grades are available, depending on the type of load and the corrosion level in the wells. All this materials comply with API 11B.

Grades C, K and D carbon are only available under special request.

Chemical Composition:

Typical chemical compositions (wt%) listed in the following table.

Grade	C	Mn	Si	S	P	Cr	Ni	Mo	Others
D Alloy	0.40-0.45	0.75-1.00	0.15-0.35	0.025 max	0.025 max	0.80-1.10	0.25 max	0.15-0.25	-
D Special KD	0.20-0.25	0.80-1.00	0.15-0.35	0.025 max	0.025 max	0.70-0.90	1.15-1.50	0.25-0.30	V: 0.03-0.07

Mechanical Properties:

Mechanical properties are listed in the following table.

Grade	Yield Stregth (0.2% offset)	Ultimate Tensile Stress	Elongation (8")	Reduction of area	Hardness
D Alloy	Min 95 kpsi (Min 655 Mpa)	120 to 140 kpsi (827 to 965 MPa)	10 % Min	45% Min	27 HRC
D Special KD	Min 85 kpsi (Min 586 Mpa)	115 to 140 kpsi (793 to 965 MPa)	10% Min	45% Min	25 HRC

Performance Data:

Maxium Pulling Force:

	Rod Outer Diameter			
Grade	3/4"	7/8"	1"	1 1/8"
D Alloy	33.5 klb (15.2 Ton)	45.6 klb (20.7 Ton)	59.7 klb (27.1 Ton)	75.6 klb (34.3 Ton)
D Special KD	30 klb (13.6 Ton)	40.8 klb (18.5 Ton)	53.4 klb (24.2 Ton)	67.7 klb (30.7 Ton)

Beam Pumping: Maxium allowable tensile stress

It is recommended that the modified Goodman stress diagram or the simplified formula listed bellow are used in the determination of the allowable range of stress applied to a sucker rod.

$$S_a = \frac{UTS}{A} + B * S_{min} * SF$$

Applied tensions can be compared to the maximum allowable using the Goodman formula:

$$Goodman\% = \frac{S_{max} - S_{min}}{S_a - S_{min}} * 100$$

Grade	A	B
D Alloy	2.3	0.375
D Special KD	2.3	0.375

Table 1: Goodman coefficients

Where:

Sa = Maximum allowable stress (psi or Mpa)

Smin = Minimum calculated or measured stress (psi or Mpa)

Smax = Maximum calculated or measured stress (psi or Mpa)

UTS = Minimum ultimate tensile stregth (psi or Mpa)

SF = Service factor. For corrosive environments a value of 0.9 is recommended

Coefficients A and B are listed on Table 1.

Progressive Cavity Pumping: Effective Stress

The effective rod stress in PCP applications can be calculated using the von Mises equation:

$$\sigma_e = \sqrt{\frac{(C_1 * L^2)}{\pi^2 * D^4} + \frac{C_2 * T^2}{\pi^2 * D^6}}$$

Where:

σ_e = Effective stress (kpsi or Mpa)

L = Total axial load (lbf or N)

T = Total torque (lbf. ft or N. m)

D = Rod's body diameter (in or mm)

C_1 = Constant (For imperial system= $1.6x10^{-5}$. For international system= 16)

C_2 = Constant (For imperial system= 0.1106. For international system= $7.68x10^{8}$)

Color Code:

Rod's ends are painted according to the following table:

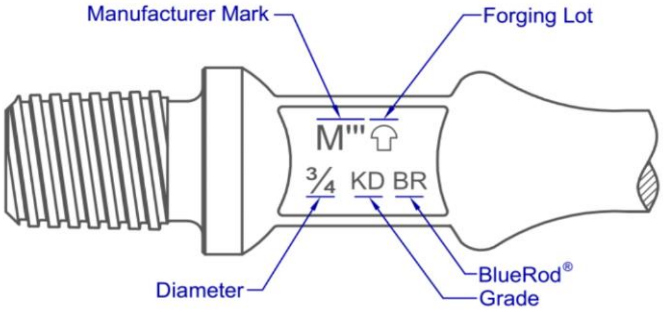
Grade	Color Code
D Alloy	Yellow
D Special KD	Orange

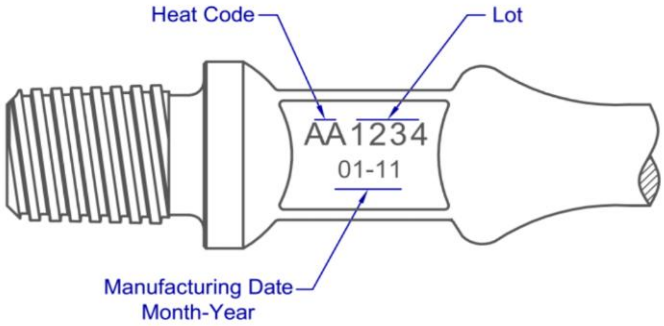
*Displayed colors are for guidance only.

Non Destructive Testing:

All raw material is carefully inspected using electromagnetic and/or ultrasonic methods to ensure the soundess of the final product.

Marking:





Labeling:*

Tenaris

Metalmecánica S.A.
Ruta 55 Km. 754,1
Villa Mercedes (San Luis)
Made in Argentina

BOX N°	QTY:
PRODUCT: SUCKER RODS SAP CODE: SPECIFICATION:	DATE:
ROD DIAM: / NET WEIGHT: (kg)	
END DIAM:	
GRADE:	
LENGTH: (ft)	
SALES ORDER:	PACKAGING TYPE:
DESTINATION:	THREAD PROTECTIO N:

*Image for reference only.

Ordering Information:

When placing an order please atach the following information:

PDS:	SRBLAPI
Product Family:	Sucker Rod (or Pony Rod)
Diameter:	1''
Grade:	D alloy
Length:	25 ft