



Stainless Steel Bars



**INOX STEEL a.s., výhradní zástupce
pro Českou a Slovenskou republiku**

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**BHANSALI
Inc.**



Stainless Steel Bright Bars (Cold Drawn)

Applications :

Machined Components, Pump Shafts, Valves, Fasteners, Machine Tools, Dairy Equipments, Surgical & Medical Parts, Threaded Bars, Studs, Bolts, Pins, Hinges and Handles.

Condition	Cold Drawn & Polished	Cold Drawn, Centreless Ground & Polished	Cold Drawn, Centreless Ground and Polished (Strain Hardened)
Grades	201, 201Cu, 202, 202Cu, 303, 304, 304L, 310, 316, 316L, 321, 409Ti, 410, 416, 420, 420B, 430, 430F, 431, 630 (17-4 PH), 1.4410, 1.4418, 1.4462, 1.4122 & others		
Diameter (Size)	2mm to 5mm 1/8" to 3/16"	6mm to 25mm 1/4" to 1"	10mm to 40mm 3/8" to 1-1/2"
Diameter Tolerance	h9 (Din 671), h11 ASTM A 484	h9 (Din 671) ASTM A 484	h9 (Din 671), h11 ASTM A 484
Length	3 upto 7 meter 12 upto 24 feet	3 upto 7 meter 12 upto 24 feet	3 upto 7 meter 12 upto 24 feet
Length Tolerance	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2" And as per customer requirement	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2" And as per customer requirement	-0/+200mm -0"/+1 feet And as per customer requirement



- We can give Chamfering of 30 or 45 degrees on one or both the ends with our dedicated chamfering machine.
- For Strain-Hardened Bars, we can supply in B8(304) and B8M(316) in Class1 and Class2.



Peeling Machines

Stainless Steel Bright Bars (Peeled/Turned)

Applications :

Machined Components, Fittings, Pump Shafts, Valves, Seals, Spindles, Fasteners, Machine Tools, Dairy Equipments, Threaded Bars, Studs, Shackles, Swivels, Screw Stoppers, Parts of Printing Press.

Condition	Peeled, Centreless Ground & Polished	Peeled & Polished	Peeled (Rough Turned)	Forged, Rough Turned
Grades	201, 201Cu, 202, 202Cu, 303, 304, 304L, 310, 316, 316L, 321, 409Ti, 410, 416, 420, 420B, 430, 430F, 431, 630 (17-4 PH), 1.4410, 1.4418, 1.4462, 1.4122 & others			303, 304, 304L, 316, 316L, 410, 416, 420, 431
Diameter (Size)	25mm to 85mm 1" to 3-1/4"	85mm to 140mm 3-1/4" to 4-3/4"	25mm to 140mm 1" to 5-1/2"	150mm to 400mm 6" to 16"
Diameter Tolerance	h9 (Din 671) (ASTM A 484)	h11	K12/K13 (Din 1013)	-0mm/+3mm (-0"/ +0.12")
Length	3 upto 7 meter 12 upto 22 feet	3 upto 7 meter 12 upto 22 feet	3 upto 7 meter 12 upto 22 feet	3 upto 6 meter 12 upto 20 feet
Length Tolerance	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2" And as per customer requirement	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2" And as per customer requirement	-0/+1000mm or 500mm -0"/+3 feet or +2 feet And as per customer requirement	-0/+2 meter- -0/+6 feet



Polishing & Straightening



Hex & Square Polishing Machine

Stainless Steel Hexagon & Square Bars

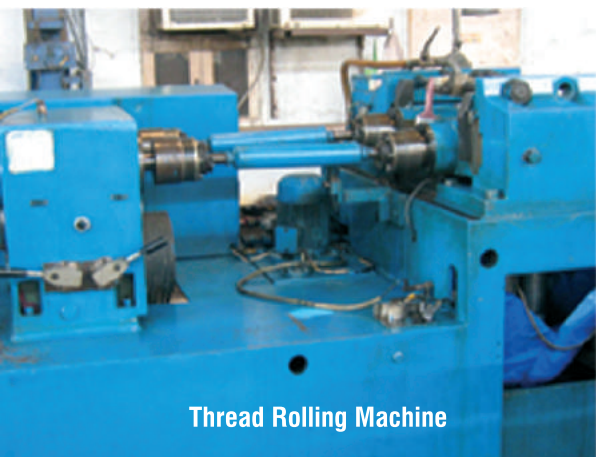
Applications : Ball Valves, Needle Valves, Filter Valves, Connectors, Couplings, Plugs, Hose Ends, Manifolds, Nuts, Bolts

Type	Cold Drawn and Polished (Squares)	Cold Drawn and Polished (Hexagons)
Grades	304, 304L, 316, 316L	304, 304L, 316, 316L
Diameter (Size)	5mm to 40mm (1/4" to 1-1/2")	10mm to 40mm (3/8" to 1-1/2")
Diameter Tolerances	h11 (ASTM A 484)	h11 (ASTM A 484)
Length	3/4/6 meter (12/14ft/20feet)	3/4/6 meter (12/14ft/20feet)
Length Tolerance	-0/+500mm (-0"/+2 feet)	-0/+500mm (-0"/+2 feet)



Stainless Steel Threaded Bars

Applications : Ground Anchors, Resin Anchors, Rock Bolts, Tie Bars, Roof and Hanger Bolts.



Thread Rolling Machine

Condition	Cold Drawn, Threading
Grades	304, 304L, 316, 316L
Diameter (Size)	M8 to M40 (5/16" to 1-1/2")
Threading Method	Thread Rolling
Thread Condition	Fully Threaded
Thread Type	ANSI B1.1 Class 2A Fit
Length	2/3/4 meter (6/12ft)
Length Tolerance	-0/ +200 mm (-0"/+ 8")



Stainless Steel Wire Rods – Hot Rolled, Annealed & Pickled

Applications : Bright Bars, Wires, Fasteners, Chains, Threaded Rods, Cutlery, Welding Products

Grades	303, 304, 304L, 316, 316L, 410, 416, 420, 430F, 430L
Diameter (Size)	5.5mm to 26mm (0.217" to 1")
Tolerance	+/- 0.3 mm (+/- 0.011")
Surface Defect	1% of Diameter
Coil Weight	500-1000 kgs
Packing	HDPE Wrapped coils 500 to 1000 kgs
Heat Treatment	Solution Annealing for Austenitic Grades, Normal Annealing for Martensitic Grades
Surface Treatment	Hot Rolled or Hot Rolled Annealed and Pickled (with or without coating)



Stainless Steel Black Bars–Round

Applications : Forged Flanges, Forged Fittings, Pump Shafts, Spindles, Machine Tools, Valves, Seals, Dairy Equipments, Parts of Printing Press

Condition	Hot Rolled, Decoiled from Coils	Hot Rolled	Forged
Grades	303, 304, 304L, 316, 316L, 410, 416, 420, 431		
Diameter (Size)	10 mm to 24 mm	25 mm to 150 mm	150mm to 400mm
Length	3 upto 7 meter	3 upto 7 meter	3 upto 7 meter
Heat Treatment	Annealed / Solution Annealed / Quenched & Tempered / Hardened & Tempered		



Stainless Steel Precision Bars

Applications : Piston Rods, Pump Shafts, Boat Shafts, Cylinder Shafts, Precision Machined Parts, Automotive Components & Others.

Condition	Cold Drawn, Centreless Ground & Polished	Peeled, Centresless Ground & Polished
Grades	303, 304, 304L, 310, 316, 316L, 410, 416, 420, 430F, 431, 630 (17-4 PH), 1.4410, 1.4418, 1.4462, 1.4122 & others	
Diameter (Size)	6mm to 25mm (1/4" to 1")	25mm to 85mm (1" to 3-1/4")
Surface Finish	Upto Rms-12 max. Upto Ra 0.2 max	Upto Rms-12 max. Upto Ra 0.2 max
Diameter Tolerance	h7, h8, f7, f8 Half of ASTM A484	h7, h8, f7, f8 Half of ASTM A484
Straightness	0.5 mm per meter TIR (0.0015 inch per feet)	
Out of Roundness	Half of Diameter Tolerance	Half of Diameter Tolerance
Length	3 upto 7 meter (12 upto 22 feet)	3 upto 7 meter (12 upto 22 feet)
Length Tolerance	-0/+50mm or +20mm or +10mm -0/+2" or 1" or 1/2"	-0/+50mm or +20mm or +10mm -0/+2" or 1" or 1/2"
Heat Treatment	Annealed/Quench & Tempered	Annealed/Quench & Tempered

Superior Surface Finish, Diameter Tolerance & Straightness is achieved by additional processes, such as Straightening, Roller Burnishing and Centreless Grinding.

Precision Bars are 100% inspected for diameter tolerance, out of roundness, surface roughness & straightness by specially designed instruments & gauges.

Ultrasonic Inspection is done to ensure bars are free from internal defects. Bars are packed in strong plywood boxes with each bar protected with distance rings to avoid scratches.





Stainless Steel Improved Machining Bars

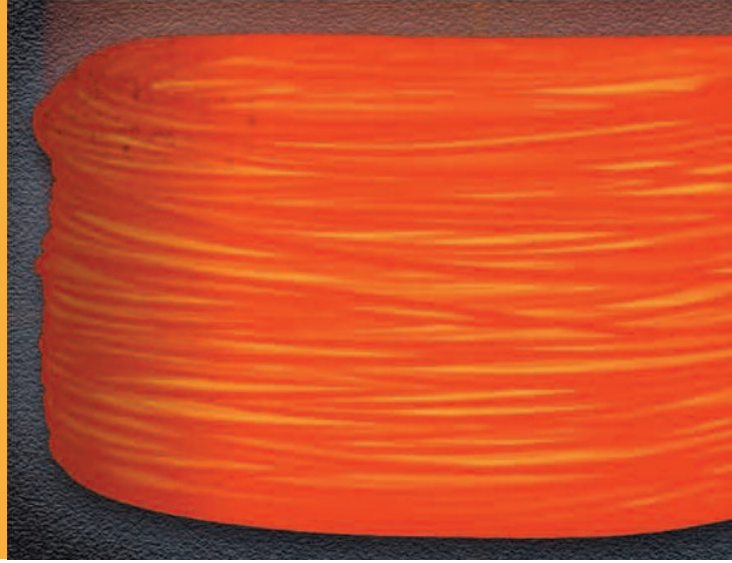
Applications : Precision Components, Machined & Turned Parts, Automotive Components.

Condition	Cold Drawn, Centreless Ground & Polished	Peeled, Centresless Ground & Polished
Grades	303EHS, 416XM (Sulphur 0.30 to 0.35) 304, 304L, 316, 316L (Sulphur Min 0.015) 430F, 1.4404 (Sulphur 0.27 to 0.31)	
Diameter (Size)	6mm to 25mm (1/4" to 1")	25mm to 85mm (1" to 3-1/4")
Diameter Tolerance	h9 (Din 671) ASTM A 484	h9 (Din 671) ASTM A 484
Length	3 upto 7 meter (12 upto 22 feet)	3 upto 7 meter (12 upto 22 feet)
Length Tolerance	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2"	-0/+200mm or +100mm or +50mm -0"/+1 feet or +4" or 2"

We offer special grades of Stainless Steel Bars with Improved Machinability. These grades undergo special melting process, Calcium-Silica (Casi) Treatment and High Sulphur Contents are key characteristic of these grades.

During Machining of components these grades result in increased productivity, better tool life and excellent chip breakage.





Grades – Chemical Composition and Equivalent Standards

Stainless steel is essentially a low carbon steel which contains chromium at 10% or more by weight. It is this addition of chromium that gives the steel its unique stainless, corrosion resisting properties. The corrosion resistance and other useful properties of the steel are enhanced by increased chromium content and the addition of other elements such as molybdenum, nickel and nitrogen.

AISI ASTM	Equivalent EN/DIN	C % Max	Mn % Max	Si % Max	S % Max	P % Max	Cr % Max	Ni % Max	Mo % Max	Others %
201	-	0.15	5.50-7.50	1.00	0.030	0.060	16.00-18.00	3.50-5.50	-	-
201Cu		0.10	8.00-8.50	1.00	0.030	0.080	14.00-16.00	1.00-1.50		Cu: 1.50-2.00
202	-	0.15	7.50-10.00	1.00	0.030	0.060	17.00-19.00	4.00-6.00	-	-
204Cu	1.4597	0.10	7.00-8.50	1.00	0.030	0.060	16.00-18.00	1.25-2.00	-	Cu: 2.00-3.50
303	1.4305	0.15	2.00	1.00	0.15 Min.	0.045	17.00-19.00	8.00-10.00	-	-
303EHS	1.4305	0.15	2.00	1.00	0.30-0.35	0.045	17.00-19.00	8.00-10.00	-	-
304	1.4301	0.07	2.00	1.00	0.030	0.045	18.00-20.00	8.00-11.00	-	-
304L	1.4307	0.03	2.00	1.00	0.030	0.045	18.00-20.00	8.00-12.00	-	-
310S	1.4845	0.08	2.00	1.50	0.030	0.045	24.00-26.00	19.00-22.00	-	-
316	1.4401	0.07	2.00	1.00	0.030	0.045	16.50-18.00	10.00-14.00	2.00-3.00	-
316L	1.4404	0.03	2.00	1.00	0.030	0.045	16.50-18.00	10.00-14.00	2.00-3.00	-
316Ti	1.4571	0.08	2.00	1.00	0.030	0.045	16.50-18.00	10.00-14.00	2.00-3.00	Ti: Min (5xC% to 0.70)
317LN	1.4438	0.03	2.00	1.00	0.030	0.045	18.00-20.00	11.00-15.00	3.00-4.00	N: 0.10-0.22
321	1.4541	0.08	2.00	1.00	0.030	0.045	17.00-19.00	9.00-12.00	-	Ti: Min (5xC%)
409Ti	1.4512	0.08	1.00	1.00	0.030	0.040	10.50-11.75	0.50	-	Ti: 6xC% - 0.75 max
410	1.4006	0.15	1.00	1.00	0.030	0.040	11.50-13.50	-	-	-
416	1.4005	0.15	1.25	1.00	0.15 Min.	0.040	12.00-14.00	-	-	-
416XM	1.4005	0.15	1.25	1.00	0.30-0.35	0.040	12.00-14.00	-	-	-
420	1.4021	0.15 Min.	1.00	1.00	0.030	0.040	12.00-14.00	-	-	-
420B	1.4028	0.26-0.35	1.00	1.00	0.030	0.040	12.00-14.00	-	-	-
430	1.4016	0.12	1.00	1.00	0.030	0.040	16.00-18.00	-	-	-
430L	1.4016	0.03	1.00	1.00	0.030	0.040	16.00-18.00	-	-	-
430F	-	0.12	1.25	1.00	0.15 Min.	0.060	16.00-18.00	-	-	-
430FDN	1.4104	0.10-0.17	1.50	1.00	0.15-0.35	0.040	15.50-17.50	-	1.50-2.50	-
431	1.4057	0.20	1.00	1.00	0.030	0.040	15.00-17.00	1.25-2.50	-	
174-PH	1.4542	0.070	1.00	1.00	0.030	0.040	15.00-17.50	3.00-5.00	-	CU:3.00-5.00%, Cb:0.15-0.45%

* We can also give customised chemistry as per customer requirement



Quality Assurance

Quality Assurance At Bhansali starts with understanding the Customers Requirement and continues till the customer is completely satisfied with the delivery of products and services. Quality Control procedures are well defined and thoroughly implemented.

Incoming Inspection : Incoming Raw Materials are the foundation for the final product. We make sure that we start with the best raw materials. Our suppliers are well-informed with our quality requirements.

Raw Materials are inspected for:

- Chemical & Mechanical Properties
- Surface Quality

In-Process Inspection : In-Process Quality Control Procedures are defined to the minutest details. These procedures enable operators, supervisors and quality control inspectors to produce the best quality products. Our Production team is at the core of the quality assurance system.

In-process Materials are inspected for:

- Dimensional properties such as tolerance, lobing, out-of-roundness, length, straightness
- Inprocess Mechanical Properties such as Tensile, Elongation, Yield, Reduction of Area, Hardness at Core.
- Surface Finish

Finished Goods Inspection : The quality assurance team in the finished goods department – we call them “ Bhansali’s Internal Customer”. They inspect materials from the customer’s perspective. Our products comply with relative international standards such as ASTM, DIN, EN, BS, AMS, ASME, QQS, MIL, JIS, NACE and others. Some of the related specifications are ASTM A193 / A276 / A320 / A479 / A582 & EN 10088-3. Test certifications comply with Euronorm EN 10204 3.1B / DIN 50049 3.1B.

Finished Goods are inspected for:

- Surface Finish
- Final Mechanical Properties
- Mercury Contamination, Macro and Micro Properties, Inter Granular and Corrosion Properties
- Packing, Color Coding, Marking



Quality Policy

At Bhansali Inc., We believe in long term business relationship with the customers and ongoing customer satisfaction by supplying consistent quality product through effective involvement of all employees and continual improvement of process

Theoritic Weight of Stainless Steel Round Bars

Size (mm)	Weight kgs/meter	Size (mm)	Weight kgs/meter	Size (mm)	Weight kgs/meter	Size (mm)	Weight kgs/meter
2	0.025	16	1.595	34	7.204	85	45.026
3	0.056	17	1.801	35	7.634	90	50.479
4	0.100	18	2.019	36	8.077	95	56.244
5	0.156	19	2.250	38	8.999	100	62.320
6	0.224	20	2.493	40	9.971	105	68.708
7	0.305	21	2.748	45	12.620	110	75.407
8	0.399	22	3.016	50	15.580	115	82.418
9	0.505	23	3.297	55	18.852	120	89.741
10	0.623	24	3.590	58	20.964	125	97.375
11	0.754	25	3.895	60	22.435	130	105.321
12	0.897	26	4.213	65	26.330	135	113.578
13	1.053	28	4.886	70	30.537	140	122.147
14	1.221	30	5.609	75	35.055	145	131.028
15	1.402	32	6.382	80	39.885	150	140.220



Conversion of Inch to millimeter and their corresponding weight

Inch	Inch (Dec)	Size (mm)	Weight kgs/meter	Inch	Inch (Dec)	Size (mm)	Weight kgs/meter	Inch	Inch (Dec)	Size (mm)	Weight kgs/meter
1/8"	0.125	3.175	0.063	2-1/8"	2.125	53.975	18.156	4-1/8"	4.125	104.775	68.414
3/16"	0.188	4.763	0.141	2-3/16"	2.188	55.563	19.239	4-3/16"	4.188	106.363	70.503
1/4"	0.250	6.350	0.251	2-1/4"	2.250	57.150	20.354	4-1/4"	4.250	107.950	72.623
5/16"	0.313	7.938	0.393	2-5/16"	2.313	58.738	21.501	4-5/16"	4.313	109.538	74.774
3/8"	0.375	9.525	0.565	2-3/8"	2.375	60.325	22.679	4-3/8"	4.375	111.125	76.958
7/16"	0.438	11.113	0.770	2-7/16"	2.438	61.913	23.888	4-7/16"	4.438	112.713	79.172
1/2"	0.500	12.700	1.005	2-1/2"	2.500	63.500	25.129	4-1/2"	4.500	114.300	81.418
5/8"	0.625	15.875	1.571	2-5/8"	2.625	66.675	27.705	4-5/8"	4.625	117.475	86.004
3/4"	0.750	19.050	2.262	2-3/4"	2.750	69.850	30.406	4-3/4"	4.750	120.650	90.716
7/8"	0.875	22.225	3.078	2-7/8"	2.875	73.025	33.233	4-7/8"	4.875	123.825	95.553
1"	1.000	25.400	4.021	3"	3.000	76.200	36.186	5"	5.000	127.000	100.516
1-1/8"	1.125	28.575	5.089	3-1/8"	3.125	79.375	39.264	5-1/8"	5.125	130.175	105.605
1-3/16"	1.188	30.163	5.670	3-3/16"	3.188	80.963	40.850	5-3/16"	5.188	131.763	108.196
1-1/4"	1.250	31.750	6.282	3-1/4"	3.250	82.550	42.468	5-1/4"	5.250	133.350	110.819
1-5/16"	1.313	33.338	6.926	3-5/16"	3.313	84.138	44.117	5-5/16"	5.313	134.938	113.473
1-3/8"	1.375	34.925	7.602	3-3/8"	3.375	85.725	45.798	5-3/8"	5.375	136.525	116.159
1-7/16"	1.438	36.513	8.308	3-7/16"	3.438	87.313	47.509	5-7/16"	5.438	138.113	118.876
1-1/2"	1.500	38.100	9.046	3-1/2"	3.500	88.900	49.253	5-1/2"	5.500	139.700	121.624
1-5/8"	1.625	41.275	10.6171	3-5/8"	3.625	92.075	52.834	5-5/8"	5.625	142.875	127.215
1-3/4"	1.750	44.450	12.313	3-3/4"	3.750	95.250	56.540	5-3/4"	5.750	146.050	132.932
1-7/8"	1.875	47.625	14.135	3-7/8"	3.875	98.425	60.372	5-7/8"	5.875	149.225	138.775
2"	2.000	50.800	16.083	4"	4.000	101.600	64.330	6"	6.000	152.400	144.743

Theoritic Weight of Stainless Steel Hex & Square Bars

Size (mm)	Weight (Hex) kgs/meter	Weight (Sq.) kgs/meter	Size (mm)	Weight (Hex) kgs/meter	Weight (Sq.) kgs/meter	Size (mm)	Weight (Hex) kgs/meter	Weight (Sq.) kgs/meter	Size (mm)	Weight (Hex) kgs/meter	Weight (Sq.) kgs/meter
5	0.172	0.197	15	1.550	1.771	21	3.038	3.472	30	6.199	7.085
6	0.248	0.283	16	1.763	2.015	22	3.334	3.810	32	7.053	8.061
8	0.441	0.504	17	1.991	2.275	24	3.967	4.534	34	7.963	9.100
10	0.689	0.787	18	2.232	2.551	25	4.305	4.920	35	8.438	9.643
12	0.992	1.134	19	2.487	2.842	27	5.021	5.739	36	8.927	10.202
14	1.350	1.543	20	2.755	3.149	28	5.400	6.172	38	9.946	11.367
									40	11.021	12.595
									42	12.150	13.886
									45	13.948	15.941
									50	17.220	19.680

Tolerance Chart For SS Round Bars as per ISO

Size Range (mm)	h8	h9	h10	h11	h12	h13	K12/K13
Upto 6	-0.018	-0.030	-0.048	-0.075	-0.120	-0.180	-
Over 6 upto 10	-0.022	-0.036	-0.058	-0.090	-0.150	-0.220	-
Over 10 upto 18	-0.027	-0.043	-0.070	-0.110	-0.180	-0.270	-
Over 18 upto 30	-0.033	-0.052	-0.084	-0.130	-0.210	-0.330	+0.10/+0.15
Over 30 upto 50	-0.039	-0.062	-0.100	-0.160	-0.250	-0.390	+0.15/+0.20
Over 50 upto 80	-0.046	-0.074	-0.120	-0.190	-0.300	-0.460	+0.20/+0.25
Over 80 upto 120	-0.054	-0.087	-0.140	-0.220	-0.350	-0.540	+0.25/+0.30

Tolerance Chart For SS Round Bars as per ASTM A 484

Table 6 - Cold Finished Round Bars

Size Range in Inch	Tolerance
1/16" to less than 5/16"	+/- 0.001"
5/16" to less than 1/2"	+/- 0.0015"
1/2" to less than 1"	+/- 0.002"
1" to less than 1-1/2"	+/- 0.0025"
1-1/2" to less than 4"	+/- 0.003"

Table 7 - Cold Finished Hexagon & Square Bars

Size Range in Inch	Tolerance
1/16" to less than 5/16"	- 0.002"
5/16" to less than 1/2"	- 0.003"
1/2" to less than 1"	- 0.004"
1" to less than 2"	- 0.006"
2" to less than 3"	- 0.008"
3" and Over	- 0.010"

Hardness Conversions Chart

Brinell Hardness HB	Vickers Hardness HV	Rockwell Hardness HRC	Rockwell Hardness HRB	Tensile Strength ksi
321	339	34	108	158
311	328	33	108	154
302	319	32	107	150
293	309	31	106	146
285	301	30	105	142
277	292	29	104	138
269	284	28	104	135
262	276	27	103	131
255	269	25	102	125
248	261	24	101	121
241	253	23	100	119
235	247	22	99	117
229	241	21	98	113
223	234	-	97	110
217	228	-	96	107
212	222	-	95	102
207	218	-	95	100
202	212	-	94	98
197	207	-	93	96
192	202	-	92	94
187	196	-	91	90
183	192	-	90	89
179	188	-	89	87

Brinell Hardness HB	Vickers Hardness HV	Rockwell Hardness HRC	Rockwell Hardness HRB	Tensile Strength ksi
174	82	-	88	84
170	178	-	87	82
166	175	-	86	80
163	171	-	85	78
159	167	-	84	77
156	163	-	83	76
153	160	-	82	75
149	156	-	81	74
146	153	-	80	72
143	150	-	79	71
140	147	-	78	70
137	143	-	76	67
134	140	-	75	66
131	137	-	74	65
128	134	-	73	64
126	132	-	72	63
124	129	-	71	62
121	127	-	70	60
118	124	-	69	59
116	122	-	68	58
114	119	-	67	57
111	117	-	66	56
-	-	-	-	-



We are exporting

our products to **industries** like :

- Pumps
- Valves
- Seals
- Machine Tools
- Automotive Components
- Machinery
- Fittings
- Forgings
- Surgical Appliances
- Fasteners
- Oil Plants
- Nuclear Plants
- Aviation

END USER INDUSTRY



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Plant :

Plot No. E/1A, Madhusudan Compound, Mankoli - Anjur Road, Anjur Village, Bhiwandi, Dist Thane - 421 302, INDIA.

Marketing Division :

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