Average Physical Properties of Alloy Steels

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AISI Number	**Condition of Bar Steel**	**Tensile Strength P.S.I.**	**Yeild P.S.I.**	**% Elongation in 2"**	**% Reduction of Area**	**Brinell Hardness**	**Rockwell Hardness**	**Machinability % of B1112 CD**
4142*	Hot Rolled Annealed	90/100,000	60/70,000	20/30	50/60	185/210	91/95B	55
	Cold Drawn Annealed	110/120,000	85/95,000	15/25	45/55	230/250	20/25C	65
	Heat Treated C.D.	140/155,000	125/140,000	12/20	45/55	270/300	26/30C	45
	1" Round Oil Quenched 1550° F., Tempered 1000° F	150/160,000	130/140,000	15/20	50/60	320/350	34/37C	
	2" Round Oil Quenched 1550° F., Tempered 1000° F	145/155,000	125/135,000	15/20	50/60	320/345	33/36C	
	3" Round Oil Quenched 1550° F., Tempered 1000° F	130/145,000	115/125,000	15/20	55/65	280/310	28/32C	
4147-50*	Hot Rolled Annealed	90/105,000	65/75,000	20/30	50/60	185/215	92/96B	52
	1" Round Oil Quenched 1525° F., Tempered 1000° F	170/180,000	145/155,000	15/20	50/60	350/375	37/39C	
	3" Round Oil Quenched 1525° F., Tempered 1000° F	150/160,000	130/140,000	15/20	50/60	325/350	34/37C	
	4" Round Oil Quenched 1525° F., Tempered 1000° F	140/150,000	120/130,000	15/20	50/60	300/330	31/35C	
	5" Round Oil Quenched 1525° F., Tempered 1000° F	135/150,000	115/125,000	15/22	52/62	295/320	30/34C	
E.T.D.®	Elevated Temperature Drawing	150,000 Min.	130,000 Min.	10/20	30/45	302 Min.	32C Min.	
E.T.D.®	Elevated Temperature Drawing	180,000 Min.	165,000 Min.	5/10	20/40	363 Min.	38C Min.	
4340	Hot Rolled Annealed	100/120,000	70/90,000	15/25	40/50	220/250	20/25C	45
	2" Round Oil Quenched 1550° F., Tempered 1000° F	175/190,000	155/170,000	12/18	48/55	370/400	38/42C	
	3" Round Oil Quenched 1550° F., Tempered 1000° F	170/180,000	140/155,000	12/20	45/50	350/375	36/39C	
	4" Round Oil Quenched 1550° F., Tempered 1000° F	160/170,000	135/145,000	12/20	40/50	330/360	35/31C	
	5" Round Oil Quenched 1550° F., Tempered 1000° F	145/160,000	125/135,000	10/15	40/50	300/330	31/36C	
	6" Round Oil Quenched 1550° F., Tempered 1000° F	140/150,000	120/130.000	10/15	40/50	240/320	30/35C	
4615	Natural Hot Rolled as Rolled	75/85,000	53/63,000	25/35	58/68	145/180	80/87B	50
	Cold Drawn	90/100,000	75/85,000	15/22	50/60	190/215	91/96B	55
	1" Round Carburized 1700° F.: Cool in box: Reheat 1525° F., Oil Quenched-Core Properties	110/125,000	80/100,000	18/23	50/60	220/250	20/24C	
4620	Natural Hot Rolled as Rolled	80/110,000	60/75,000	20/30	50/60	180/220		50
	1" Round Corburized 1700° F.: Cool in box: Reheat 1525° F., Oil Quenched-Core Properties	115/130,000	80/100,000	15/25	45/55	240/270	24/30C	
4815	Natural Hot Rolled as Rolled	100/110,000	65/75,000	20/30	50/60	210/230	95/99B	50
	1" Round Carburized 1700° F.: Cool in box: Reheat 1525° F., Oil Quenched-Core Properties	140/160.000	120/140,000	14/18	45/55	300/340	33/38C	
E52100	Hot Rolled Annealed	100/110,000	75/85,000	20/25	50/60	210/235		45
	1" Round Oil Quenched 1500° F., Tempered 1000° F	180/195,000	65/180,000	10/15	35/45	375/415	40/43C	
6150	Hot Rolled Annealed	95/110,000	75/85,000	20/30	50/60	200/230	14/21C	50
	1" Round Oil Quenched 1575° F., Tempered 1000° F	170/185,000	150/160,000	12/17	45/55	360/390	38/41C	
8620*	Natural Hot Rolled	80/95,000	55/65,000	18/25	45/60	160/200	85/95B	55
	Cold Drawn	90/105,000	65/80,000	15/25	40/50	185/215	90/96B	60/70
	1" Round Carburized 1700° F.: Cool in box: Reheat 1550° F., Oil Quenched—Core	120/135,000	90/110.000	15/20	40/50	285/350	28/40C	

	Properties							
8642	Natural Hot Rolled	90/120,000	50/70,000	15/25	35/50	210/260	17/27C	50/55
	Hot Rolled Heat Treated	125,000	105,000	16 Min.	50 Min.	260/320	26/33	45/50
	Cold Drawn Annealed	Min.	Min.	13/20	40/50	195/220	93/98B	65
	1' Round Oil Quenched 1550° F,,	100/110,000	90/100,000	15/20	50/55	325/345	34/37C	
	Tempered 1000° F	150/160,000	130/140,000					
	2' Round Oil Quenched 1550° F.,			15/20	50/60	285/310	29/32C	
	Tempered 1000° F	130/145,000	105/115,000					
8645	Natural Hot Rolled	105/125.000	55/75,000	15/25	35/50	220/270	20/28C	48/55
	Annealed Hot Rolled	100/110,000	50/60,000	20/25	40/55	210/230	17/21C	54
	2" Round Oil Quenched 1550° F.,	140/150,000	110/125,000	15/20	45/55	300/320	30/34C	
	Tempered 1000° F							
	3" Round Oil Quenched 1550° F.,	130/140,000	105/115,000	15/20	50/60	285/310	29/32C	
	Tempered 1000° F							
8742	Natural Hot Rolled	110/125,000	50/70,000	15/25	35/50	230/270	22/28C	45/55
	Cold Drawn Annealed	105/120,000	95/105,000	10/18	35/45	210/235	95/99B	60
	1" Round Oil Quenched 1550° F.,	155/165,000	135/145,000	15/20	45/52	330/355	35/38C	
	Tempered 1000° F							
	2" Round Oil Quenched 1550° F.,	135/145,000	110/120,000	15/20	50/60	290/320	30/33C	
	Tempered 1000° F							

*With the addition of .15/.35 per cent Lead to these alloys, mechanical properties are not appreciably affected. Machinability, however, is improved approximately 25 per cent.