

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 1038 H to 15B21 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE														"J" Distance Sixteenths of an inch
	1038 H		1045 H		1522 H		1524 H		1526 H		1541 H		15B21 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	58	51	62	55	50	41	51	42	53	44	60	53	48	41	1
1.5	56	42	61	52	48	41	49	42	50	42	59	52	48	41	1.5
2	55	34	59	42	47	32	48	38	49	38	59	50	47	40	2
2.5	53	29	56	34	46	27	47	34	47	33	58	47	47	39	2.5
3	49	26	52	31	45	22	45	29	46	26	57	44	46	38	3
3.5	43	24	46	29	42	21	43	25	42	25	56	41	45	36	3.5
4	37	23	38	28	39	20	39	22	39	21	55	38	44	30	4
4.5	33	22	34	27	37	....	38	20	37	20	53	35	42	23	4.5
5	30	22	33	26	34	....	35	....	33	....	52	32	40	20	5
5.5	29	21	32	26	32	....	34	....	31	....	50	29	38	....	5.5
6	28	21	32	25	30	....	32	....	30	....	48	27	32	....	6
6.5	27	20	31	25	28	....	30	....	28	....	46	26	27	....	6.5
7	27	....	31	25	27	....	29	....	27	....	44	25	22	....	7
7.5	26	....	30	24	....	....	28	....	26	....	41	24	20	....	7.5
8	26	....	30	24	....	....	27	....	26	....	39	23	....	....	8
9	25	....	29	23	....	....	26	....	24	....	35	23	....	....	9
10	25	....	29	22	....	....	25	....	24	....	33	22	....	....	10
12	23	....	28	21	....	....	23	....	23	....	32	21	....	....	12
14	21	....	27	20	....	....	22	....	....	....	31	20	....	....	14
16	....	....	26	....	....	....	....	....	....	....	30	....	....	....	16
18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	18
20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20
22	....	....	....	....	....	....	....	....	....	....	....	....	....	....	22
24	....	....	....	....	....	....	....	....	....	....	....	....	....	....	24
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26
28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 15B28 H to 1330 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	15B28 H		15B30 H		15B35 H		15B37 H		15B41 H		15B48 H		15B62 H		1330 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	53	47	55	48	58	51	58	50	60	53	63	56	....	60	56	49	1
2	53	47	53	47	56	50	56	50	59	52	62	56	....	60	56	47	2
3	52	46	52	46	55	49	55	49	59	52	62	55	....	60	55	44	3
4	51	45	51	44	54	48	54	48	58	51	61	54	....	60	53	40	4
5	51	42	50	32	53	39	53	43	58	51	60	53	65	59	52	35	5
6	50	32	48	22	51	28	52	37	57	50	59	52	65	58	50	31	6
7	49	25	43	20	47	24	51	33	57	49	58	42	64	57	48	28	7
8	48	21	38	....	41	22	50	26	56	48	57	34	64	52	45	26	8
9	46	20	33	....	....	....	....	....	55	44	56	31	64	43	43	25	9
10	43	....	29	....	30	20	....	45	22	55	37	55	30	63	39	42	10
11	40	....	27	....	....	....	....	....	....	54	32	53	29	63	37	40	11
12	37	....	26	....	27	....	....	40	21	53	28	51	28	3	35	39	12
13	34	....	25	....	....	....	....	....	52	26	48	27	62	35	38	20	13
14	31	....	24	....	26	....	....	33	20	51	25	45	27	62	34	37	14
15	30	....	23	....	....	....	....	....	....	50	25	41	26	61	33	36	15
16	29	....	22	....	25	....	....	29	....	49	24	38	26	60	33	35	16
18	27	....	20	....	....	....	....	....	46	23	34	25	58	32	34	....	18
20	25	....	....	....	24	....	....	27	....	42	22	32	24	54	31	33	20
22	25	....	....	....	....	....	....	....	....	39	21	31	23	48	30	32	22
24	24	....	....	....	22	....	....	25	....	36	21	30	22	43	30	31	24
26	23	....	....	....	....	....	....	....	....	34	20	29	21	40	29	31	26
28	22	....	....	....	20	....	....	23	....	33	....	29	20	37	28	31	28
30	21	....	....	....	....	....	....	....	....	31	....	28	....	35	27	30	30
32	20	....	....	....	....	....	....	....	....	31	....	28	....	34	26	30	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 1335 H to 4037 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

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"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	1335 H		1340 H		1345 H		3310 H*		3316 H*		4028 H		4032 H		4037 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	58	51	60	53	63	56	43	36	47	40	52	45	57	50	59	52	1
2	57	49	60	52	63	56	43	36	47	39	50	40	54	45	57	49	2
3	56	47	59	51	62	55	42	35	47	38	46	31	51	36	54	42	3
4	55	44	58	49	61	54	42	35	46	38	40	25	46	29	51	35	4
5	54	38	57	46	61	51	42	34	46	37	34	22	39	25	45	30	5
6	52	34	56	40	60	44	42	33	46	37	30	20	34	23	38	26	6
7	50	31	55	35	60	38	41	32	45	36	28	....	31	22	34	23	7
8	48	29	54	33	59	35	41	31	45	35	26	....	29	21	32	22	8
9	46	27	52	31	58	33	41	30	45	34	25	....	28	20	30	21	9
10	44	26	51	29	57	32	40	30	45	33	25	....	26	....	29	20	10
11	42	25	50	28	56	31	40	29	45	33	24	....	26	....	28	....	11
12	41	24	48	27	55	30	40	29	45	32	23	....	25	....	27	....	12
13	40	23	46	26	54	29	39	28	45	32	23	....	24	....	26	....	13
14	39	22	44	25	53	29	39	28	44	32	22	....	24	....	26	....	14
15	38	22	42	25	52	28	38	27	44	31	22	....	23	....	26	....	15
16	37	21	41	24	51	28	38	27	44	31	21	....	23	....	25	....	16
18	35	20	39	23	49	27	37	26	44	31	21	....	23	....	25	....	18
20	34	....	38	23	48	27	37	26	43	31	20	....	22	....	25	....	20
22	33	....	37	22	47	26	37	26	43	31	....	....	22	....	25	....	22
24	32	....	36	22	46	26	36	26	43	31	....	....	21	....	24	....	24
26	31	....	35	21	45	25	36	25	42	31	....	....	21	....	24	....	26
28	31	....	35	21	45	25	36	25	42	30	....	....	20	....	24	....	28
30	30	....	34	20	45	24	35	25	42	30	....	....	....	....	23	....	30
32	30	....	34	20	45	24	35	25	41	30	....	....	....	....	23	....	32

* Formerly Standard Steels

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 4042 H to 4142 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	4042 H		4047 H		4118 H		4130 H		4135 H		4137 H		4140 H		4142 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	62	55	64	57	48	41	56	49	58	51	59	52	60	53	62	55	1
2	60	52	62	55	46	36	55	46	58	50	59	51	60	53	62	55	2
3	58	48	60	50	41	27	53	42	57	49	58	50	60	52	62	54	3
4	55	40	58	42	35	23	51	38	56	48	58	49	59	51	61	53	4
5	50	33	55	35	31	20	49	34	56	47	57	49	59	51	61	53	5
6	45	29	52	32	28	....	47	31	55	45	57	48	58	50	61	52	6
7	39	27	47	30	27	....	44	29	54	42	56	45	58	48	60	51	7
8	36	26	43	28	25	....	42	27	53	40	55	43	57	47	60	50	8
9	34	25	40	28	24	....	40	26	52	38	55	40	57	44	60	49	9
10	33	24	38	27	23	....	38	26	51	36	54	39	56	42	59	47	10
11	32	24	37	26	22	....	36	25	50	34	53	37	56	40	59	46	11
12	31	23	35	26	21	....	35	25	49	33	52	36	55	39	58	44	12
13	30	23	34	25	21	....	34	24	48	32	51	35	55	38	58	42	13
14	30	23	33	25	20	....	34	24	47	31	50	34	54	37	57	41	14
15	29	22	33	25	....	....	33	23	46	30	49	33	54	36	57	40	15
16	29	22	32	25	....	....	33	23	45	30	48	33	53	35	56	39	16
18	28	22	31	24	....	....	32	22	44	29	46	32	52	34	55	37	18
20	28	21	30	24	....	....	32	21	42	28	45	31	51	33	54	36	20
22	28	20	30	23	....	....	32	20	41	27	44	30	49	33	53	35	22
24	27	20	30	23	....	....	31	....	40	27	43	30	48	32	53	34	24
26	27	....	30	22	....	....	31	....	39	27	42	30	47	32	52	34	26
28	27	....	29	22	....	....	30	....	38	26	42	29	46	31	51	34	28
30	26	....	29	21	....	....	30	....	38	26	41	29	45	31	51	33	30
32	26	....	29	21	....	....	29	....	37	26	41	29	44	30	50	33	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 4145 H to 4620 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	4145 H		4147 H		4150 H		4161 H		4320 H		4340 H		E 4340 H		4620 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	63	56	64	57	65	59	65	60	48	41	60	53	60	53	48	41	1
2	63	55	64	57	65	59	65	60	47	38	60	53	60	53	45	35	2
3	62	55	64	56	65	59	65	60	45	35	60	53	60	53	42	27	3
4	62	54	64	56	65	58	65	60	43	32	60	53	60	53	39	24	4
5	62	53	63	55	65	58	65	60	41	29	60	53	60	53	34	21	5
6	61	53	63	55	65	57	65	60	38	27	60	53	60	53	31	....	6
7	61	52	63	55	65	57	65	60	36	25	60	53	60	53	29	....	7
8	61	52	63	54	64	56	65	60	34	23	60	52	60	53	27	....	8
9	60	51	63	54	64	56	65	59	33	22	60	52	60	53	26	....	9
10	60	50	62	53	64	55	65	59	31	21	60	52	60	53	25	....	10
11	60	49	62	52	64	54	65	59	30	20	59	51	60	53	24	....	11
12	59	48	62	51	63	53	64	59	29	20	59	51	60	52	23	....	12
13	59	46	61	49	63	51	64	58	28	....	59	50	60	52	22	....	13
14	59	45	61	48	62	50	64	58	27	....	58	49	59	52	22	....	14
15	58	43	60	46	62	48	64	57	27	....	58	49	59	52	22	....	15
16	58	42	60	45	62	47	64	56	26	....	58	48	59	51	21	....	16
18	57	40	59	42	61	45	64	55	25	....	58	47	58	51	21	....	18
20	57	38	59	40	60	43	63	53	25	....	57	46	58	50	20	....	20
22	56	37	58	39	59	41	63	50	24	....	57	45	58	49	....	....	22
24	55	36	57	38	59	40	63	48	24	....	57	44	57	48	....	....	24
26	55	35	57	37	58	39	63	45	24	....	57	43	57	47	....	....	26
28	55	35	57	37	58	38	63	43	24	....	56	42	57	46	....	....	28
30	55	34	56	37	58	38	63	42	24	....	56	41	57	45	....	....	30
32	54	34	56	36	58	38	63	41	....	....	56	40	57	44	....	....	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 4626 H to 50B44 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	4626 H*		4718 H		4720 H		4815 H		4817 H		4820 H		50B40 H		50B44 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	51	45	47	40	48	41	45	38	46	39	48	41	60	53	63	56	1
2	48	36	47	40	47	39	44	37	46	38	48	40	60	53	63	56	2
3	41	29	45	38	43	31	44	34	45	35	47	39	59	52	62	55	3
4	33	24	43	33	39	27	42	30	44	32	46	38	59	51	62	55	4
5	29	21	40	29	35	23	41	27	42	29	45	34	58	50	61	54	5
6	27	....	37	27	32	21	39	24	41	27	43	31	58	48	61	52	6
7	25	....	35	25	29	....	37	22	39	25	42	29	57	44	60	48	7
8	24	....	33	24	28	....	35	21	37	23	40	27	57	39	60	43	8
9	23	....	32	23	27	....	33	20	35	22	39	26	56	34	59	38	9
10	22	....	31	22	26	....	31	....	33	21	37	25	55	31	58	34	10
11	22	....	30	22	25	....	30	....	32	20	36	24	53	29	57	31	11
12	21	....	29	21	24	....	29	....	31	20	35	23	51	28	56	30	12
13	21	....	29	21	24	....	28	....	30	....	34	22	49	27	54	29	13
14	20	....	28	21	23	....	28	....	29	....	33	22	47	26	52	29	14
15	....	....	27	20	23	....	27	....	28	....	32	21	44	25	50	28	15
16	....	....	27	20	22	....	27	....	28	....	31	21	41	25	48	27	16
18	....	....	27	....	21	....	26	....	27	....	29	20	38	23	44	26	18
20	....	....	26	....	21	....	25	....	26	....	28	20	36	21	40	24	20
22	....	....	26	....	21	....	24	....	25	....	28	....	35	....	38	23	22
24	....	....	25	....	20	....	24	....	25	....	27	....	34	....	37	21	24
26	....	....	25	....	....	....	24	....	25	....	27	....	33	....	36	20	26
28	....	....	24	....	....	....	23	....	25	....	26	....	32	....	35	....	28
30	....	....	24	....	....	....	23	....	24	....	26	....	30	....	34	....	30
32	....	....	24	....	....	....	23	....	24	....	25	....	29	....	33	....	32

* Formerly Standard Steel

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 5046 H to 5135 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	5046 H		50B46 H		50B50 H		50B60 H		5120 H		5130 H		5132 H		5135 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	63	56	63	56	65	59	....	60	48	40	56	49	57	50	58	51	1
2	62	55	62	54	65	59	....	60	46	34	55	46	56	47	57	49	2
3	60	45	61	52	64	58	....	60	41	28	53	42	54	43	56	47	3
4	56	32	60	50	64	57	....	60	36	23	51	39	52	40	55	43	4
5	52	28	59	41	63	56	....	60	33	20	49	35	50	35	54	38	5
6	46	27	58	32	63	55	....	59	30	....	47	32	48	32	52	35	6
7	39	26	57	31	62	52	....	57	28	....	45	30	45	29	50	32	7
8	35	25	56	30	62	47	65	53	27	....	42	28	42	27	47	30	8
9	34	24	54	29	61	42	65	47	25	....	40	26	40	25	45	28	9
10	33	24	51	28	60	37	64	42	24	....	38	25	38	24	43	27	10
11	33	23	47	27	60	35	64	39	23	....	37	23	37	23	41	25	11
12	32	23	43	26	59	33	64	37	22	....	36	22	36	22	40	24	12
13	32	22	40	26	58	32	63	36	21	....	35	21	35	21	39	23	13
14	31	22	38	25	57	31	63	35	21	....	34	20	34	20	38	22	14
15	31	21	37	25	56	30	63	34	20	....	34	....	34	....	37	21	15
16	30	21	36	24	54	29	62	34	....	....	33	....	33	....	37	21	16
18	29	20	35	23	50	28	60	33	....	....	32	....	32	....	36	20	18
20	28	....	34	22	47	27	58	31	....	....	31	....	31	....	35	....	20
22	27	....	33	21	44	26	55	30	....	....	30	....	30	....	34	....	22
24	26	....	32	20	41	25	53	29	....	....	29	....	29	....	33	....	24
26	25	....	31	....	39	24	51	28	....	....	27	....	28	....	32	....	26
28	24	....	30	....	38	22	49	27	....	....	26	....	27	....	32	....	28
30	23	....	29	....	37	21	47	26	....	....	25	....	26	....	31	....	30
32	23	....	28	....	36	20	44	25	....	....	24	....	25	....	30	....	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 5140 H to 6150 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	5140 H		5147 H		5150 H		5155 H		5160 H		51B60 H		6118 H		6150 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	60	53	64	57	65	59	....	60	....	60	....	60	46	39	65	59	1
2	59	52	64	56	65	58	65	59	....	60	....	60	44	36	65	58	2
3	58	50	63	55	64	57	64	58	....	60	....	60	38	28	64	57	3
4	57	48	62	54	63	56	64	57	65	59	....	60	33	24	64	56	4
5	56	43	62	53	62	53	63	55	65	58	....	60	30	22	63	55	5
6	54	38	61	52	61	49	63	52	64	56	....	59	28	20	63	53	6
7	52	35	61	49	60	42	62	47	64	52	....	58	27	....	62	50	7
8	50	33	60	45	59	38	62	41	63	47	....	57	26	....	61	47	8
9	48	31	60	40	58	36	61	37	62	42	....	54	26	....	61	43	9
10	46	30	59	37	56	34	60	36	61	39	....	50	25	....	60	41	10
11	45	29	59	35	55	33	59	35	60	37	....	44	25	....	59	39	11
12	43	28	58	34	53	32	57	34	59	36	65	41	24	....	58	38	12
13	42	27	58	33	51	31	55	34	58	35	65	40	24	....	57	37	13
14	40	27	57	32	50	31	52	33	56	35	64	39	23	....	55	36	14
15	39	26	57	32	48	30	51	33	54	34	64	38	23	....	54	35	15
16	38	25	56	31	47	30	49	32	52	34	63	37	22	....	52	35	16
18	37	24	55	30	45	29	47	31	48	33	61	36	22	....	50	34	18
20	36	23	54	29	43	28	45	31	47	32	59	34	21	....	48	32	20
22	35	21	53	27	42	27	44	30	46	31	57	33	21	....	47	31	22
24	34	20	52	26	41	26	43	29	45	30	55	31	20	....	46	30	24
26	34	....	51	25	40	25	42	28	44	29	53	30	....	....	45	29	26
28	33	....	50	24	39	24	41	27	43	28	51	28	....	....	44	27	28
30	33	....	49	22	39	23	41	26	43	28	49	27	....	....	43	26	30
32	32	....	48	21	38	22	40	25	42	27	47	25	....	....	42	25	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 81B45 H to 86B30 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	81B45 H		8617 H		8620 H		8622 H		8625 H		8627 H		8630 H		86B30 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	63	56	46	39	48	41	50	43	52	45	54	47	56	49	56	49	1
2	63	56	44	33	47	37	49	39	51	41	52	43	55	46	55	49	2
3	63	56	41	27	44	32	47	34	48	36	50	38	54	43	55	48	3
4	63	56	38	24	41	27	44	30	46	32	48	35	52	39	55	48	4
5	63	55	34	20	37	23	40	26	43	29	45	32	50	35	54	48	5
6	63	54	31	....	34	21	37	24	40	27	43	29	47	32	54	48	6
7	62	53	28	....	32	....	34	22	37	25	40	27	44	29	53	48	7
8	62	51	27	....	30	....	32	20	35	23	38	26	41	28	53	47	8
9	61	48	26	....	29	....	31	....	33	22	36	24	39	27	52	46	9
10	60	44	25	....	28	....	30	....	32	21	34	24	37	26	52	44	10
11	60	41	24	....	27	....	29	....	31	20	33	23	35	25	52	42	11
12	59	39	23	....	26	....	28	....	30	....	32	22	34	24	51	40	12
13	58	38	23	....	25	....	27	....	29	....	31	21	33	23	51	39	13
14	57	37	22	....	25	....	26	....	28	....	30	21	33	22	50	38	14
15	57	36	22	....	24	....	26	....	28	....	30	20	32	22	50	36	15
16	56	35	21	....	24	....	25	....	27	....	29	20	31	21	49	35	16
18	55	34	21	....	23	....	25	....	27	....	28	....	30	21	48	34	18
20	53	32	20	....	23	....	24	....	26	....	28	....	30	20	47	32	20
22	52	31	....	....	23	....	24	....	26	....	28	....	29	20	45	31	22
24	50	30	....	....	23	....	24	....	26	....	27	....	29	....	44	29	24
26	49	29	....	....	23	....	24	....	26	....	27	....	29	....	43	28	26
28	47	28	....	....	22	....	24	....	25	....	27	....	29	....	41	27	28
30	45	28	....	....	22	....	24	....	25	....	27	....	29	....	40	26	30
32	43	27	....	....	22	....	24	....	25	....	27	....	29	....	39	25	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 8637 H to 8660 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	8637 H		8640 H		8642 H		8645 H		86B45 H		8650 H		8655 H		8660 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	59	52	60	53	62	55	63	56	63	56	65	59	....	60	....	60	1
2	58	51	60	53	62	54	63	56	63	56	65	58	....	59	....	60	2
3	58	50	60	52	62	53	63	55	62	55	65	57	....	59	....	60	3
4	57	48	59	51	61	52	63	54	62	54	64	57	....	58	....	60	4
5	56	45	59	49	61	50	62	52	62	54	64	56	....	57	....	60	5
6	55	42	58	46	60	48	61	50	61	53	63	54	....	56	....	59	6
7	54	39	57	42	59	45	61	48	61	52	63	53	....	55	....	58	7
8	53	36	55	39	58	42	60	45	60	52	62	50	....	54	....	57	8
9	51	34	54	36	57	39	59	41	60	51	61	47	....	52	....	55	9
10	49	32	52	34	55	37	58	39	60	51	60	44	65	49	....	53	10
11	47	31	50	32	54	34	56	37	59	50	60	41	65	46	....	50	11
12	46	30	49	31	52	33	55	35	59	50	59	39	64	43	....	47	12
13	44	29	47	30	50	32	54	34	59	49	58	37	64	41	....	45	13
14	43	28	45	29	49	31	52	33	59	48	58	36	63	40	....	44	14
15	41	27	44	28	48	30	51	32	58	46	57	35	63	39	....	43	15
16	40	26	42	28	46	29	49	31	58	45	56	34	62	38	65	42	16
18	39	25	41	26	44	28	47	30	58	42	55	33	61	37	64	40	18
20	37	25	39	26	42	28	45	29	58	39	53	32	60	35	64	39	20
22	36	24	38	25	41	27	43	28	57	37	52	31	59	34	63	38	22
24	36	24	38	25	40	27	42	28	57	35	50	31	58	34	62	37	24
26	35	24	37	24	40	26	42	27	57	34	49	30	57	33	62	36	26
28	35	24	37	24	39	26	41	27	57	32	47	30	56	33	61	36	28
30	35	23	37	24	39	26	41	27	56	32	46	29	55	32	60	35	30
32	35	23	37	24	39	26	41	27	56	31	45	29	53	32	60	35	32

END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 8720 H to 94B30 H

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	8720 H		8740 H		8822 H		9260 H		9310 H		94B15 H		94B17 H		94B30 H		
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	
1	48	41	60	53	50	43	....	60	43	36	45	38	46	39	56	49	1
2	47	38	60	53	49	42	....	60	43	35	45	38	46	39	56	49	2
3	45	35	60	52	48	39	65	57	43	35	44	37	45	38	55	48	3
4	42	30	60	51	46	33	64	53	42	34	44	36	45	37	55	48	4
5	38	26	59	49	43	29	63	46	42	32	43	32	44	34	54	47	5
6	35	24	58	46	40	27	62	41	42	31	42	28	43	29	54	46	6
7	33	22	57	43	37	25	60	38	42	30	40	25	42	26	53	44	7
8	31	21	56	40	35	24	58	36	41	29	38	23	41	24	53	42	8
9	30	20	55	37	34	24	55	36	40	28	36	21	40	23	52	39	9
10	29	....	53	35	33	23	52	35	40	27	34	20	38	21	52	37	10
11	28	....	52	34	32	23	49	34	39	27	33	....	36	20	51	34	11
12	27	....	50	32	31	22	47	34	38	26	31	....	34	....	51	32	12
13	26	....	49	31	31	22	45	33	37	26	30	....	33	....	50	30	13
14	26	....	48	31	30	22	43	33	36	26	29	....	32	....	49	29	14
15	25	....	46	30	30	21	42	32	36	26	28	....	31	....	48	28	15
16	25	....	45	29	29	21	40	32	35	26	27	....	30	....	46	27	16
18	24	....	43	28	29	20	38	31	35	26	26	....	28	....	44	25	18
20	24	....	42	28	28	....	37	31	35	25	25	....	27	....	42	24	20
22	23	....	41	27	27	....	36	30	34	25	24	....	26	....	40	23	22
24	23	....	40	27	27	....	36	30	34	25	23	....	25	....	38	23	24
26	23	....	39	27	27	....	35	29	34	25	23	....	24	....	37	22	26
28	23	....	39	27	27	....	35	29	34	25	22	....	24	....	35	21	28
30	22	....	38	26	27	....	35	28	33	24	22	....	23	....	34	21	30
32	22	....	38	26	27	....	34	28	33	24	22	....	23	....	34	20	32

RESTRICTED END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 15B21 RH to 4130 RH

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified.

"J" Distance Sixteenths of an inch	GRADE														"J" Distance Sixteenths of an inch
	15B21 RH		15B35 RH		3310 RH		4027 RH		4118 RH		4120 RH		4130 RH		
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	47	42	57	52	42	37	51	46	47	42	47	42	55	50	1
2	46	41	55	51	42	37	48	42	44	38	45	39	54	48	2
3	44	39	54	50	42	37	43	34	38	30	41	35	52	44	3
4	42	33	53	49	41	36	37	28	33	25	38	30	49	40	4
5	37	24	50	41	41	36	32	24	29	22	34	26	46	36	5
6	30	20	46	33	41	35	28	22	27	20	31	24	44	34	6
7	24	....	42	28	40	33	26	20	25	....	29	22	41	32	7
8	22	....	36	24	40	33	24	....	24	....	28	21	39	30	8
9	20	....	32	23	39	32	23	....	23	....	26	20	37	28	9
10	....	....	28	21	39	32	22	....	22	....	25	....	35	27	10
11	....	....	....	....	39	31	22	....	21	....	24	....	33	26	11
12	....	....	25	....	39	31	21	....	20	....	23	....	32	26	12
13	....	....	....	....	38	30	21	....	....	....	23	....	32	26	13
14	....	....	24	....	38	30	20	....	....	....	22	....	31	25	14
15	....	....	....	....	37	29	....	....	....	....	22	....	31	25	15
16	....	....	23	....	37	29	....	....	....	....	21	....	31	25	16
18	....	....	....	....	36	28	....	....	....	....	20	....	30	24	18
20	....	....	22	....	36	28	....	....	....	....	....	....	30	23	20
22	....	....	....	....	35	27	....	....	....	....	....	....	30	23	22
24	....	....	20	....	35	27	....	....	....	....	....	....	29	22	24
26	....	....	....	....	35	27	....	....	....	....	....	....	29	22	26
28	....	....	....	....	34	26	....	....	....	....	....	....	28	21	28
30	....	....	....	....	34	26	....	....	....	....	....	....	28	21	30
32	....	....	....	....	34	26	....	....	....	....	....	....	27	20	32

RESTRICTED END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 4140 RH to 50B40 RH

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified.

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"J" Distance Sixteenths of an inch	GRADE														"J" Distance Sixteenths of an inch
	4140 RH		4145 RH		4161 RH		4320 RH		4620 RH		4820 RH		50B40 RH		
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	59	54	62	57	65	60	47	42	47	42	47	42	59	54	1
2	59	54	62	57	65	60	46	40	44	37	47	42	59	54	2
3	59	54	61	56	65	60	44	37	40	30	46	41	58	53	3
4	59	53	61	56	65	60	41	34	37	27	45	40	57	53	4
5	58	52	60	55	65	60	39	31	32	24	43	36	57	52	5
6	57	51	60	55	65	60	36	29	29	21	41	33	56	50	6
7	56	50	59	54	65	60	34	27	27	20	40	32	55	47	7
8	55	49	59	53	65	60	32	25	25	....	38	30	54	43	8
9	54	48	58	52	65	60	31	24	24	....	36	28	52	38	9
10	53	46	58	52	65	60	29	23	23	....	35	27	50	35	10
11	52	44	58	51	65	60	28	22	22	....	34	26	49	33	11
12	52	43	57	50	64	59	26	21	21	....	33	25	47	32	12
13	51	42	57	49	64	59	25	20	20	....	32	24	45	31	13
14	50	41	56	48	64	59	24	....	....	....	31	24	44	30	14
15	50	40	56	47	63	58	24	....	....	....	30	23	41	29	15
16	49	39	55	46	63	57	23	....	....	....	29	23	38	28	16
18	48	38	54	44	62	56	22	....	....	....	28	22	36	26	18
20	47	37	53	43	62	54	22	....	....	....	27	22	34	24	20
22	46	37	52	42	61	53	21	....	....	....	26	21	33	23	22
24	45	36	51	40	60	51	21	....	....	....	25	20	32	22	24
26	44	35	51	40	59	49	21	....	....	....	25	20	31	21	26
28	43	35	50	39	58	47	21	....	....	....	25	....	30	20	28
30	42	34	50	38	57	46	21	....	....	....	24	....	29	....	30
32	41	33	49	37	57	45	21	....	....	....	23	....	28	....	32

RESTRICTED END-QUENCH HARDENABILITY BANDS

Tabulations of Band Limits – 5130 RH to 9310 RH

These values were adjusted to the nearest Rockwell "C" point, and are used when points are selected and specified.

"J" Distance Sixteenths of an inch	GRADE																"J" Distance Sixteenths of an inch
	5130 RH		5140 RH		5160 RH		8620 RH		8622 RH		8720 RH		8822 RH		9310 RH		
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
1	55	50	59	54	65	60	47	42	49	44	47	42	49	44	42	37	1
2	53	47	58	53	65	60	45	39	47	41	45	39	48	43	42	36	2
3	51	44	57	51	65	60	41	35	45	37	43	37	47	40	42	36	3
4	49	41	55	49	65	59	38	30	41	32	40	32	43	35	41	35	4
5	46	37	53	45	64	58	34	26	38	29	36	28	40	31	41	34	5
6	44	35	51	41	63	57	31	24	35	27	33	26	37	29	40	33	6
7	42	33	48	38	62	54	29	22	32	24	31	24	35	27	40	32	7
8	39	31	46	36	60	50	28	21	30	22	29	23	33	26	39	31	8
9	37	29	44	34	58	45	26	20	29	21	28	22	32	25	38	30	9
10	35	27	43	33	56	42	25	....	28	20	27	21	31	25	37	29	10
11	34	26	41	32	55	40	24	....	27	....	26	20	30	24	37	29	11
12	33	25	40	31	53	39	23	....	26	....	25	....	30	23	36	28	12
13	32	24	39	30	51	38	23	....	25	....	25	....	29	23	35	28	13
14	31	23	37	29	50	37	22	....	24	....	24	....	28	23	34	28	14
15	30	22	36	28	48	36	22	....	24	....	24	....	28	22	34	28	15
16	29	21	35	27	47	36	21	....	23	....	23	....	27	22	33	27	16
18	28	20	34	26	44	35	20	....	23	....	23	....	27	21	33	27	18
20	27	....	33	25	43	34	....	....	22	....	22	....	26	20	32	26	20
22	26	....	32	24	42	33	....	....	22	....	22	....	26	....	32	26	22
24	25	....	31	23	41	32	....	....	22	....	21	....	26	....	32	26	24
26	24	....	30	22	40	31	....	....	22	....	20	....	26	....	32	26	26
28	23	....	30	21	39	30	....	....	22	....	....	....	25	....	32	26	28
30	22	....	29	20	39	29	....	....	22	....	....	....	25	....	31	25	30
32	21	....	29	....	38	29	....	....	22	....	....	....	25	....	31	25	32

INTRODUCTION TO JOMINY CORRELATION WITH ROUND BARS

The following correlation of Jominy values with quenching severity and surface to center hardnesses obtainable in round bars is based on calculated and practical experience data.

Since practical heat treatment results are subject to several variables that are always difficult to determine, i.e., surface condition of piece being quenched, furnace atmosphere, and quenching severity of the coolant, the metallurgist or heat treater may find some differences in applying this correlation to his particular heat treatment setup.

However, as experience is gained by their use, it is believed that these charts will be found helpful as a guide to the selection of steel of proper hardenability based on Jominy end quench results. Timken Company hardenability data supplied upon request with each heat of steel can be used to advantage in this respect.