

III. RESULTS
A. DATA

Nominal Annealing Temp. (C)	Annealing Temp. (C)	Annealing Time (hrs)	Temper Name and Percent Reduction											
			Annealed		1/2 Hard		Hard		Extra Hard		Spring		Extra Spring	
			0%		20.7%		37.1%		50.1%		60.5%		68.7%	
			R _A	U _{RA}	R _A	U _{RA}	R _A	U _{RA}	R _A	U _{RA}	R _A	U _{RA}	R _A	U _{RA}
200	200	0.00			44.1	0.7	50.3	0.3	50.2	0.8	54.0	0.4	55.9	0.4
200	200	0.25			44.6	1.1	51.5	0.5	54.3	2.8	57.1	0.8	57.4	0.3
200	200	0.50			44.7	0.5	51.0	0.4	53.9	0.1	56.5	0.2	56.1	1.3
200	200	1.00			45.2	0.3	50.9	0.7	53.1	0.6	56.3	0.4	57.2	1.1
250	265	0.00	8.5	1.4	44.4	0.8	49.6	2.3	52.3	0.8	49.6	8.6	56.2	0.3
250	265	0.25			44.2	0.5	51.3	0.5	54.5	0.1	56.6	2.5	57.0	0.3
250	265	0.50			44.1	1.0	51.4	0.6	53.2	0.7	55.7	0.4	56.7	0.3
250	265	1.00			43.5	1.0	51.2	1.0	52.9	0.5	54.0	1.4	54.8	0.4
300	305	0.00			44.3	0.3	49.9	0.7	53.1	0.3	54.1	0.7	55.5	0.1
300	305	0.25			43.4	1.1	50.9	0.7	51.8	0.4	49.1	0.5	46.7	0.4
300	305	0.50			43.7	1.0	50.7	0.2	44.9	0.1	43.2	0.4	44.4	0.4
300	305	1.00			43.4	0.5	49.3	0.7	39.3	0.5	41.1	0.5	43.1	0.1
350	352	0.00	9.6	2.3	44.2	0.2	49.8	0.5	53.0	0.1	54.3	0.4	55.9	0.3
350	352	0.25			41.4	0.6	39.8	0.6	36.7	0.4	39.1	0.5	40.1	0.4
350	352	0.50			41.8	0.4	33.1	2.5	35.9	0.3	37.5	0.4	39.6	1.2
350	352	1.00			42.4	0.7	34.0	2.6	35.3	0.4	37.3	0.7	38.3	0.5
400	396	0.00			41.6	1.1	50.2	0.6	52.5	0.9	52.7	0.8	54.4	4.8
400	396	0.25			37.3	0.7	32.6	0.6	32.5	0.5	34.5	0.9	35.1	3.5
400	396	0.50			28.3	1.0	29.3	0.8	32.3	0.8	32.3	1.0	33.3	5.4
400	396	1.00			26.9	1.2	29.6	0.7	31.2	0.3	30.9	2.8	33.4	2.0
450	453	0.00	10.0	1.1	44.2	0.6	49.4	0.2	52.9	0.6	53.1	0.4	55.2	0.5
450	453	0.25			25.1	0.4	29.4	1.1	28.2	2.9	29.9	0.7	30.5	2.6
450	453	0.50			19.8	0.6	28.1	0.2	28.1	1.9	27.8	0.4	29.4	1.4
450	453	1.00			21.1	3.2	27.4	0.3	27.5	1.2	26.4	1.5	26.1	2.2
500	499	0.00			43.9	0.2	49.7	0.7	52.9	0.2	55.4	1.3	55.2	1.1
500	499	0.25			23.7	1.4	26.6	0.8	26.0	1.1	24.8	0.8	23.8	0.7
500	499	0.50			22.8	1.5	23.4	0.9	24.5	0.8	22.8	1.0	21.9	0.2
500	499	1.00			20.2	0.8	22.1	0.7	22.4	1.1	21.7	1.6	21.4	1.1
550	542	0.00	9.0	1.8	43.8	2.6	50.6	0.5	54.2	1.9	54.7	0.0	55.0	0.5
550	542	0.25			21.9	0.4	18.9	2.0	21.1	2.9	20.1	1.0	21.9	1.7
550	542	0.50			20.2	0.6	18.0	1.0	16.5	1.0	20.4	1.4	17.9	0.5
550	542	1.00			19.5	0.8	16.4	2.7	14.7	2.6	17.7	1.0	13.3	3.0
600	604	0.00			42.5	2.4	50.6	1.4	53.5	0.5	54.1	2.1	56.1	0.3
600	604	0.25			14.5	1.0	14.5	5.2	10.8	2.6	16.2	2.7	8.2	1.4
600	604	0.50			12.4	1.0	10.7	0.9	11.0	2.7	11.6	1.4	11.4	2.1
600	604	1.00			9.9	1.2	11.4	4.0	7.6	0.9	3.7	2.9		
650	641	0.00	10.9	1.3	43.4	1.2	49.4	0.8	53.8	0.4	51.9	1.3	55.3	0.6
650	641	0.25			13.3	2.5	11.6	1.0	9.6	1.0	13.3	4.4	16.3	4.2
650	641	0.50			12.5	2.2	10.4	1.5	11.8	1.6	10.9	3.7	10.1	2.1
650	641	1.00			11.6	3.3	8.6	1.5	8.4	1.8	8.8	3.3	7.2	1.3

Table 1. Hardness (R_A) and Annealed temperature data