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Appendix

All digital data of Fig. 4.4 to Fig. 4.19 are tabulated in the appendix.

Volume fraction of retained austenite ($V\gamma$), macro-hardness and micro-hardness at austenitizing temperature of 1273 K.

No.	Tempering Temperature (K)	$V\gamma$, %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
1	As-hardened	1.4	667	622
	623	2.1	624	576
	673	2.0	622	583
	723	2.1	628	589
	748	1.7	643	602
	773	0.8	657	629
	798	0.0	649	602
	823	0.0	631	586
	848	0.0	585	545
	873	0.0	545	522
2	As-hardened	1.8	545	527
	623	2.1	527	499
	673	1.3	537	513
	723	1.9	556	527
	748	1.1	561	541
	773	0.5	582	560
	798	0.0	579	554
	823	0.0	566	541
	848	0.0	525	487
	873	0.0	507	477

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
3	As-hardened	14.3	839	770
	623	15.7	727	666
	673	15.4	724	677
	723	11.6	738	684
	748	8.6	751	703
	773	1.0	778	729
	798	0.0	773	721
	823	0.0	737	692
	848	0.0	690	639
	873	0.0	622	581
4	As-hardened	3.5	802	741
	623	2.0	707	669
	673	2.7	713	663
	723	2.7	717	675
	748	1.3	720	680
	773	0.4	743	691
	798	0.2	730	683
	823	0.0	705	661
	848	0.0	653	594
	873	0.0	596	565

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
5	As-hardened	0.9	686	623
	623	1.4	647	605
	673	0.9	653	600
	723	1.6	651	608
	748	0.8	654	613
	773	0.1	694	646
	798	0.0	687	636
	823	0.0	662	621
	848	0.0	618	567
	873	0.0	588	542
6	As-hardened	34.2	801	751
	623	31.9	690	665
	673	30.7	699	673
	723	28.6	709	680
	748	20.7	754	716
	773	11.4	800	768
	798	6.9	819	777
	823	5.3	826	787
	848	0.4	748	690
	873	0.0	695	656

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
7	As-hardened	24.4	850	757
	623	24.0	758	715
	673	24.7	744	708
	723	20.6	753	714
	748	11.6	780	731
	773	5.5	817	762
	798	1.0	837	771
	823	0.3	806	744
	848	0.2	731	679
	873	0.2	679	624
8	As-hardened	13.6	832	766
	623	13.0	754	704
	673	13.9	759	705
	723	14.4	772	724
	748	12.4	776	731
	773	3.9	816	760
	798	0.6	811	745
	823	0.2	779	720
	848	0.1	720	657
	873	0.1	661	610

Volume fraction of retained austenite ($V\gamma$), macro-hardness and micro-hardness at austenitizing temperature of 1373 K.

No.	Tempering Temperature (K)	$V\gamma$, %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
1	As-hardened	5.9	767	703
	623	5.2	685	641
	673	5.3	700	657
	723	3.2	720	684
	748	2.8	733	689
	773	0.9	754	711
	798	0.0	773	718
	823	0.0	739	699
	848	0.0	684	647
	873	0.0	636	599
2	As-hardened	1.2	639	584
	623	1.1	623	584
	673	1.2	625	601
	723	1.3	651	619
	748	1.0	659	634
	773	0.6	668	645
	798	0.0	677	649
	823	0.0	638	618
	848	0.0	595	555
	873	0.0	568	528

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
3	As-hardened	28.6	732	740
	623	27.7	628	648
	673	30.8	637	636
	723	25.4	661	664
	748	23.7	680	707
	773	23.0	724	725
	798	10.7	819	776
	823	5.8	838	791
	848	1.7	802	741
	873	1.3	770	710
4	As-hardened	12.4	790	730
	623	11.6	733	707
	673	10.9	732	703
	723	11.2	757	713
	748	8.8	771	735
	773	3.5	798	754
	798	0.0	829	770
	823	0.0	813	750
	848	0.0	761	707
	873	0.0	703	657

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
5	As-hardened	3.3	743	643
	623	3.5	711	654
	673	3.5	701	640
	723	3.4	715	664
	748	2.4	734	676
	773	1.7	744	690
	798	0.0	760	696
	823	0.0	737	686
	848	0.0	703	639
	873	0.0	656	597
6	As-hardened	72.5	502	546
	623	68.1	494	531
	673	66.6	507	534
	723	67.6	522	551
	748	61.4	548	572
	773	53.6	587	620
	798	48.8	631	654
	823	43.1	683	675
	848	32.4	716	713
	873	27.8	723	702
	923	5.8	666	620

No.	Tempering Temperature (K)	V γ , %	Macro-hardness (HV30)	Micro-hardness (HV0.1)
7	As-hardened	48.1	635	655
	623	48.6	587	603
	673	48.2	597	620
	723	45.5	607	635
	748	41.9	664	673
	773	29.5	708	722
	798	24.5	776	746
	823	15.7	819	765
	848	10.5	822	765
	873	7.7	798	716
	923	0.5	592	552
8	As-hardened	27.5	741	716
	623	28.2	692	709
	673	30.3	695	712
	723	29.9	710	719
	748	27.9	720	729
	773	22.0	752	752
	798	10.4	850	787
	823	3.3	866	801
	848	1.1	815	742
	873	0.0	773	670

Biography

My name is Miss Wanaporn Khanitnantharak. I was born on December 13, 1976 in Bangkok. I graduated with a degree of Bachelor of Engineering (Metallurgical Engineering) from Chulalongkorn University in 1997. After graduation, I have been studying for the degree of Master of Engineering in Metallurgical Engineering. In July 2000, I have carried out to work on this thesis as a research student at Department of Materials Science and Metallurgical Engineering, Kurume National College of Technology, Japan.

