

Group 2. SteelUnpolished.												
Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
1 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images						Data obtained in the manual manner by an expert					
1	A	25.8	84.5	70.700	76.301	73.5001	1.7163	72.29	77.89	75.089	1.6445	2.1157
	B	96.5	84.5			0						
	D	61	122.8			0						
	C	61.3	46.5			0						
2	A	27.3	91.3	74.000	80.204	77.1001	1.5598	74.70	80.91	77.803	1.5317	0.9039
	B	101.3	91.3			0						
	D	64.5	130.5			0						
	C	65.3	50.3			0						
3	A	17	88	70.512	76.700	73.6001	1.7117	71.16	77.35	74.255	1.6816	0.8816
	B	87.5	89.3			0						
	D	52.5	126.5			0						
	C	52.3	49.8			0						
4	A	21.3	72.3	61.018	67.017	64.0001	2.2637	61.62	67.62	64.621	2.2204	0.9601
	B	82.3	73.8			0						
	D	51	106			0						
	C	52.5	39			0						
5	A	30	90.5	62.826	65.517	64.1001	2.2566	63.44	66.13	64.782	2.2093	1.0533
	B	92.8	92.3			0						
	D	62.3	125.8			0						
	C	63.8	60.3			0						
6	A	31.8	67.3	54.221	60.000	57.1001	2.8438	54.43	60.21	57.321	2.8219	0.3858
	B	86	68.8			0						
	D	59.3	98.5			0						
	C	59.3	38.5			0						
7	A	18.5	83	72.111	77.002	74.6001	1.6661	72.19	77.08	74.633	1.6646	0.0442
	B	90.5	87			0						
	D	56.3	123.8			0						
	C	56.8	46.8			0						
8	A	22.5	64	63.502	68.801	66.1001	2.1221	63.78	69.08	66.429	2.1011	0.4954
	B	86	64.5			0						
	D	54.8	97.8			0						
	C	54.5	29			0						
9	A	17.3	66.8	64.702	70.500	67.6001	2.0290	64.81	70.61	67.712	2.0223	0.1647
	B	82	67.3			0						
	D	49.8	101.5			0						
	C	50	31			0						
10	A	19.8	72.5	63.501	67.024	65.3001	2.1744	64.00	67.52	65.759	2.1442	0.6975
	B	83.3	72.8			0						
	D	52	106.3			0						
	C	53.8	39.3			0						

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Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
2 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images						Data obtained in the manual manner by an expert					
11	A	28.8	98	59.008	60.901	59.9001	2.5842	59.22	61.11	60.166	2.5614	0.4415
	B	87.8	97			0						
	D	55	131.8			0						
	C	58.5	71			0						
12	A	15.3	97.8	61.040	66.508	63.8001	2.2779	61.65	67.12	64.385	2.2367	0.9077
	B	76.3	100			0						
	D	45.5	134			0						
	C	46.5	67.5			0						
13	A	17.5	82	68.812	72.502	70.6001	1.8602	69.08	72.77	70.929	1.8430	0.4637
	B	86.3	83.3			0						
	D	51.8	119			0						
	C	52.3	46.5			0						
14	A	19.5	73	68.812	78.500	73.6001	1.7117	68.82	78.51	73.666	1.7086	0.0891
	B	88.3	74.3			0						
	D	53.5	114			0						
	C	53.5	35.5			0						
15	A	23.8	68.3	70.003	77.515	73.8001	1.7024	70.08	77.59	73.836	1.7007	0.0490
	B	93.8	69			0						
	D	57.3	107.3			0						
	C	58.8	29.8			0						
16	A	10.8	100.5	49.010	52.314	50.6001	3.6214	49.08	52.38	50.727	3.6032	0.2506
	B	59.8	101.5			0						
	D	35.3	127.3			0						
	C	36.5	75			0						
17	A	17.5	71.5	66.805	72.700	69.8001	1.9031	66.87	72.77	69.820	1.9020	0.0280
	B	84.3	72.3			0						
	D	50.8	109			0						
	C	51	36.3			0						
18	A	12.8	82.3	71.203	76.201	73.8001	1.7024	71.32	76.32	73.819	1.7015	0.0262
	B	84	83			0						
	D	47.3	120.5			0						
	C	47	44.3			0						
19	A	29	90.3	69.552	79.500	74.5001	1.6706	70.10	80.05	75.078	1.6449	0.7703
	B	98.5	93			0						
	D	63.5	131.3			0						
	C	63.5	51.8			0						
20	A	15.5	80.8	71.820	77.519	74.6001	1.6661	72.32	78.01	75.165	1.6411	0.7517
	B	87.3	82.5			0						
	D	49.8	120			0						
	C	51.5	42.5			0						

Group 2. SteelUnpolished.												
Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
3 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images							Data obtained in the manual manner by an expert				
21	A	22	99.8	53.813	57.801	55.8001	2.9779	53.84	57.82	55.830	2.9747	0.0532
	B	75.8	101			0						
	D	48	129.8			0						
	C	48.3	72			0						
22	A	17.5	88	50.802	53.702	52.3001	3.3898	51.14	54.04	52.592	3.3522	0.5555
	B	68.3	88.5			0						
	D	42.3	115.5			0						
	C	41.8	61.8			0						
23	A	15.3	88.5	52.501	58.302	55.4001	3.0210	53.06	58.86	55.956	2.9613	0.9931
	B	67.8	88.8			0						
	D	41	117.8			0						
	C	41.5	59.5			0						
24	A	27	101.5	51.800	56.200	54.0001	3.1797	51.83	56.23	54.029	3.1763	0.0536
	B	78.8	101.5			0						
	D	52.8	129.5			0						
	C	52.8	73.3			0						
25	A	26.5	72.3	50.805	55.502	53.1001	3.2884	50.91	55.61	53.257	3.2690	0.2951
	B	77.3	73			0						
	D	52	100.8			0						
	C	52.5	45.3			0						
26	A	25	99.8	53.809	60.012	56.9001	2.8638	53.86	60.06	56.959	2.8579	0.1041
	B	78.8	100.8			0						
	D	50.8	131.3			0						
	C	52	71.3			0						
27	A	25.8	84.3	53.205	58.002	55.6001	2.9993	53.33	58.13	55.730	2.9853	0.2334
	B	79	85			0						
	D	52.3	114			0						
	C	52.8	56			0						
28	A	32.3	100.3	51.202	57.002	54.1001	3.1679	51.23	57.03	54.132	3.1643	0.0582
	B	83.5	100.8			0						
	D	58	129.3			0						
	C	57.5	72.3			0						
29	A	28	100	51.301	56.702	54.0001	3.1797	51.38	56.78	54.082	3.1701	0.1506
	B	79.3	100.3			0						
	D	53	128.5			0						
	C	53.5	71.8			0						
30	A	27.5	100.5	52.301	57.300	54.8001	3.0875	52.36	57.35	54.855	3.0813	0.1007
	B	79.8	100.8			0						
	D	53.8	129.3			0						
	C	53.8	72			0						

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Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
4 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images						Data obtained in the manual manner by an expert					
31	A	21	88.5	56.506	60.002	58.3001	2.7279	57.14	60.63	58.885	2.6741	0.9925
	B	77.5	89.3			0						
	D	49.3	120.8			0						
	C	49.8	60.8			0						
32	A	24.8	72	61.518	68.812	65.1001	2.1878	61.53	68.83	65.181	2.1824	0.1244
	B	86.3	73.5			0						
	D	54.5	106.8			0						
	C	55.8	38			0						
33	A	27	77.5	67.517	72.307	69.9001	1.8977	67.61	72.40	70.001	1.8922	0.1446
	B	94.5	79			0						
	D	60.8	114.8			0						
	C	61.8	42.5			0						
34	A	20	72.3	74.307	79.506	76.9001	1.5679	74.84	80.04	77.438	1.5462	0.6941
	B	94.3	73.3			0						
	D	55.8	113			0						
	C	56.8	33.5			0						
35	A	14	92.8	70.807	77.503	74.1001	1.6886	71.44	78.13	74.784	1.6579	0.9144
	B	84.8	93.8			0						
	D	48.3	132.3			0						
	C	49	54.8			0						
36	A	18.8	95	66.707	73.500	70.1001	1.8868	66.72	73.51	70.115	1.8860	0.0216
	B	85.5	96			0						
	D	52.3	131.3			0						
	C	52.5	57.8			0						
37	A	33.8	87.8	52.002	60.002	54.3001	3.1446	52.01	60.01	56.013	2.9553	3.0574
	B	85.8	88.3			0						
	D	59.5	116.5			0						
	C	60	60			0						
38	A	33.5	74.3	53.314	59.002	56.1001	2.9461	53.38	59.07	56.223	2.9333	0.2177
	B	86.8	75.5			0						
	D	60.3	103.5			0						
	C	59.8	44.5			0						
39	A	19.8	74	71.237	77.800	74.5001	1.6706	71.33	77.89	74.609	1.6657	0.1458
	B	91	76.3			0						
	D	56.3	113.8			0						
	C	56.5	36			0						
40	A	15.8	94.5	71.005	79.300	75.1001	1.6440	71.08	79.37	75.227	1.6384	0.1686
	B	86.8	95.3			0						
	D	51	135.3			0						
	C	51	56			0						

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Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
5 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images							Data obtained in the manual manner by an expert				
41	A	26.3	95.5	52.716	56.500	54.6001	3.1102	52.94	56.72	54.828	3.0844	0.4160
	B	79	96.8			0						
	D	53.3	124			0						
	C	53.5	67.5			0						
42	A	27	100.3	69.345	76.332	72.8001	1.7495	70.38	77.37	73.876	1.6989	1.4559
	B	96.3	102.8			0						
	D	59.8	141.3			0						
	C	62	65			0						
43	A	25.5	70	70.507	76.009	73.3001	1.7257	70.64	76.15	73.395	1.7213	0.1287
	B	96	71			0						
	D	60.3	107.5			0						
	C	61.5	31.5			0						
44	A	23	89.5	51.502	57.501	54.5001	3.1216	51.52	57.52	54.518	3.1196	0.0327
	B	74.5	90			0						
	D	48.5	118.5			0						
	C	48.8	61			0						
45	A	30.8	91.5	48.203	53.302	50.8001	3.5929	48.76	53.86	51.313	3.5214	1.0005
	B	79	92			0						
	D	55.8	118.3			0						
	C	55.3	65			0						
46	A	32.3	90.8	49.010	52.531	50.8001	3.5929	50.07	53.59	51.830	3.4516	1.9861
	B	81.3	91.8			0						
	D	55.5	118			0						
	C	57.3	65.5			0						
47	A	37.3	97	47.203	53.502	50.4001	3.6501	47.87	54.17	51.022	3.5618	1.2182
	B	84.5	96.5			0						
	D	62.3	123			0						
	C	61.8	69.5			0						
48	A	31.3	89.3	50.000	53.009	51.5001	3.4959	50.55	53.56	52.051	3.4223	1.0587
	B	81.3	89.3			0						
	D	56.8	114.8			0						
	C	57.8	61.8			0						
49	A	15	87.5	71.302	78.006	74.6001	1.6661	71.59	78.29	74.938	1.6511	0.4511
	B	86.3	88			0						
	D	50.5	127			0						
	C	51.5	49			0						
50	A	18.8	84.3	71.210	75.702	73.5001	1.7163	71.49	75.98	73.735	1.7054	0.3179
	B	90	85.5			0						
	D	56.5	123			0						
	C	57	47.3			0						

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6 of 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images						Data obtained in the manual manner by an expert					
51	A	22.3	77.3	52.738	57.000	54.9001	3.0763	52.79	57.05	54.917	3.0743	0.0315
	B	75	79.3			0						
	D	49.5	106.8			0						
	C	49.3	49.8			0						
52	A	14.8	99.3	69.004	73.707	71.4001	1.8188	69.10	73.80	71.450	1.8162	0.0702
	B	83.8	100			0						
	D	49.5	136.5			0						
	C	50.5	62.8			0						
53	A	23.8	80.3	52.705	57.800	55.3001	3.0319	52.71	57.81	55.259	3.0364	-0.0739
	B	76.5	81			0						
	D	50.8	109.3			0						
	C	51	51.5			0						
54	A	23.5	80.3	53.837	58.204	56.0001	2.9566	54.12	58.48	56.300	2.9252	0.5331
	B	77.3	82.3			0						
	D	49.8	110			0						
	C	50.5	51.8			0						
55	A	24.8	79	55.506	60.200	57.9001	2.7658	55.64	60.34	57.991	2.7571	0.1575
	B	80.3	79.8			0						
	D	52.8	110.5			0						
	C	53	50.3			0						
56	A	18	86	73.507	80.202	76.9001	1.5679	73.53	80.23	76.880	1.5687	-0.0255
	B	91.5	87			0						
	D	54.8	126.5			0						
	C	55.3	46.3			0						
57	A	15	88.8	70.528	78.302	74.4001	1.6750	70.61	78.38	74.498	1.6706	0.1319
	B	85.5	90.8			0						
	D	49	124.3			0						
	C	49.5	46			0						
58	A	17	97.3	68.307	73.502	70.9001	1.8445	68.87	74.06	71.463	1.8155	0.7884
	B	85.3	98.3			0						
	D	51.3	136.3			0						
	C	50.8	62.8			0						
59	A	17	93.5	63.308	71.503	67.4001	2.0410	63.53	71.73	67.630	2.0272	0.3400
	B	80.3	94.5			0						
	D	48.8	130.3			0						
	C	49.5	58.8			0						
60	A	20.8	97.3	62.702	69.002	65.9001	2.1350	62.96	69.26	66.107	2.1217	0.3134
	B	83.5	97.8			0						
	D	52.5	132.8			0						
	C	53	63.8			0						

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Image	Vertice	Row (μm)	Column (μm)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	l_1 (μm)	l_2 (μm)	Average diagonal length (μm)	HV (GP)	Relative error in average diagonal length
7 de 7	Data obtained by algorithm for automatic detection and measurement of indentation in Vickers hardness testing images						Data obtained in the manual manner by an expert					
61	A	18	92.5	65.308	70.802	68.0001	2.0052	66.02	71.51	68.763	1.9609	1.1097
	B	83.3	91.5			0						
	D	51.8	128.3			0						
	C	52.3	57.5			0						
62	A	17	88	64.801	70.500	67.6001	2.0290	65.12	70.82	67.966	2.0072	0.5391
	B	81.8	88.3			0						
	D	49.8	124.3			0						
	C	50	53.8			0						
63	A	21.8	91.8	64.556	70.003	67.3001	2.0471	64.95	70.39	67.671	2.0247	0.5487
	B	86.3	94.5			0						
	D	53.8	128.5			0						
	C	54.5	58.5			0						
64	A	24.5	81.5	64.008	68.300	66.1001	2.1221	64.40	68.69	66.547	2.0937	0.6708
	B	88.5	82.5			0						
	D	56.8	117.8			0						
	C	57	49.5			0						
65	A	20.8	97.3	62.702	69.002	65.9001	2.1350	62.79	69.09	65.940	2.1324	0.0608
	B	83.5	97.8			0						
	D	52.5	132.8			0						
	C	53	63.8			0						
66	A	25.8	87.8	64.502	71.802	68.1001	1.9993	64.52	71.82	68.166	1.9955	0.0959
	B	90.3	88.3			0						
	D	58.3	124.3			0						
	C	58.8	52.5			0						
67	A	14.8	100.3	65.002	72.216	68.6001	1.9703	65.24	72.45	68.846	1.9562	0.3573
	B	79.8	99.8			0						
	D	46	137			0						
	C	47.5	64.8			0						
68	A	16.3	97.3	65.000	69.502	67.3001	2.0471	65.52	70.03	67.775	2.0185	0.7010
	B	81.3	97.5			0						
	D	48.5	133.5			0						
	C	49	64			0						
69	A	18	97.5	65.805	71.807	68.8001	1.9588	65.94	71.95	68.945	1.9506	0.2106
	B	83.8	98.3			0						
	D	51.5	134.3			0						
	C	52.5	62.5			0						
70	A	20.3	89	63.002	70.302	66.6001	2.0904	63.07	70.36	66.715	2.0832	0.1723
	B	83.3	89.5			0						
	D	51.3	126.3			0						
	C	51.8	56			0						