

Group 3. Deformed.

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 5	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	27.3	80.5	50.217	54.006	52.10	2.0495	50.65	54.44	52.55	2.0149	0.8474
	B	77.5	81.8			0						
	D	52.5	109.5			0						
	C	53.3	55.5			0						
2	A	31	66.3	52.502	56.502	54.5	1.8730	52.71	56.71	54.71	1.85846	0.3883
	B	83.5	66.8			0						
	D	57.3	95.5			0						
	C	56.8	39			0						
3	A	42	101.5	52.801	56.502	54.6	1.8661	53.02	56.72	54.87	1.8478	0.4930
	B	94.8	101.8			0						
	D	67.8	130			0						
	C	68.3	73.5			0						
4	A	34.3	101	52.202	57.001	54.6	1.8661	52.29	57.08	54.68	1.8603	0.1554
	B	86.5	101.5			0						
	D	60.5	130			0						
	C	60.8	73			0						
5	A	27.5	100.5	52.301	57.300	54.8	1.8525	52.37	57.36	54.86	1.8481	0.1182
	B	79.8	100.8			0						
	D	53.8	129.3			0						
	C	53.8	72			0						
6	A	34	94.8	52.005	55.309	53.6	1.9364	52.08	55.38	53.73	1.9268	0.2472
	B	86	95.5			0						
	D	59	123.3			0						
	C	60	68			0						
7	A	23.8	81.8	69.205	75.715	72.5	1.0584	69.22	75.73	72.47	1.0591	-0.0347
	B	93	81			0						
	D	57.8	120.5			0						
	C	59.3	44.8			0						
8	A	27	101.5	51.800	56.200	54	1.9078	51.88	56.28	54.08	1.9025	0.1404
	B	78.8	101.5			0						
	D	52.8	129.5			0						
	C	52.8	73.3			0						
9	A	21.3	72.3	61.018	67.017	64	1.3582	61.44	67.44	64.44	1.3397	0.6828
	B	82.3	73.8			0						
	D	51	106			0						
	C	52.5	39			0						
10	A	29.5	78.3	53.500	58.502	56	1.7740	53.78	58.78	56.28	1.7563	0.4982
	B	83	78.3			0						
	D	55.8	107.3			0						
	C	56.3	48.8			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
2 of 5	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	24	81.8	54.802	58.001	56.4	1.749	54.95	58.14	56.54	1.740	0.2556
	B	78.8	82.3			0						
	D	51	111.3			0						
	C	51.3	53.3			0						
12	A	17.5	88	50.802	53.702	52.3	2.034	50.88	53.78	52.33	2.032	0.0567
	B	68.3	88.5			0						
	D	42.3	115.5			0						
	C	41.8	61.8			0						
13	A	19.3	87	69.507	78.500	74	1.016	70.21	79.20	74.70	0.997	0.9434
	B	88.8	86			0						
	D	53	124			0						
	C	52.8	45.5			0						
14	A	18.8	99	55.002	60.000	57.5	1.683	55.61	60.61	58.11	1.647	1.0539
	B	73.8	99.5			0						
	D	46.5	130.3			0						
	C	46.3	70.3			0						
15	A	23.3	64.8	59.504	65.001	62.3	1.433	60.22	65.72	62.97	1.403	1.0614
	B	82.8	65.5			0						
	D	52.3	98.5			0						
	C	52	33.5			0						
16	A	31	80	51.506	54.504	53	1.980	51.52	54.52	53.02	1.979	0.0339
	B	82.5	80.8			0						
	D	56.3	108.3			0						
	C	57	53.8			0						
17	A	17.3	87.5	53.001	58.300	55.6	1.800	53.55	58.85	56.20	1.762	1.0595
	B	70.3	87.8			0						
	D	43.5	116.8			0						
	C	43.3	58.5			0						
18	A	8	105.8	64.808	71.802	68.3	1.193	65.18	72.17	68.68	1.179	0.5498
	B	72.8	106.8			0						
	D	41.8	144.3			0						
	C	42.3	72.5			0						
19	A	6.5	83	63.808	70.500	67.1	1.236	64.10	70.80	67.45	1.223	0.5192
	B	70.3	84			0						
	D	38.8	121.3			0						
	C	38.8	50.8			0						
20	A	15.5	74.8	65.002	71.007	68	1.203	65.10	71.10	68.10	1.200	0.1489
	B	80.5	75.3			0						
	D	49.3	112			0						
	C	50.3	41			0						

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3 of 5	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	27.5	78.8	50.000	53.802	51.9	2.0653	50.20	54.01	52.11	3.418	0.3944
	B	77.5	78.8			0						
	D	53	105.8			0						
	C	53.5	52			0						
22	A	27	98	60.501	68.511	64.5	1.3372	61.06	69.07	65.06	2.124	0.8631
	B	87.5	98.3			0						
	D	57.8	135.5			0						
	C	59	67			0						
23	A	32	90.8	49.510	53.038	51.27	2.1164	50.06	53.59	51.82	3.452	1.0665
	B	81.5	91.8			0						
	D	55.3	118.5			0						
	C	57.3	65.5			0						
24	A	37.3	97	47.203	53.502	50.4	2.1901	47.61	53.91	50.76	3.513	0.7141
	B	84.5	96.5			0						
	D	62.3	123			0						
	C	61.8	69.5			0						
25	A	31.3	89.3	50.000	53.009	51.5	2.0975	50.11	53.12	51.62	3.579	0.2264
	B	81.3	89.3			0						
	D	56.8	114.8			0						
	C	57.8	61.8			0						
26	A	23.5	80.3	53.837	58.204	56	1.7740	54.06	58.43	56.24	2.93	0.4334
	B	77.3	82.3			0						
	D	49.8	110			0						
	C	50.5	51.8			0						
27	A	18.8	84.5	52.206	55.301	53.8	1.9220	52.22	55.31	53.76	3.207	-0.0695
	B	71	85.3			0						
	D	44.8	113.3			0						
	C	44.5	58			0						
28	A	35.3	100.5	51.506	53.005	52.3	2.0339	51.63	53.13	52.38	3.063	0.1577
	B	86.8	101.3			0						
	D	60.8	128.3			0						
	C	61.5	75.3			0						
29	A	35	100.5	52.006	53.701	52.9	1.9880	52.08	53.77	52.93	3.296	0.0509
	B	87	101.3			0						
	D	61	128.5			0						
	C	61.3	74.8			0						
30	A	18.5	80	62.501	72.216	67.4	1.2246	62.78	72.50	67.64	2.025	0.3514
	B	81	80.3			0						
	D	49	116.5			0						
	C	50.5	44.3			0						

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4 of 5	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	23.8	77	59.708	66.208	63	1.4014	59.77	66.26	63.02	1.4007	0.0243
	B	83.5	78			0						
	D	52.5	110.5			0						
	C	53.5	44.3			0						
32	A	15.5	76	70.505	80.800	75.6	0.9732	70.57	80.86	75.71	0.9702	0.1512
	B	86	76.8			0						
	D	51.8	116.3			0						
	C	51.8	35.5			0						
33	A	19.3	85.3	59.708	64.000	61.9	1.4516	59.76	64.05	61.90	1.4514	0.0064
	B	79	86.3			0						
	D	49.3	117			0						
	C	49.5	53			0						
34	A	16.8	86.5	70.001	77.800	73.9	1.0185	70.28	78.08	74.18	1.0108	0.3772
	B	86.8	86.8			0						
	D	51.8	127.3			0						
	C	52	49.5			0						
35	A	12.3	88	67.724	76.007	71.9	1.0759	67.73	76.01	71.87	1.0767	-0.0387
	B	80	89.8			0						
	D	46.3	127.8			0						
	C	47.3	51.8			0						
36	A	20.8	88.5	65.342	68.229	66.8	1.2465	65.58	68.47	67.03	1.2380	0.3404
	B	86	92.8			0						
	D	52.3	124			0						
	C	50.3	55.8			0						
37	A	15.5	81.8	69.807	79.002	74.4	1.0048	69.88	79.07	74.48	1.0027	0.1039
	B	85.3	82.8			0						
	D	50	121.3			0						
	C	50.5	42.3			0						
38	A	17.5	84.3	68.804	77.000	72.9	1.0466	68.82	77.02	72.92	1.0461	0.0248
	B	86.3	85			0						
	D	51.8	123.3			0						
	C	52	46.3			0						
39	A	10.3	82.3	70.003	78.019	74	1.0157	70.01	78.03	74.02	1.0152	0.0258
	B	80.3	83			0						
	D	44.3	122.3			0						
	C	46	44.3			0						
40	A	19.3	87.3	67.650	79.546	73.6	1.0268	69.92	81.81	75.87	0.9664	2.9864
	B	86.8	91.8			0						
	D	55	133.3			0						
	C	52.3	53.8			0						

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5 of 5	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	18.5	82.5	62.25	64.75	64.8	1.3249	62.32	67.31	64.81	1.3243	0.0207
	B	80.8	83.5			0						
	D	48	116.8			0						
	C	48.8	49.5			0						
42	A	22.8	85.3	67.007	74.000	70.5	1.1193	67.06	74.06	70.56	1.1174	0.0865
	B	89.8	86.3			0						
	D	55.8	123.8			0						
	C	56	49.8			0						
43	A	19.8	83.8	67.700	77.501	72.6	1.0555	68.20	78.00	73.10	1.0410	0.6905
	B	87.5	84			0						
	D	52.5	121.3			0						
	C	52.8	43.8			0						
44	A	23.3	87.5	74.261	80.564	77.4	0.9286	74.52	80.83	77.67	0.9221	0.3529
	B	97.5	84.5			0						
	D	62.5	122.3			0						
	C	59.3	41.8			0						
45	A	8	77.5	71.016	79.506	75.3	0.981	71.16	79.65	75.40	0.9785	0.134
	B	79	79			0						
	D	45	117.3			0						
	C	46	37.8			0						
46	A	15.3	87.3	73.533	82.075	77.8	0.9191	75.11	83.66	79.38	0.8828	1.9964
	B	88.8	89.5			0						
	D	52	127.5			0						
	C	48.5	45.5			0						
47	A	24	85	62.300	67.001	64.6	1.3331	62.40	67.10	64.75	1.3270	0.2300
	B	86.3	85			0						
	D	55.5	118.8			0						
	C	55.8	51.8			0						
48	A	14.5	80.8	72.310	77.215	74.8	0.9943	73.36	78.27	75.81	0.9679	1.3363
	B	86.8	82			0						
	D	52	120			0						
	C	53.5	42.8			0						
49	A	18.5	76.5	64.531	72.043	68.3	1.1926	64.76	72.27	68.51	1.1851	0.3135
	B	83	78.5			0						
	D	53.8	111			0						
	C	51.3	39			0						
50	A	18.5	76.3	65.000	67.036	66	1.2771	65.02	67.06	66.04	1.2756	0.0615
	B	83.5	76.3			0						
	D	50.3	108.5			0						
	C	52.5	41.5			0						