

Group 4. Imperfection.

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 4	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	22.5	73.5	61.314	65.201	63.3	2.314	61.86	65.74	63.80	2.278	0.7831
	B	83.8	74.8			0						
	D	52.8	105			0						
	C	52.5	39.8			0						
2	A	27	76.3	52.322	56.301	54.3	3.145	52.78	56.76	54.77	3.091	0.8633
	B	79.3	74.8			0						
	D	52.5	103.3			0						
	C	52.8	47			0						
3	A	31	67	55.529	63.001	59.3	2.637	56.07	63.54	59.81	2.592	0.8483
	B	86.5	68.8			0						
	D	59.5	99			0						
	C	59.8	36			0						
4	A	30	90.5	62.826	65.517	64.1	2.257	63.20	65.89	64.54	2.226	0.6843
	B	92.8	92.3			0						
	D	62.3	125.8			0						
	C	63.8	60.3			0						
5	A	21	82.3	69.010	76.807	72.9	1.745	69.61	77.41	73.51	1.716	0.8268
	B	90	83.5			0						
	D	54.8	121.3			0						
	C	55.8	44.5			0						
6	A	20.5	100.8	69.802	77.801	73.8	1.702	70.03	78.02	74.03	1.692	0.3041
	B	90.3	101.3			0						
	D	55.8	139.8			0						
	C	55.5	62			0						
7	A	35	100.5	52.006	53.701	52.9	3.313	52.16	53.85	53.01	3.300	0.2008
	B	87	101.3			0						
	D	61	128.5			0						
	C	61.3	74.8			0						
8	A	27	77.5	67.517	72.307	69.9	1.898	67.74	72.53	70.14	1.885	0.3360
	B	94.5	79			0						
	D	60.8	114.8			0						
	C	61.8	42.5			0						
9	A	24.8	72	61.518	68.812	65.1	2.188	61.73	69.02	65.37	2.170	0.4172
	B	86.3	73.5			0						
	D	54.5	106.8			0						
	C	55.8	38			0						
10	A	19.5	73	68.812	78.500	73.6	1.712	69.11	78.80	73.95	1.695	0.4795
	B	88.3	74.3			0						
	D	53.5	114			0						
	C	53.5	35.5			0						

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2 of 4	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	19.5	73.3	54.802	64.031	59.4	2.628	55.10	64.32	59.71	2.601	0.5197
	B	74.3	73.8			0						
	D	45.8	105.3			0						
	C	47.8	41.3			0						
12	A	23.8	68.3	70.003	77.515	73.8	1.702	70.17	77.68	73.92	1.697	0.1647
	B	93.8	69			0						
	D	57.3	107.3			0						
	C	58.8	29.8			0						
13	A	17.5	82	68.812	72.502	70.6	1.860	69.02	72.71	70.87	1.846	0.3770
	B	86.3	83.3			0						
	D	51.8	119			0						
	C	52.3	46.5			0						
14	A	12.8	82.3	71.203	76.201	73.8	1.702	71.31	76.30	73.80	1.702	0.0050
	B	84	83			0						
	D	47.3	120.5			0						
	C	47	44.3			0						
15	A	26	67.5	73.842	80.502	77.1	1.560	73.94	80.60	77.27	1.553	0.2203
	B	99.8	70			0						
	D	62.8	109.5			0						
	C	63.3	29			0						
16	A	19.5	69.8	73.515	78.702	76.1	1.601	73.56	78.75	76.16	1.599	0.0763
	B	93	71.3			0						
	D	56.3	109.5			0						
	C	56.8	30.8			0						
17	A	35.5	74.8	55.526	65.705	60.6	2.525	56.26	66.44	61.35	2.464	1.2154
	B	91	76.5			0						
	D	61	108			0						
	C	61.8	42.3			0						
18	A	9.8	87.5	74.061	78.501	76.3	1.593	74.21	78.65	76.43	1.587	0.1737
	B	83.8	90.5			0						
	D	48	129.3			0						
	C	48.3	50.8			0						
19	A	16	64.3	73.300	78.326	75.8	1.614	74.01	79.04	76.52	1.583	0.9471
	B	89.3	64.5			0						
	D	50.5	103.8			0						
	C	52.5	25.5			0						
20	A	24	72.5	72.302	77.009	74.6	1.666	72.61	77.32	74.97	1.650	0.4901
	B	96.3	72			0						
	D	58.3	112.3			0						
	C	59.5	35.3			0						

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3 of 4	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	18.5	80.3	72.028	79.806	75.9	1.609	72.04	79.82	75.93	1.608	0.0369
	B	90.5	82.3			0						
	D	54	120.8			0						
	C	55	41			0						
22	A	23.3	64.8	59.504	65.001	62.3	2.389	60.05	65.54	62.80	2.351	0.7893
	B	82.8	65.5			0						
	D	52.3	98.5			0						
	C	52	33.5			0						
23	A	14.5	71.8	69.310	74.202	71.8	1.799	69.55	74.44	71.99	1.789	0.2685
	B	83.8	73			0						
	D	48.5	109			0						
	C	49	34.8			0						
24	A	18.5	81	70.005	74.702	72.4	1.769	70.12	74.82	72.47	1.766	0.0944
	B	88.5	81.8			0						
	D	52.5	119.5			0						
	C	53	44.8			0						
25	A	14.3	64.3	72.500	77.709	75.1	1.644	72.64	77.85	75.24	1.638	0.1882
	B	86.8	64.3			0						
	D	49.8	104			0						
	C	51	26.3			0						
26	A	21.5	72.3	60.519	66.317	63.4	2.307	60.66	66.46	63.56	2.295	0.2552
	B	82	73.8			0						
	D	51	105.8			0						
	C	52.5	39.5			0						
27	A	26.8	89.3	50.500	54.815	52.6	3.351	50.55	54.87	52.71	3.337	0.2137
	B	77.3	89.3			0						
	D	51.5	117.3			0						
	C	52.8	62.5			0						
28	A	19.5	84.5	60.505	66.000	63.3	2.314	60.73	66.22	63.48	2.301	0.2779
	B	80	85.3			0						
	D	49.8	117.8			0						
	C	49.8	51.8			0						
29	A	27.3	79.8	61.704	66.013	63.9	2.271	61.77	66.08	63.93	2.269	0.0427
	B	89	80.5			0						
	D	57	114			0						
	C	58.3	48			0						
30	A	10.5	83.8	69.300	74.307	71.8	1.799	69.82	74.82	72.32	1.773	0.7171
	B	79.8	83.8			0						
	D	45.5	120.3			0						
	C	46.5	46			0						

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4 of 4	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	13.3	84	67.712	74.501	71.1	1.834	67.97	74.76	71.36	1.821	0.3702
	B	81	85.3			0						
	D	47.5	122.3			0						
	C	47.8	47.8			0						
32	A	16	82.5	68.002	76.303	72.1	1.784	68.14	76.44	72.29	1.774	0.2602
	B	84	83			0						
	D	51	120.3			0						
	C	50.3	44			0						
33	A	19	90.3	72.507	76.504	74.5	1.671	74.63	78.63	76.63	1.579	2.7765
	B	91.5	89.3			0						
	D	54.5	127.5			0						
	C	55.3	51			0						
34	A	22	85.8	53.309	56.506	54.9	3.076	53.80	57.00	55.40	3.021	0.9069
	B	75.3	86.8			0						
	D	48	115.5			0						
	C	48.8	59			0						
35	A	28.5	79.5	57.809	64.357	61	2.492	59.25	65.79	62.52	2.372	2.4311
	B	86.3	80.5			0						
	D	54.8	114.8			0						
	C	57.5	50.5			0						
36	A	20	81	61.805	67.202	64.5	2.229	61.91	67.30	64.61	2.221	0.1629
	B	81.8	81.8			0						
	D	50.3	114.5			0						
	C	50.8	47.3			0						
37	A	18.3	83.8	60.708	67.000	63.9	2.271	60.72	67.01	63.86	2.273	-0.056
	B	79	84.8			0						
	D	49.3	117.8			0						
	C	49.5	50.8			0						
38	A	21	89.5	68.516	75.215	71.9	1.794	68.59	75.29	71.94	1.791	0.061
	B	89.5	91			0						
	D	55	128			0						
	C	56.5	52.8			0						
39	A	19.3	85.3	59.708	64.000	61.9	2.420	59.77	64.06	61.92	2.419	0.0248
	B	79	86.3			0						
	D	49.3	117			0						
	C	49.5	53			0						
40	A	18.5	82.5	62.308	67.305	64.8	2.208	62.36	67.36	64.86	2.204	0.0935
	B	80.8	83.5			0						
	D	48	116.8			0						
	C	48.8	49.5			0						