Measurement of roundness by Dial gauge deflections of 6-mm Diameter Aluminium (Al) Round Bar Before Straightening

Mean values of Dial Gauge Deflection Readings before straightening of 6 mm Aluminium(Al) round bar x 0.01 mm

	Angles in Degrees																							
Length in cm	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	STD DEV (mm)
16.5	241.0	244.0	244.5	243.0	242.5	239.5	233.5	233.0	231.0	228.0	226.0	222.0	221.5	221.5	221.0	220.0	221.0	223.5	223.0	229.0	229.0	233.0	237.0	237.5	0.0844
20.0	231.0	233.5	233.5	231.5	230.0	229.0	222.5	224.5	221.0	219.5	220.0	218.0	217.0	216.5	215.5	217.0	217.5	217.5	220.0	225.0	223.5	225.5	229.5	235.0	0.0630
25.0	231.5	235.5	237.5	236.5	233.5	231.0	225.5	226.0	224.0	221.0	219.5	216.0	217.0	217.5	215.5	215.0	216.5	218.5	219.0	222.0	226.5	225.0	227.5	230.0	0.0715
30.0	233.5	236.5	237.0	236.0	235.0	233.0	229.0	228.0	229.0	225.0	225.0	222.5	221.5	221.5	222.0	222.0	223.0	224.0	226.5	229.5	233.5	232.5	235.5	238.5	0.0575
35.0	249.0	253.0	254.0	253.5	253.5	251.0	245.5	243.5	240.0	239.0	236.5	235.0	234.5	234.0	234.5	233.5	236.0	237.0	237.5	240.5	243.0	243.5	245.5	248.5	0.0707
40.0	239.0	240.0	239.0	238.0	233.0	231.5	225.0	221.0	224.0	219.5	221.0	219.0	221.0	220.0	222.5	226.0	228.0	229.5	233.5	238.5	239.5	239.0	240.0	238.0	0.0799
45.0	244.5	245.0	244.5	241.0	239.0	236.0	233.0	229.0	226.5	223.0	219.5	219.0	217.5	220.5	219.0	222.5	225.0	228.0	230.0	234.0	236.5	238.0	238.5	240.5	0.0910
50.0	234.0	236.5	238.0	238.0	238.0	239.0	234.0	234.0	233.5	231.0	229.0	228.5	225.0	224.0	222.0	223.5	224.0	226.0	231.0	233.5	237.0	238.0	239.0	237.0	0.0566
55.0	240.0	241.5	245.0	245.5	243.5	242.0	239.0	237.0	235.5	234.0	233.5	230.0	229.5	228.5	228.5	229.5	230.0	233.5	236.5	235.0	240.0	238.0	239.0	241.0	0.0534
60.0	247.5	252.0	254.5	255.5	254.5	256.0	252.5	251.5	247.5	248.0	244.5	244.0	241.0	239.5	238.0	238.5	238.5	239.0	239.0	238.5	243.5	240.0	244.5	246.5	0.0624
65.0	246.5	251.0	253.0	253.0	253.5	253.5	250.0	247.5	246.5	244.0	241.5	239.5	235.5	232.5	233.0	229.5	229.5	230.0	229.5	230.5	238.0	240.0	239.0	241.0	0.0861
70.0	238.5	242.5	243.0	246.5	248.0	249.5	247.0	248.5	245.0	245.5	245.0	242.0	239.0	239.0	237.0	235.0	235.0	235.0	234.0	232.0	233.5	235.0	236.5	239.0	0.0544
75.0	237.0	238.0	239.0	241.0	241.0	240.0	238.0	237.5	237.0	236.0	232.5	230.5	228.5	226.5	227.0	224.5	224.5	224.5	227.0	225.0	233.5	233.0	234.0	236.5	0.0575
80.0	235.5	235.5	233.5	232.0	230.0	224.5	225.5	221.0	220.5	220.0	218.5	217.5	220.0	219.5	221.5	225.5	230.0	230.0	234.5	237.0	238.0	240.0	240.0	239.5	0.0773
85.0	257.0	256.0	252.0	250.0	247.5	244.0	240.5	239.0	239.0	238.0	239.0	239.5	241.5	245.0	246.0	249.0	253.0	252.0	256.5	257.5	259.0	260.0	262.0	260.0	0.0801
90.0	245.0	246.5	242.5	242.0	243.0	238.0	235.5	236.5	234.5	233.0	231.0	229.5	235.0	236.0	238.0	236.5	239.0	243.5	245.0	245.5	248.0	249.0	253.5	249.0	0.0632
95.0	253.5	252.0	250.0	248.0	244.0	243.0	241.5	237.5	238.5	238.0	234.0	236.5	235.0	240.0	240.0	242.5	245.5	243.5	247.5	248.0	250.5	254.5	254.5	251.0	0.0636
100.0	246.5	241.5	240.5	238.0	236.0	235.0	233.0	229.5	225.0	226.5	224.0	225.5	225.5	229.5	229.0	236.0	237.5	238.5	240.5	244.0	241.5	245.5	244.5	245.0	0.0737
105.0	239.0	240.0	238.5	240.0	239.0	238.0	239.5	237.5	235.5	232.0	234.0	233.5	233.0	236.0	237.0	238.0	239.0	238.5	238.0	239.0	239.5	241.5	240.5	242.5	0.0267
109.0	242.5	244.0	245.0	244.0	244.0	243.5	247.0	244.5	246.5	244.5	242.5	244.5	243.5	244.5	241.5	243.0	242.5	244.0	240.5	244.5	243.0	244.0	244.0	242.5	0.0141

Measurement of roundness by Dial gauge deflections of 8-mm Diameter Aluminium (Al) Round Bar Before Straightening

Mean values of Dial Gauge Deflection Readings before straightening of 8 mm Aluminium round bar x 0.01 mm

	Angles in Degrees																							
Length in cm	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	STD DEV (mm)
12	173	172	168	166	163	161	158	157	153	150	147	146	147	149	153	157	163	166	171	175	175	175	174	174	0.1017828
15	172	170	168	165	164	160	158	156	152	148	145	145	146	149	153	157	161	166	169	173	173	173	174	174	0.1018878
20	171	170	168	165	161	159	157	155	150	147	147	146	147	150	155	157	160	165	169	170	171	172	173	173	0.094518
24	168	167	164	161	159	156	154	152	148	146	145	145	147	150	153	157	159	162	166	168	169	170	170	169	0.0886861
28	168	165	163	161	158	154	153	149	147	145	145	145	147	150	154	155	159	162	163	166	167	168	168	168	0.0842612
32	161	161	159	157	155	153	150	149	147	146	147	146	147	149	149	151	153	155	157	159	161	162	163	163	0.0604452

36	172	174	175	175	174	174	175	174	174	173	172	170	170	168	169	168	167	167	166	166	166	167	168	169	0.0336838
40	173	173	175	174	173	173	173	172	171	170	169	167	168	168	168	167	167	167	167	167	167	169	170	170	0.0274522
44	171	172	172	172	170	171	171	169	168	168	168	167	166	166	167	167	167	168	167	167	168	169	169	169	0.0192512
48	171	172	172	171	170	170	169	168	167	167	166	165	165	165	166	166	168	167	168	168	169	169	170	171	0.0223728
52	171	172	172	171	169	169	168	167	166	165	165	164	165	166	167	168	168	169	170	170	170	171	172	171	0.0247999
56	171	171	170	169	167	167	166	165	164	164	164	163	163	164	166	167	167	168	168	168	168	169	170	171	0.0253874
59	171	172	171	169	169	167	167	165	164	164	163	163	163	164	166	167	168	169	169	169	170	172	171	171	0.0309387
62	168	169	168	168	166	166	165	163	163	163	162	162	162	163	163	164	164	165	166	167	167	169	169	168	0.0251193
65	168	167	167	166	164	164	164	161	160	160	160	160	160	161	162	163	164	165	165	166	166	167	168	167	0.0279719
69	167	167	166	164	163	162	162	160	158	159	158	157	158	159	160	160	161	163	164	163	164	166	166	166	0.0315647
73	166	166	165	164	162	161	161	159	158	157	156	156	156	157	158	159	160	161	162	163	163	165	165	166	0.0341883
77	170	169	168	166	166	165	164	161	160	160	159	158	159	160	160	161	162	163	164	166	167	168	168	168	0.0379925
80	169	170	168	168	165	164	163	161	160	158	158	157	157	159	160	161	162	163	164	164	167	169	169	168	0.0428296
83	169	169	168	165	164	163	162	160	159	158	157	155	157	157	159	161	161	162	163	164	165	166	167	168	0.0411469
87	168	169	169	167	165	164	163	159	159	157	156	155	156	156	157	158	159	161	162	163	164	166	167	167	0.0463427
90	170	169	169	168	165	164	163	161	159	158	155	156	156	157	158	158	159	161	162	164	165	165	167	168	0.0472462
93	166	164	164	165	165	165	164	164	163	162	160	159	157	157	157	157	157	157	159	159	160	162	163	164	0.0323862
96	165	165	165	165	164	164	167	163	162	160	161	159	158	156	156	156	157	157	158	159	160	161	163	164	0.0328369
100	165	165	165	167	167	166	165	165	164	163	162	160	159	157	157	158	158	159	161	161	162	164	165	167	0.0334166
104	168	168	169	167	167	166	165	164	163	162	161	159	158	156	157	157	157	158	160	161	162	164	166	167	0.0407782
108	168	168	168	168	167	166	165	164	163	163	161	160	157	156	156	157	158	158	160	161	162	164	166	167	0.0422703
112	169	169	169	168	168	166	165	164	163	163	160	158	157	155	155	157	157	158	160	161	163	165	167	168	0.0480263
116	169	169	169	169	168	166	166	165	163	162	161	158	156	156	156	156	157	158	159	162	162	165	166	168	0.0483716
120	169	169	170	169	168	167	166	164	163	162	160	158	157	156	156	157	157	159	160	162	164	165	168	169	0.04903
124	170	170	170	170	169	168	166	166	163	161	160	157	157	156	157	157	158	158	161	163	164	166	168	170	0.052205
128	170	170	170	171	170	169	168	166	164	162	161	160	158	156	157	157	157	158	159	161	162	166	167	169	0.0524089
132	169	168	168	169	170	167	165	164	162	160	159	157	155	155	154	155	156	156	159	161	162	165	166	167	0.0534053
136	168	169	170	169	168	168	168	164	162	161	159	157	155	154	155	154	156	157	159	160	163	165	167	169	0.0554425
140	168	169	170	170	169	167	167	165	164	162	160	160	157	157	156	157	157	158	162	164	164	166	168	169	0.0475253
143	169	169	169	168	167	167	165	164	164	162	161	159	159	158	158	159	161	162	163	164	166	168	169	169	0.0395147

Measurement of roundness by Dial gauge deflections of 10-mm Diameter Aluminium (Al) Round Bar Before Straightening

Mean values of Dial Gauge Deflection Readings before straightening of 10 mm Aluminium round bar x 0.01 mm

	Angles in Degrees																								
Length in cm	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	STD DEV (mm)
13	115	107	100	91	83	75	72	66	61	60	64	75	81	85	98	102	111	118	120	119	121	122	122	122	0.22284
16	127	116	108	97	87	78	72	63	54	50	49	61	72	81	89	106	110	116	120	121	125	127	128	129	0.27635
19	132	122	112	102	90	77	66	55	49	41	49	59	70	87	93	105	113	121	126	127	130	132	136	137	0.31978

22	144	132	120	108	93	77	66	53	49	41	41	50	69	84	95	109	118	123	132	136	138	140	142	145	0.36806
25	149	133	123	105	90	75	62	49	41	33	41	53	72	92	110	125	134	138	143	146	149	151	154	156	0.42223
28	153	144	130	113	98	79	64	50	49	33	33	41	61	85	100	116	129	137	142	146	148	152	155	157	0.43784
31	157	145	133	120	102	83	66	50	49	25	33	41	50	74	93	111	126	138	141	146	149	152	155	158	0.45628
34	153	149	135	123	105	87	71	53	49	33	17	25	49	66	86	105	118	129	135	138	142	147	150	154	0.45514
37	156	139	128	113	95	78	65	50	41	33	33	41	58	79	98	115	126	138	143	149	149	152	155	157	0.44786
40	152	141	129	116	99	84	68	56	49	41	33	41	54	64	87	113	125	131	141	148	151	152	153	153	0.43317
43	103	95	82	72	57	49	41	41	41	51	68	90	106	116	124	127	130	131	135	136	137	136	126	120	0.34866
46	102	94	85	80	73	64	57	52	51	56	64	77	85	97	105	111	117	117	120	119	118	118	112	104	0.23790
49	83	80	76	74	71	67	63	56	51	51	56	62	66	70	75	80	83	85	85	86	87	88	82	81	0.11628
52	64	66	65	66	68	69	68	64	63	58	57	55	62	56	60	63	66	69	69	69	69	69	68	64	0.04370
55	59	63	64	67	72	75	76	76	74	70	68	66	64	62	65	66	66	66	65	64	65	64	62	58	0.05093
58	50	52	54	58	64	66	69	68	68	65	63	61	59	57	58	57	56	55	54	51	51	50	50	50	0.06450
61	50	50	50	53	59	64	67	67	67	65	63	61	58	56	56	56	55	53	50	50	50	50	50	50	0.06317
64	78	83	85	91	98	96	97	97	94	90	87	83	76	74	72	71	69	67	66	66	68	68	65	72	0.11455
67	66	78	83	91	93	98	101	101	97	93	88	84	77	74	70	67	64	62	61	62	63	68	68	68	0.13686
70	64	67	77	83	93	97	97	99	98	93	89	84	77	71	66	62	60	56	56	55	56	62	61	61	0.15539
73	72	74	79	88	93	101	100	102	100	94	90	85	79	73	70	65	62	60	58	57	59	62	63	61	0.15545
76	63	73	77	82	91	96	95	98	98	94	91	85	80	76	72	69	66	63	62	60	60	61	64	63	0.13670
79	95	98	103	105	110	115	114	114	103	109	105	101	97	92	90	91	89	87	87	87	89	90	92	94	0.09238
81	56	56	53	54	54	60	63	65	66	68	69	69	71	71	70	71	73	72	73	72	71	68	66	63	0.06612
82	88	90	92	94	98	99	99	96	94	90	86	85	82	80	78	81	83	84	85	87	88	89	92	88	0.05902
84	50	50	50	50	50	50	52	54	56	62	67	70	75	77	80	81	84	82	81	80	78	72	67	61	0.12880
85	108	108	107	106	107	106	104	101	98	92	90	87	86	87	88	92	96	101	105	108	111	113	104	110	0.08632
87	55	51	51	51	51	51	51	54	57	66	67	74	78	82	87	88	89	90	86	86	84	79	72	66	0.15046
90	53	51	51	51	51	51	51	54	58	61	68	71	77	82	82	87	90	90	89	89	85	78	69	64	0.15388
93	54	51	51	51	51	51	51	51	55	60	65	70	75	79	83	84	84	88	86	85	83	78	72	66	0.14326
96	59	53	49	49	49	49	49	49	49	49	49	51	56	59	65	68	69	79	76	78	79	76	71	66	0.11386
99	61	59	55	53	50	59	51	52	49	49	51	50	58	61	63	63	69	71	73	74	76	75	73	70	0.09303
102	69	67	62	60	58	56	59	57	56	55	53	52	54	54	56	58	62	63	65	67	70	72	71	72	0.06515
105	71	67	65	64	61	59	60	58	55	51	50	50	50	50	50	50	50	51	58	61	66	68	70	71	0.08004
108	71	68	68	66	65	65	62	58	52	50	50	50	50	47	47	50	50	50	56	60	65	69	73	72	0.09307
111	68	66	65	63	60	61	58	53	50	50	47	45	45	47	47	47	47	50	50	55	59	61	66	69	0.08488
114	74	78	76	75	69	65	60	52	50	47	45	43	45	45	47	47	47	47	50	56	62	67	75	76	0.13079
117	76	76	75	72	70	65	57	50	47	45	45	43	41	43	45	47	47	49	50	57	63	69	74	76	0.13300
120	83	81	82	79	76	71	64	52	50	47	45	43	43	41	43	45	47	47	50	57	61	69	77	81	0.15687
123	80	83	82	77	75	70	62	52	50	47	45	43	41	43	45	47	47	47	50	54	61	69	76	79	0.15251
126	80	79	77	73	71	65	55	50	47	45	41	39	39	41	43	45	47	47	50	57	66	74	81	84	0.16279
129	106	104	104	100	101	93	85	73	63	51	50	47	45	44	43	44	45	47	51	51	60	67	73	78	0.22627
132	109	108	107	105	99	93	82	72	59	50	50	47	45	47	47	49	56	65	73	82	92	99	105	107	0.24830
135	102	96	95	91	89	85	88	71	60	52	49	47	47	47	49	55	63	72	85	91	98	102	103	103	0.21439
138	94	93	92	95	92	88	80	73	63	54	49	47	45	47	49	49	56	67	73	79	84	88	90	91	0.18580
141	81	83	86	89	87	82	76	69	60	51	49	47	47	49	50	55	65	71	78	82	87	88	90	88	0.16086

Measurement of roundness by Dial gauge deflections of 12-mm Diameter Aluminium (Al) Round Bar Before Straightening

Mean values of Dial Gauge Deflection Readings before straightening of 12 mm Aluminium (Al) round bar x 0.01 mm

	Angles in Degrees																							
Length in cm	0°	15°	30°	45°	60°	75°	90°	105°	120°	135°	150°	165°	180°	195°	210°	225°	240°	255°	270°	285°	300°	315°	330°	345°	STD DEV (mm)
11	56	53	52	52	52	54	56	58	60	61	62	66	69	70	71	71	70	68	66	66	66	64	62	60	0.06543
16	55	52	51	51	51	53	55	57	58	59	61	64	67	68	69	69	68	66	65	64	65	63	61	58	0.06213
20	53	51	50	50	51	52	54	55	57	57	59	62	65	66	67	67	66	64	63	63	63	61	59	56	0.05823
25	54	52	51	52	54	53	56	57	58.5	58	60	63	66	66	67	67	66	64	63	64	63	62	59	57	0.05266
30	54	53	53	54	56	57	58	59	60	60	62	64	67	67	68	67	66	64	63	64	64	62	60	58	0.04733
35	53	53	53	53	55	56	57	58	59	59	61	63	65	66	66	65	64	62	61	62	63	61	59	57	0.04302
40	51	53	53	53	55	56	57	57	58	58	59	62	63	64	63	64	62	61	60	61	61	59	59	56	0.03753
45	54	55	54	55	57	58	60	60	61	61	62	65	66	66	67	66	64	63	63	64	64	62	62	59	0.03985
50	58	58	58	58	59	60	62	63	64	64	65	67	69	68	69	67	66	65	66	66	66	65	64	62	0.03595
55	59	59	59	60	61	62	63	65	64	65	66	67	70	69	70	68	68	67	67	68	67	66	65	63	0.03476
60	61	60	60	61	62	63	64	66	65	66	67	70	71	71	72	72	69	69	68	69	68	66	65	63	0.03804
65	60	59	58	59	60	62	62	62	63	63	64	67	67	68	68	67	66	65	65	66	65	64	63	61	0.02993
70	58	57	57	58	59	60	60	60	60	60	61	63	64	64	64	63	62	61	62	63	62	61	60	58	0.02136
75	58	58	58	58	58	60	60	61	61	61	61	63	64	64	64	63	63	61	62	63	63	62	61	59	0.02083
80	58	58	58	58	60	61	61	61	61	62	62	64	64	64	64	64	63	62	62	64	63	63	62	60	0.02039
85	58	58	58	58	59	60	61	60	61	62	62	63	65	65	65	64	63	63	63	64	63	64	63	60	0.02382
90	58	57	58	58	59	60	61	61	61	61	63	64	66	66	66	65	64	64	64	64	64	64	63	60	0.02813
95	57	56	57	58	58.5	60	60.8	61	60.3	61	63	63	65	65	65	64	63	62	62	63	62	62	61	59	0.02588
100	55	55	56	57	58	60	61	61	60	61	62	64	65	64	64	63	61	60	61	61	60	60	60	58	0.02763
105	58	57	57	58	59	61	62	61	60	61	60	61	62	62	61	61	59	58	59	59	61	59	60	58	0.01567
109	60	59	58	59	60	62	63	61	59	58	58	59	60	59	58	58	57	56	56	56	58	58	59	58	0.01605