|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.21**  **Measurement of roundness by Dial gauge deflections of 12-mm Diameter Aluminium (Al) Round Bar After Straightening** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | **Mean values of Dial Gauge Deflection Readings after straightening of 12 mm Aluminium (AL) round bar x 0.01 mm** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | **Angles in Degrees** | | | | | | | | | | | | | | | | | | | | | | | |  |
| **Length in cm** | **0o** | **15o** | **30o** | **45o** | **60o** | **75o** | **90o** | **105o** | **120o** | **135o** | **150o** | **165o** | **180o** | **195o** | **210o** | **225o** | **240o** | **255o** | **270o** | **285o** | **300o** | **315o** | **330o** | **345o** | **STD**  **DEV (mm)** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | 126 | 127 | 128 | 128 | 128 | 129 | 130 | 129 | 128 | 126 | 124 | 122 | 120 | 120 | 119 | 120 | 121 | 121 | 122 | 122 | 122 | 123 | 125 | 125 | 0.036 |
| 20 | 121 | 122 | 123 | 123 | 123 | 125 | 126 | 125 | 124 | 123 | 121 | 119 | 118 | 117 | 117 | 118 | 119 | 119 | 120 | 119 | 119 | 120 | 121 | 121 | 0.026 |
| 30 | 117 | 117 | 118 | 118 | 119 | 120 | 121 | 120 | 119 | 117 | 115 | 114 | 113 | 113 | 112 | 113 | 115 | 115 | 116 | 116 | 116 | 116 | 117 | 117 | 0.023 |
| 40 | 120 | 120 | 121 | 121 | 121 | 122 | 122 | 121 | 120 | 118 | 117 | 115 | 113 | 112 | 112 | 113 | 115 | 116 | 117 | 117 | 117 | 118 | 119 | 120 | 0.032 |
| 45 | 120 | 120 | 120 | 120 | 120 | 121 | 122 | 120 | 119 | 117 | 115 | 114 | 113 | 112 | 112 | 114 | 115 | 116 | 117 | 117 | 118 | 118 | 118 | 118 | 0.028 |
| 50 | 114 | 114 | 115 | 115 | 116 | 116 | 117 | 116 | 116 | 114 | 113 | 112 | 111 | 110 | 110 | 111 | 112 | 113 | 114 | 113 | 113 | 113 | 114 | 114 | 0.019 |
| 60 | 113 | 113 | 114 | 114 | 115 | 115 | 116 | 115 | 114 | 113 | 112 | 111 | 109 | 109 | 110 | 111 | 113 | 113 | 114 | 113 | 113 | 113 | 114 | 113 | 0.018 |
| 70 | 114 | 114 | 114 | 114 | 115 | 115 | 116 | 115 | 115 | 112 | 110 | 109 | 108 | 108 | 108 | 109 | 110 | 111 | 112 | 112 | 112 | 112 | 113 | 113 | 0.025 |
| 80 | 117 | 117 | 117 | 116 | 116 | 116 | 117 | 116 | 115 | 113 | 111 | 110 | 110 | 110 | 110 | 112 | 114 | 114 | 115 | 113 | 112 | 114 | 116 | 116 | 0.025 |
| 90 | 109 | 109 | 109 | 109 | 110 | 110 | 110 | 109 | 108 | 107 | 107 | 107 | 106 | 105 | 104 | 106 | 108 | 105 | 102 | 102 | 101 | 101 | 101 | 101 | 0.032 |
| 100 | 108 | 107 | 106 | 106 | 105 | 105 | 105 | 105 | 105 | 104 | 103 | 102 | 101 | 101 | 101 | 103 | 104 | 106 | 108 | 108 | 108 | 108 | 108 | 108 | 0.023 |
| 110 | 106 | 105 | 105 | 105 | 105 | 105 | 106 | 106 | 106 | 105 | 105 | 103 | 102 | 102 | 101 | 102 | 103 | 105 | 106 | 106 | 105 | 105 | 105 | 105 | 0.015 |
| 120 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 106 | 105 | 105 | 103 | 102 | 102 | 102 | 103 | 104 | 106 | 107 | 107 | 106 | 106 | 105 | 105 | 0.013 |
| 90 | 143 | 142 | 141 | 141 | 141 | 141 | 141 | 141 | 141 | 139 | 138 | 137 | 135 | 135 | 135 | 136 | 138 | 140 | 142 | 141 | 141 | 141 | 142 | 142 | 0.025 |
| 120 | 139 | 139 | 139 | 139 | 139 | 139 | 139 | 139 | 140 | 139 | 139 | 137 | 136 | 136 | 136 | 137 | 138 | 140 | 141 | 141 | 140 | 140 | 139 | 139 | 0.013 |



**Figure 6.26(a): Box Plot of dial gauge readings dataset of mean values of 12-mm diameter Aluminium (Al) round bar before straightening**

**Figure 6.26(b): Error Plot of dial gauge readings on 12 mm Aluminium Round Bar after straightening**