|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.11**  **Measurement of roundness by Dial gauge deflections of 8-mm Diameter Mild Steel (MS) Round Bar** **After Straightening** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | Mean values of Dial Gauge Deflection Readings after straightening of 8 mm Mild Steel (MS) 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)** |
| 12 | 163 | 166 | 162 | 158 | 155 | 153 | 150 | 148 | 146 | 147 | 149 | 155 | 159 | 167 | 149 | 149 | 153 | 158 | 159 | 160 | 159 | 158 | 155 | 152 | 0.0599 |
| 17 | 155 | 150 | 149 | 145 | 141 | 142 | 138 | 135 | 137 | 138 | 145 | 148 | 152 | 155 | 135 | 140 | 145 | 150 | 155 | 157 | 157 | 158 | 157 | 154 | 0.0771 |
| 22 | 153 | 153 | 150 | 148 | 146 | 146 | 142 | 139 | 142 | 143 | 138 | 137 | 140 | 138 | 135 | 142 | 136 | 141 | 145 | 151 | 154 | 156 | 156 | 154 | 0.0674 |
| 27 | 152 | 149 | 148 | 146 | 144 | 143 | 140 | 140 | 144 | 146 | 143 | 142 | 143 | 140 | 138 | 135 | 140 | 143 | 142 | 143 | 142 | 145 | 148 | 149 | 0.0391 |
| 32 | 148 | 143 | 143 | 143 | 142 | 142 | 139 | 142 | 143 | 145 | 144 | 143 | 142 | 144 | 143 | 140 | 142 | 140 | 142 | 140 | 138 | 134 | 137 | 140 | 0.0288 |
| 36 | 147 | 146 | 144 | 146 | 145 | 142 | 140 | 145 | 146 | 144 | 141 | 144 | 142 | 140 | 144 | 142 | 140 | 142 | 144 | 143 | 143 | 142 | 139 | 141 | 0.0221 |
| 40 | 150 | 147 | 143 | 145 | 144 | 146 | 142 | 144 | 144 | 143 | 140 | 142 | 144 | 142 | 141 | 142 | 139 | 138 | 140 | 142 | 140 | 141 | 142 | 143 | 0.0265 |
| 45 | 149 | 148 | 146 | 147 | 146 | 144 | 144 | 142 | 145 | 144 | 143 | 141 | 142 | 144 | 138 | 141 | 138 | 140 | 141 | 141 | 144 | 142 | 144 | 146 | 0.0287 |
| 50 | 147 | 149 | 145 | 145 | 144 | 146 | 145 | 144 | 146 | 145 | 143 | 141 | 137 | 138 | 138 | 134 | 141 | 138 | 140 | 142 | 144 | 141 | 140 | 143 | 0.0367 |
| 55 | 148 | 147 | 143 | 144 | 145 | 144 | 142 | 143 | 145 | 146 | 145 | 134 | 136 | 135 | 136 | 137 | 139 | 141 | 137 | 137 | 141 | 143 | 145 | 146 | 0.0421 |
| 60 | 146 | 145 | 144 | 143 | 146 | 142 | 144 | 142 | 143 | 141 | 142 | 143 | 143 | 141 | 137 | 137 | 137 | 137 | 137 | 135 | 135 | 141 | 143 | 144 | 0.0353 |
| 65 | 145 | 143 | 142 | 144 | 145 | 144 | 143 | 143 | 141 | 145 | 138 | 139 | 140 | 140 | 138 | 136 | 135 | 133 | 133 | 133 | 132 | 140 | 141 | 143 | 0.0422 |
| 70 | 147 | 146 | 143 | 142 | 144 | 143 | 142 | 144 | 142 | 144 | 143 | 139 | 143 | 144 | 144 | 139 | 142 | 139 | 143 | 141 | 143 | 144 | 143 | 145 | 0.0198 |
| 75 | 149 | 144 | 147 | 145 | 146 | 145 | 144 | 142 | 143 | 143 | 141 | 145 | 144 | 146 | 144 | 146 | 142 | 145 | 144 | 143 | 141 | 143 | 145 | 147 | 0.0195 |
| 80 | 145 | 146 | 145 | 146 | 145 | 143 | 141 | 143 | 144 | 146 | 145 | 146 | 145 | 146 | 143 | 144 | 146 | 145 | 147 | 144 | 147 | 145 | 144 | 147 | 0.0147 |
| 85 | 148 | 145 | 146 | 145 | 144 | 142 | 142 | 141 | 142 | 144 | 143 | 142 | 141 | 142 | 143 | 142 | 144 | 143 | 142 | 140 | 139 | 141 | 143 | 145 | 0.0201 |
| 90 | 144 | 143 | 142 | 144 | 143 | 140 | 141 | 144 | 143 | 145 | 144 | 143 | 142 | 141 | 142 | 144 | 142 | 144 | 143 | 142 | 140 | 142 | 141 | 143 | 0.0135 |
| 95 | 143 | 145 | 144 | 142 | 145 | 142 | 143 | 143 | 144 | 146 | 145 | 144 | 142 | 141 | 143 | 142 | 145 | 143 | 144 | 141 | 143 | 144 | 143 | 141 | 0.0139 |
| 101.3 | 146 | 144 | 143 | 143 | 147 | 145 | 144 | 142 | 142 | 145 | 143 | 142 | 144 | 143 | 142 | 144 | 142 | 145 | 142 | 144 | 142 | 143 | 142 | 144 | 0.0141 |
| 106.3 | 147 | 145 | 144 | 146 | 145 | 143 | 145 | 144 | 145 | 143 | 145 | 143 | 142 | 144 | 143 | 142 | 144 | 142 | 144 | 143 | 141 | 142 | 143 | 145 | 0.0145 |
| 111.3 | 144 | 142 | 143 | 145 | 143 | 141 | 144 | 146 | 143 | 141 | 140 | 142 | 141 | 142 | 140 | 141 | 130 | 144 | 143 | 142 | 144 | 141 | 142 | 143 | 0.0297 |
| 116.3 | 148 | 146 | 144 | 143 | 142 | 140 | 142 | 143 | 141 | 139 | 138 | 141 | 144 | 139 | 143 | 139 | 141 | 142 | 144 | 143 | 142 | 143 | 144 | 145 | 0.0237 |
| 121.3 | 148 | 145 | 139 | 141 | 139 | 137 | 137 | 139 | 135 | 136 | 140 | 138 | 140 | 136 | 136 | 137 | 138 | 140 | 140 | 139 | 138 | 140 | 142 | 144 | 0.0314 |
| 126.3 | 144 | 141 | 138 | 139 | 137 | 135 | 136 | 135 | 136 | 137 | 138 | 136 | 138 | 140 | 142 | 143 | 144 | 141 | 139 | 141 | 143 | 144 | 145 | 146 | 0.0339 |
| 131.3 | 141 | 136 | 137 | 136 | 135 | 136 | 132 | 134 | 134 | 135 | 135 | 134 | 134 | 135 | 134 | 133 | 133 | 133 | 135 | 134 | 135 | 137 | 139 | 142 | 0.0251 |
| 136.3 | 139 | 128 | 126 | 131 | 133 | 134 | 136 | 118 | 118 | 122 | 132 | 127 | 129 | 129 | 128 | 130 | 129 | 127 | 128 | 126 | 125 | 134 | 136 | 138 | 0.0556 |
| 141.3 | 136 | 116 | 116 | 115 | 118 | 120 | 119 | 120 | 127 | 128 | 129 | 129 | 130 | 130 | 129 | 128 | 129 | 128 | 125 | 122 | 120 | 117 | 118 | 113 | 0.062 |



**Figure 6.16(a): Box Plot of dial gauge readings dataset of mean values of 8-mm diameter Mild Steel (MS) round bar before straightening**

**Figure 6.16(b): Error Plot of dial gauge readings on 8 mm Mild Steel Round Bar after straightening**