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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Table 6.22**  **Measurement of roundness by Dial gauge deflections of 6-mm Diameter Copper (Cu) Round Bar After Straightening** | | | | | | | | | | | | | | | | | | | | | | | |  |
|  | **Mean values of Dial Gauge Deflection Readings after straightening of 6 mm Copper (Cu) 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)** |
| 16.0 | 301.5 | 297.0 | 288.0 | 275.5 | 262.5 | 251.0 | 239.5 | 246.0 | 248.0 | 252.0 | 276.0 | 287.0 | 270.0 | 265.0 | 246.0 | 236.0 | 241.5 | 256.0 | 269.0 | 284.0 | 296.0 | 302.5 | 308.5 | 310.5 | 0.237 |
| 20.0 | 281.0 | 283.0 | 277.0 | 274.0 | 267.0 | 250.5 | 238.0 | 243.0 | 221.5 | 213.5 | 226.0 | 243.0 | 251.0 | 256.0 | 237.0 | 238.0 | 240.0 | 252.0 | 260.0 | 268.0 | 274.5 | 279.5 | 282.5 | 283.5 | 0.2119 |
| 25.0 | 268.0 | 276.0 | 272.0 | 269.0 | 263.0 | 256.0 | 236.0 | 244.0 | 232.5 | 232.5 | 235.5 | 239.0 | 241.0 | 241.5 | 244.5 | 245.0 | 245.0 | 242.5 | 241.0 | 240.5 | 239.0 | 247.5 | 237.0 | 245.5 | 0.1289 |
| 30.0 | 256.0 | 259.0 | 264.0 | 263.0 | 257.0 | 248.0 | 243.5 | 247.0 | 249.5 | 245.0 | 252.0 | 253.5 | 252.0 | 251.0 | 248.0 | 243.5 | 237.0 | 230.0 | 234.0 | 236.0 | 232.0 | 241.0 | 247.0 | 255.0 | 0.0934 |
| 35.0 | 243.0 | 248.0 | 253.0 | 257.0 | 253.0 | 238.5 | 245.5 | 250.5 | 254.5 | 256.5 | 256.0 | 254.5 | 256.0 | 254.0 | 247.0 | 240.5 | 236.0 | 231.0 | 231.0 | 230.0 | 223.0 | 238.0 | 245.0 | 248.0 | 0.099 |
| 40.0 | 234.0 | 236.0 | 243.0 | 241.0 | 244.0 | 250.0 | 248.0 | 254.0 | 255.0 | 253.0 | 252.0 | 251.0 | 253.0 | 254.0 | 252.5 | 243.5 | 238.0 | 238.0 | 242.0 | 247.0 | 234.0 | 234.0 | 241.0 | 241.0 | 0.0715 |
| 45.0 | 233.0 | 228.0 | 238.0 | 237.0 | 246.0 | 251.0 | 255.0 | 255.0 | 261.0 | 251.0 | 255.0 | 258.0 | 263.0 | 264.0 | 265.5 | 252.5 | 245.0 | 245.0 | 246.0 | 249.0 | 243.0 | 240.0 | 235.0 | 232.0 | 0.1069 |
| 50.0 | 235.0 | 229.0 | 227.0 | 236.0 | 234.0 | 252.0 | 254.0 | 257.0 | 265.0 | 258.0 | 262.0 | 265.0 | 264.0 | 263.0 | 266.0 | 264.0 | 260.0 | 252.0 | 234.0 | 242.0 | 241.0 | 245.0 | 234.0 | 236.0 | 0.1343 |
| 55.0 | 237.0 | 234.0 | 236.0 | 237.0 | 233.5 | 243.0 | 257.0 | 260.0 | 262.0 | 262.0 | 265.0 | 268.0 | 262.0 | 261.0 | 268.0 | 265.0 | 261.0 | 256.0 | 254.5 | 232.0 | 208.0 | 243.0 | 237.0 | 239.0 | 0.1546 |
| 60.0 | 245.0 | 242.0 | 239.0 | 236.0 | 237.0 | 245.0 | 256.0 | 259.0 | 270.0 | 265.0 | 268.0 | 267.0 | 264.0 | 259.0 | 264.0 | 264.0 | 263.0 | 260.0 | 261.0 | 256.0 | 242.5 | 241.0 | 243.0 | 245.0 | 0.1125 |
| 65.0 | 242.0 | 246.0 | 243.0 | 241.0 | 245.0 | 241.0 | 251.0 | 255.0 | 261.0 | 261.5 | 267.0 | 264.0 | 263.0 | 261.0 | 259.0 | 262.0 | 260.0 | 263.0 | 267.5 | 250.5 | 241.0 | 238.0 | 241.0 | 240.0 | 0.1023 |
| 70.0 | 234.0 | 238.0 | 241.0 | 245.0 | 248.0 | 246.0 | 248.0 | 252.0 | 254.0 | 261.5 | 265.0 | 262.0 | 261.0 | 263.0 | 258.0 | 261.0 | 262.0 | 261.0 | 268.0 | 246.0 | 239.0 | 237.0 | 237.0 | 235.0 | 0.1102 |
| 75.0 | 226.0 | 225.0 | 237.0 | 238.0 | 239.0 | 242.0 | 244.0 | 249.0 | 256.0 | 258.0 | 255.0 | 259.0 | 264.0 | 261.0 | 257.0 | 258.0 | 259.0 | 264.5 | 246.5 | 243.0 | 236.0 | 232.0 | 227.0 | 224.0 | 0.1324 |
| 80.0 | 221.0 | 223.0 | 229.0 | 234.0 | 238.0 | 243.0 | 241.5 | 246.0 | 258.0 | 261.0 | 259.0 | 258.0 | 262.0 | 259.0 | 256.0 | 262.0 | 262.5 | 243.0 | 241.0 | 237.0 | 226.0 | 224.0 | 223.0 | 223.0 | 0.151 |
| 86.0 | 233.0 | 236.0 | 235.0 | 237.0 | 242.0 | 246.5 | 259.5 | 261.0 | 259.0 | 255.0 | 258.0 | 256.0 | 258.0 | 257.0 | 258.0 | 263.0 | 247.5 | 242.0 | 236.0 | 236.0 | 235.0 | 233.0 | 235.0 | 234.0 | 0.1114 |



**Figure 6.27(a): Box Plot of dial gauge readings dataset of mean values of 6-mm diameter Copper (Cu) round bar before straightening**

**Figure 6.27(b): Error Plot of dial gauge readings on 6 mm Copper Round Bar after straightening**