

Tensile Strength and Hardness Relationships for Carbon Steel Fasteners



| Tensile Strength(Approx) | Rockwell Hardness No. | | | Brinell | Vickers |
|--------------------------|-----------------------|---------|---------|------------|--------------|
| | ksi | B Scale | C Scale | 30-N Scale | Hardness No. |
| 56 | 65.7 | - | - | 111 | 117 |
| 60 | 69.8 | - | - | 121 | 127 |
| 65 | 74.0 | - | - | 131 | 137 |
| 71 | 78.7 | - | - | 143 | 150 |
| 76 | 82.9 | - | - | 156 | 163 |
| 81 | 86.0 | - | - | 167 | 175 |
| 85 | 87.8 | - | - | 174 | 182 |
| 90 | 90.7 | - | - | 187 | 196 |
| 95 | 92.8 | - | - | 197 | 207 |
| 100 | 94.6 | - | - | 207 | 218 |
| 105 | 96.4 | - | - | 217 | 228 |
| 110 | 97.8 | 20 | 41.5 | 226 | 238 |
| 114 | 99.0 | 22 | 43.2 | 237 | 248 |
| 117 | 100.0 | 23 | 44.0 | 243 | 254 |
| 120 | - | 24 | 45.0 | 247 | 260 |
| 122 | - | 25 | 45.9 | 253 | 266 |
| 125 | - | 26 | 46.8 | 258 | 272 |
| 128 | - | 27 | 47.7 | 264 | 279 |
| 132 | - | 28 | 48.6 | 271 | 286 |
| 135 | - | 29 | 49.5 | 279 | 294 |
| 138 | - | 30 | 50.4 | 286 | 302 |
| 142 | - | 31 | 51.3 | 294 | 310 |
| 145 | - | 32 | 52.1 | 301 | 318 |
| 149 | - | 33 | 53.3 | 311 | 327 |
| 153 | - | 34 | 54.2 | 319 | 336 |
| 157 | - | 35 | 55.0 | 327 | 345 |
| 162 | - | 36 | 55.9 | 336 | 354 |
| 168 | - | 37 | 56.8 | 344 | 363 |
| 171 | - | 38 | 57.7 | 353 | 372 |
| 176 | - | 39 | 58.6 | 362 | 382 |
| 181 | - | 40 | 59.5 | 371 | 392 |
| 188 | - | 41 | 60.4 | 381 | 402 |
| 194 | - | 42 | 61.3 | 390 | 412 |
| 201 | - | 43 | 62.2 | 400 | 423 |
| 208 | - | 44 | 63.1 | 409 | 434 |
| 215 | - | 45 | 64.0 | 421 | 446 |
| 222 | - | 46 | 64.8 | 432 | 458 |

NOTE: Approximate tensile strengths and hardness value relationships are abstracted from conversion tables included in SAE Information Report J417 (see page N-45)