

| Rockwell | | | | | | Rockwell Superficial | | | | Brinell | | Vickers | Shore | Approx Tensile Strength (psi) |
|------------|------------------|-------------|-------------|-----------------|-----------------|----------------------|------------|------------|------------------|-----------------|-----------------|-----------------|--------------|-------------------------------|
| A | B | C | D | E | F | 15-N | 30-N | 45-N | 30-T | 3000 kg | 500 kg | 136 | | |
| 60kg Brale | 100kg 1/16" Ball | 150kg Brale | 100kg Brale | 100kg 1/8" Ball | 60kg 1/16" Ball | 15kg Brale | 30kg Brale | 45kg Brale | 30 kg 1/16" Ball | 10mm Ball Steel | 10mm Ball Steel | Diamond Pyramid | Sciero-scope | |
| 86.5 | --- | 70 | 78.5 | --- | --- | 94 | 86 | 77.6 | --- | --- | --- | 1076 | 101 | --- |
| 86 | --- | 69 | 77.7 | --- | --- | 93.5 | 85 | 76.5 | --- | --- | --- | 1044 | 99 | --- |
| 85.6 | --- | 68 | 76.9 | --- | --- | 93.2 | 84.4 | 75.4 | --- | --- | --- | 940 | 97 | --- |
| 85 | --- | 67 | 76.1 | --- | --- | 92.9 | 83.6 | 74.2 | --- | --- | --- | 900 | 95 | --- |
| 84.5 | --- | 66 | 75.4 | --- | --- | 92.5 | 82.8 | 73.2 | --- | --- | --- | 865 | 92 | --- |
| 83.9 | --- | 65 | 74.5 | --- | --- | 92.2 | 81.9 | 72 | --- | 739 | --- | 832 | 91 | --- |
| 83.4 | --- | 64 | 73.8 | --- | --- | 91.8 | 81.1 | 71 | --- | 722 | --- | 800 | 88 | --- |
| 82.8 | --- | 63 | 73 | --- | --- | 91.4 | 80.1 | 69.9 | --- | 705 | --- | 772 | 87 | --- |
| 82.3 | --- | 62 | 72.2 | --- | --- | 91.1 | 79.3 | 68.8 | --- | 688 | --- | 746 | 85 | --- |
| 81.8 | --- | 61 | 71.5 | --- | --- | 90.7 | 78.4 | 67.7 | --- | 670 | --- | 720 | 83 | --- |
| 81.2 | --- | 60 | 70.7 | --- | --- | 90.2 | 77.5 | 66.6 | --- | 654 | --- | 697 | 81 | 320,000 |
| 80.7 | --- | 59 | 69.9 | --- | --- | 89.8 | 76.6 | 65.5 | --- | 634 | --- | 674 | 80 | 310,000 |
| 80.1 | --- | 58 | 69.2 | --- | --- | 89.3 | 75.7 | 64.3 | --- | 615 | --- | 653 | 78 | 300,000 |
| 79.6 | --- | 57 | 68.5 | --- | --- | 88.9 | 74.8 | 63.2 | --- | 595 | --- | 633 | 76 | 290,000 |
| 79 | --- | 56 | 67.7 | --- | --- | 88.3 | 73.9 | 62 | --- | 577 | --- | 613 | 75 | 282,000 |
| 78.5 | 120 | 55 | 66.9 | --- | --- | 87.9 | 73 | 60.9 | --- | 560 | --- | 595 | 74 | 274,000 |
| 78 | 120 | 54 | 66.1 | --- | --- | 87.4 | 72 | 59.8 | --- | 543 | --- | 577 | 72 | 266,000 |
| 77.4 | 119 | 53 | 65.4 | --- | --- | 86.9 | 71.2 | 58.6 | --- | 525 | --- | 560 | 71 | 257,000 |
| 76.8 | 119 | 52 | 64.6 | --- | --- | 86.4 | 70.2 | 57.4 | --- | 500 | --- | 544 | 69 | 245,000 |
| 76.3 | 118 | 51 | 63.8 | --- | --- | 85.9 | 69.4 | 56.1 | --- | 487 | --- | 528 | 68 | 239,000 |
| 75.9 | 117 | 50 | 63.1 | --- | --- | 85.5 | 68.5 | 55 | --- | 475 | --- | 513 | 67 | 233,000 |
| 75.2 | 117 | 49 | 62.1 | --- | --- | 85 | 67.6 | 53.8 | --- | 464 | --- | 498 | 66 | 227,000 |
| 74.7 | 116 | 48 | 61.4 | --- | --- | 84.5 | 66.7 | 52.5 | --- | 451 | --- | 484 | 64 | 221,000 |
| 74.1 | 116 | 47 | 60.8 | --- | --- | 83.9 | 65.8 | 51.4 | --- | 442 | --- | 471 | 63 | 217,000 |
| 73.6 | 115 | 46 | 60 | --- | --- | 83.5 | 64.8 | 50.3 | --- | 432 | --- | 458 | 62 | 212,000 |
| 73.1 | 115 | 45 | 59.2 | --- | --- | 83 | 64 | 49 | --- | 421 | --- | 446 | 60 | 206,000 |
| 72.5 | 114 | 44 | 58.5 | --- | --- | 82.5 | 63.1 | 47.8 | --- | 409 | --- | 434 | 58 | 200,000 |
| 72 | 113 | 43 | 57.7 | --- | --- | 82 | 62.2 | 46.7 | --- | 400 | --- | 423 | 57 | 196,000 |
| 71.5 | 113 | 42 | 56.9 | --- | --- | 81.5 | 61.3 | 45.5 | --- | 390 | --- | 412 | 56 | 191,000 |
| 70.9 | 112 | 41 | 56.2 | --- | --- | 80.9 | 60.4 | 44.3 | --- | 381 | --- | 402 | 55 | 187,000 |
| 70.4 | 112 | 40 | 55.4 | --- | --- | 80.4 | 59.5 | 43.1 | --- | 371 | --- | 392 | 54 | 182,000 |
| 69.9 | 111 | 39 | 54.6 | --- | --- | 79.9 | 58.6 | 41.9 | --- | 362 | --- | 382 | 52 | 177,000 |

| | | | | | | | | | | | | | | |
|------|-----|-----|------|-----|-----|------|------|------|------|-----|-----|-----|-----|---------|
| 69.4 | 110 | 38 | 53.8 | --- | --- | 79.4 | 57.7 | 40.8 | --- | 353 | --- | 372 | 51 | 173,000 |
| 68.9 | 110 | 37 | 53.1 | --- | --- | 78.8 | 56.8 | 39.6 | --- | 344 | --- | 363 | 50 | 169,000 |
| 68.4 | 109 | 36 | 52.3 | --- | --- | 78.3 | 55.9 | 38.4 | --- | 336 | --- | 354 | 49 | 165,000 |
| 67.9 | 109 | 35 | 51.5 | --- | --- | 77.7 | 55 | 37.2 | --- | 327 | --- | 345 | 48 | 160,000 |
| 67.4 | 108 | 34 | 50.8 | --- | --- | 77.2 | 54.2 | 36.1 | --- | 319 | --- | 336 | 47 | 156,000 |
| 66.8 | 108 | 33 | 50 | --- | --- | 76.6 | 53.3 | 34.9 | --- | 311 | --- | 327 | 46 | 152,000 |
| 66.3 | 107 | 32 | 49.2 | --- | --- | 76.1 | 52.1 | 33.7 | --- | 301 | --- | 318 | 44 | 147,000 |
| 65.8 | 106 | 31 | 48.4 | --- | --- | 75.6 | 51.3 | 32.5 | --- | 294 | --- | 310 | 43 | 144,000 |
| 65.3 | 105 | 30 | 47.7 | --- | --- | 75 | 50.4 | 31.3 | --- | 286 | --- | 302 | 42 | 140,000 |
| 64.7 | 104 | 29 | 47 | --- | --- | 74.5 | 49.5 | 30.1 | --- | 279 | --- | 294 | 41 | 137,000 |
| 64.3 | 104 | 28 | 46.1 | --- | --- | 73.9 | 48.6 | 28.9 | --- | 271 | --- | 286 | 41 | 133,000 |
| 63.8 | 103 | 27 | 45.2 | --- | --- | 73.3 | 47.7 | 27.8 | --- | 264 | --- | 279 | 40 | 129,000 |
| 63.3 | 103 | 26 | 44.6 | --- | --- | 72.8 | 46.8 | 26.7 | --- | 258 | --- | 272 | 39 | 126,000 |
| 62.8 | 102 | 25 | 43.8 | --- | --- | 72.2 | 45.9 | 25.5 | --- | 253 | --- | 266 | 38 | 124,000 |
| 62.4 | 101 | 24 | 43.1 | --- | --- | 71.6 | 45 | 24.3 | --- | 247 | --- | 260 | 37 | 121,000 |
| 62 | 100 | 23 | 42.1 | --- | --- | 71 | 44 | 23.1 | 82 | 240 | 201 | 254 | 36 | 118,000 |
| 61.5 | 99 | 22 | 41.6 | --- | --- | 70.5 | 43.2 | 22 | 81.5 | 234 | 195 | 248 | 35 | 115,000 |
| 61 | 98 | 21 | 40.9 | --- | --- | 69.9 | 42.3 | 20.7 | 81 | 228 | 189 | 243 | 35 | 112,000 |
| 60.5 | 97 | 20 | 40.1 | --- | --- | 69.4 | 41.5 | 19.6 | 80.5 | 222 | 184 | 238 | 34 | 109,000 |
| 59 | 96 | 18 | --- | --- | --- | --- | --- | --- | 80 | 216 | 179 | 230 | 33 | 106,000 |
| 58 | 95 | 16 | --- | --- | --- | --- | --- | --- | 79 | 210 | 175 | 222 | 32 | 103,000 |
| 57.5 | 94 | 15 | --- | --- | --- | --- | --- | --- | 78.5 | 205 | 171 | 213 | 31 | 100,000 |
| 57 | 93 | 13 | --- | --- | --- | --- | --- | --- | 78 | 200 | 167 | 208 | 30 | 98,000 |
| 56.5 | 92 | 12 | --- | --- | --- | --- | --- | --- | 77.5 | 195 | 163 | 204 | 29 | 96,000 |
| 56 | 91 | 10 | --- | --- | --- | --- | --- | --- | 77 | 190 | 160 | 196 | 28 | 93,000 |
| 55.5 | 90 | 9 | --- | --- | --- | --- | --- | --- | 76 | 185 | 157 | 192 | 27 | 91,000 |
| 55 | 89 | 8 | --- | --- | --- | --- | --- | --- | 75.5 | 180 | 154 | 188 | 26 | 88,000 |
| 54 | 88 | 7 | --- | --- | --- | --- | --- | --- | 75 | 176 | 151 | 184 | 26 | 86,000 |
| 53.5 | 87 | 6 | --- | --- | --- | --- | --- | --- | 74.5 | 172 | 148 | 180 | 26 | 84,000 |
| 53 | 86 | 5 | --- | --- | --- | --- | --- | --- | 74 | 169 | 145 | 176 | 25 | 83,000 |
| 52.5 | 85 | 4 | --- | --- | --- | --- | --- | --- | 73.5 | 165 | 142 | 173 | 25 | 81,000 |
| 52 | 84 | 3 | --- | --- | --- | --- | --- | --- | 73 | 162 | 140 | 170 | 25 | 79,000 |
| 51 | 83 | 2 | --- | --- | --- | --- | --- | --- | 72 | 159 | 137 | 166 | 24 | 78,000 |
| 50.5 | 82 | 1 | --- | --- | --- | --- | --- | --- | 71.5 | 156 | 135 | 163 | 24 | 76,000 |
| 50 | 81 | 0 | --- | --- | --- | --- | --- | --- | 71 | 153 | 133 | 160 | 24 | 75,000 |
| 49.5 | 80 | --- | --- | --- | --- | --- | --- | --- | 70 | 150 | 130 | --- | --- | 73,000 |
| 49 | 79 | --- | --- | --- | --- | --- | --- | --- | 69.5 | 147 | 128 | --- | --- | --- |
| 48.5 | 78 | --- | --- | --- | --- | --- | --- | --- | 69 | 144 | 126 | --- | --- | --- |
| 48 | 77 | --- | --- | --- | --- | --- | --- | --- | 68 | 141 | 124 | --- | --- | --- |
| 47 | 76 | --- | --- | --- | --- | --- | --- | --- | 67.5 | 139 | 122 | --- | --- | --- |

| | | | | | | | | | | | | | | |
|------|----|-----|-----|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----|
| 46.5 | 75 | --- | --- | --- | 99.5 | --- | --- | --- | 67 | 137 | 120 | --- | --- | --- |
| 46 | 74 | --- | --- | --- | 99 | --- | --- | --- | 66 | 135 | 118 | --- | --- | --- |
| 45.5 | 73 | --- | --- | --- | 98.5 | --- | --- | --- | 65.5 | 132 | 116 | --- | --- | --- |
| 45 | 72 | --- | --- | --- | 98 | --- | --- | --- | 65 | 130 | 114 | --- | --- | --- |
| 44.5 | 71 | --- | --- | 100 | 97.5 | --- | --- | --- | 64.2 | 127 | 112 | --- | --- | --- |
| 44 | 70 | --- | --- | 99.5 | 97 | --- | --- | --- | 63.5 | 125 | 110 | --- | --- | --- |
| 43.5 | 69 | --- | --- | 99 | 96 | --- | --- | --- | 62.8 | 123 | 109 | --- | --- | --- |
| 43 | 68 | --- | --- | 98 | 95.5 | --- | --- | --- | 62 | 121 | 107 | --- | --- | --- |
| 42.5 | 67 | --- | --- | 97.5 | 95 | --- | --- | --- | 61.4 | 119 | 106 | --- | --- | --- |
| 42 | 66 | --- | --- | 97 | 94.5 | --- | --- | --- | 60.5 | 117 | 104 | --- | --- | --- |
| 41.8 | 65 | --- | --- | 96 | 94 | --- | --- | --- | 60.1 | 116 | 102 | --- | --- | --- |
| 41.5 | 64 | --- | --- | 95.5 | 93.5 | --- | --- | --- | 59.5 | 114 | 101 | --- | --- | --- |
| 41 | 63 | --- | --- | 95 | 93 | --- | --- | --- | 58.7 | 112 | 99 | --- | --- | --- |
| 40.5 | 62 | --- | --- | 94.5 | 92 | --- | --- | --- | 58 | 110 | 98 | --- | --- | --- |
| 40 | 61 | --- | --- | 93.5 | 91.5 | --- | --- | --- | 57.3 | 108 | 96 | --- | --- | --- |
| 39.5 | 60 | --- | --- | 93 | 91 | --- | --- | --- | 56.5 | 107 | 95 | --- | --- | --- |
| 39 | 59 | --- | --- | 92.5 | 90.5 | --- | --- | --- | 55.9 | 106 | 94 | --- | --- | --- |
| 38.5 | 58 | --- | --- | 92 | 90 | --- | --- | --- | 55 | 104 | 92 | --- | --- | --- |
| 38 | 57 | --- | --- | 91 | 89.5 | --- | --- | --- | 54.6 | 102 | 91 | --- | --- | --- |
| 37.8 | 56 | --- | --- | 90.5 | 89 | --- | --- | --- | 54 | 101 | 90 | --- | --- | --- |
| 37.5 | 55 | --- | --- | 90 | 88 | --- | --- | --- | 53.2 | 99 | 89 | --- | --- | --- |
| 37 | 54 | --- | --- | 89.5 | 87.5 | --- | --- | --- | 52.5 | --- | 87 | --- | --- | --- |
| 36.5 | 53 | --- | --- | 89 | 87 | --- | --- | --- | 51.8 | --- | 86 | --- | --- | --- |
| 36 | 52 | --- | --- | 88 | 86.5 | --- | --- | --- | 51 | --- | 85 | --- | --- | --- |
| 35.5 | 51 | --- | --- | 87.5 | 86 | --- | --- | --- | 50.4 | --- | 84 | --- | --- | --- |
| 35 | 50 | --- | --- | 87 | 85.5 | --- | --- | --- | 49.5 | --- | 83 | --- | --- | --- |
| 34.8 | 49 | --- | --- | 86.5 | 85 | --- | --- | --- | 49.1 | --- | 82 | --- | --- | --- |
| 34.5 | 48 | --- | --- | 85.5 | 84.5 | --- | --- | --- | 48.5 | --- | 81 | --- | --- | --- |
| 34 | 47 | --- | --- | 85 | 84 | --- | --- | --- | 47.7 | --- | 80 | --- | --- | --- |
| 33.5 | 46 | --- | --- | 84.5 | 83 | --- | --- | --- | 47 | --- | 79 | --- | --- | --- |
| 33 | 45 | --- | --- | 84 | 82.5 | --- | --- | --- | 46.2 | --- | 79 | --- | --- | --- |
| 32.5 | 44 | --- | --- | 83.5 | 82 | --- | --- | --- | 45.5 | --- | 78 | --- | --- | --- |
| 32 | 43 | --- | --- | 82.5 | 81.5 | --- | --- | --- | 44.8 | --- | 77 | --- | --- | --- |
| 31.5 | 42 | --- | --- | 82 | 81 | --- | --- | --- | 44 | --- | 76 | --- | --- | --- |
| 31 | 41 | --- | --- | 81.5 | 80.5 | --- | --- | --- | 43.4 | --- | 75 | --- | --- | --- |
| 30.8 | 40 | --- | --- | 81 | 79.5 | --- | --- | --- | 43 | --- | 74 | --- | --- | --- |
| 30.5 | 39 | --- | --- | 80 | 79 | --- | --- | --- | 42.1 | --- | 74 | --- | --- | --- |
| 30 | 38 | --- | --- | 79.5 | 78.5 | --- | --- | --- | 41.5 | --- | 73 | --- | --- | --- |
| 29.5 | 37 | --- | --- | 79 | 78 | --- | --- | --- | 40.7 | --- | 72 | --- | --- | --- |
| 29 | 36 | --- | --- | 78.5 | 77.5 | --- | --- | --- | 40 | --- | 71 | --- | --- | --- |

| | | | | | | | | | | | | | | |
|------|----|-----|-----|------|------|-----|-----|-----|------|-----|----|-----|-----|-----|
| 28.5 | 35 | --- | --- | 78 | 77 | --- | --- | --- | 39.3 | --- | 71 | --- | --- | --- |
| 28 | 34 | --- | --- | 77 | 76.5 | --- | --- | --- | 38.5 | --- | 70 | --- | --- | --- |
| 27.8 | 33 | --- | --- | 76.5 | 75.5 | --- | --- | --- | 37.9 | --- | 69 | --- | --- | --- |
| 27.5 | 32 | --- | --- | 76 | 75 | --- | --- | --- | 37.5 | --- | 68 | --- | --- | --- |
| 27 | 31 | --- | --- | 75.5 | 74.5 | --- | --- | --- | 36.6 | --- | 68 | --- | --- | --- |
| 26.5 | 30 | --- | --- | 75 | 74 | --- | --- | --- | 36 | --- | 67 | --- | --- | --- |
| 26 | 29 | --- | --- | 74 | 73.5 | --- | --- | --- | 35.2 | --- | 66 | --- | --- | --- |
| 25.5 | 28 | --- | --- | 73.5 | 73 | --- | --- | --- | 34.5 | --- | 66 | --- | --- | --- |
| 25 | 27 | --- | --- | 73 | 72.5 | --- | --- | --- | 33.8 | --- | 65 | --- | --- | --- |
| 24.5 | 26 | --- | --- | 72.5 | 72 | --- | --- | --- | 33.1 | --- | 65 | --- | --- | --- |
| 24.2 | 25 | --- | --- | 72 | 71 | --- | --- | --- | 32.4 | --- | 64 | --- | --- | --- |
| 24 | 24 | --- | --- | 71 | 70.5 | --- | --- | --- | 32 | --- | 64 | --- | --- | --- |
| 23.5 | 23 | --- | --- | 70.5 | 70 | --- | --- | --- | 31.1 | --- | 63 | --- | --- | --- |
| 23 | 22 | --- | --- | 70 | 69.5 | --- | --- | --- | 30.4 | --- | 63 | --- | --- | --- |
| 22.5 | 21 | --- | --- | 69.5 | 69 | --- | --- | --- | 29.7 | --- | 62 | --- | --- | --- |
| 22 | 20 | --- | --- | 68.5 | 68.5 | --- | --- | --- | 29 | --- | 62 | --- | --- | --- |
| 21.5 | 19 | --- | --- | 68 | 68 | --- | --- | --- | 28.1 | --- | 61 | --- | --- | --- |
| 21.2 | 18 | --- | --- | 67.5 | 67 | --- | --- | --- | 27.4 | --- | 61 | --- | --- | --- |
| 21 | 17 | --- | --- | 67 | 66.5 | --- | --- | --- | 26.7 | --- | 60 | --- | --- | --- |
| 20.5 | 16 | --- | --- | 66.5 | 66 | --- | --- | --- | 26 | --- | 60 | --- | --- | --- |
| 20 | 15 | --- | --- | 65.5 | 65.5 | --- | --- | --- | 25.3 | --- | 59 | --- | --- | --- |
| --- | 14 | --- | --- | 65 | 65 | --- | --- | --- | 24.6 | --- | 59 | --- | --- | --- |
| --- | 13 | --- | --- | 64.5 | 64.5 | --- | --- | --- | 23.9 | --- | 58 | --- | --- | --- |
| --- | 12 | --- | --- | 64 | 64 | --- | --- | --- | 23.5 | --- | 58 | --- | --- | --- |
| --- | 11 | --- | --- | 63.5 | 63.5 | --- | --- | --- | 22.6 | --- | 57 | --- | --- | --- |
| --- | 10 | --- | --- | 62.5 | 63 | --- | --- | --- | 21.9 | --- | 57 | --- | --- | --- |
| --- | 9 | --- | --- | 62 | 62 | --- | --- | --- | 21.2 | --- | 56 | --- | --- | --- |
| --- | 8 | --- | --- | 61.5 | 61.5 | --- | --- | --- | 20.5 | --- | 56 | --- | --- | --- |
| --- | 7 | --- | --- | 61 | 61 | --- | --- | --- | 19.8 | --- | 56 | --- | --- | --- |
| --- | 6 | --- | --- | 60.5 | 60.5 | --- | --- | --- | 19.1 | --- | 55 | --- | --- | --- |
| --- | 5 | --- | --- | 60 | 60 | --- | --- | --- | 18.4 | --- | 55 | --- | --- | --- |
| --- | 4 | --- | --- | 59 | 59.5 | --- | --- | --- | 18 | --- | 55 | --- | --- | --- |
| --- | 3 | --- | --- | 58.5 | 59 | --- | --- | --- | 17.1 | --- | 54 | --- | --- | --- |
| --- | 2 | --- | --- | 58 | 58 | --- | --- | --- | 16.4 | --- | 54 | --- | --- | --- |
| --- | 1 | --- | --- | 57.5 | 57.5 | --- | --- | --- | 15.7 | --- | 53 | --- | --- | --- |
| --- | 0 | --- | --- | 57 | 57 | --- | --- | --- | 15 | --- | 53 | --- | --- | --- |