



Since 1943

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330-773-8211

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Fax: 330-773-3660

Email: info@AkronSteelTreating.com



## HARDNESS CONVERSIONS

| ROCKWELL SCALES        |                        |                       |                           |                           |                           |                           | KNOOP<br>500gm<br>& OVER<br>HK | VICKERS<br>10KG<br>HV | BRINELL 3000 KG |     | TENSILE<br>STRENGTH<br>KPSI |
|------------------------|------------------------|-----------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------------|-----------------------|-----------------|-----|-----------------------------|
| C<br>150 KG<br>DIAMOND | D<br>100 KG<br>DIAMOND | A<br>60 KG<br>DIAMOND | 45N<br>45 KG<br>N DIAMOND | 30N<br>30 KG<br>N DIAMOND | 15N<br>15 KG<br>N DIAMOND | G<br>150 KG<br>1/16" BALL |                                |                       | DIA.<br>(mm)    | HB  |                             |
| 68                     | 77.0                   | 85.5                  | 75.5                      | 84.5                      | 93.0                      | —                         | 920                            | 940                   | —               | —   |                             |
| 67                     | 76.0                   | 85.0                  | 74.0                      | 83.5                      | —                         | —                         | 895                            | 900                   | —               | —   |                             |
| 66                     | 75.5                   | 84.5                  | 73.5                      | 83.0                      | 92.5                      | —                         | 870                            | 865                   | —               | —   |                             |
| 65                     | 74.5                   | 84.0                  | 72.0                      | 82.0                      | 92.0                      | —                         | 846                            | 832                   | —               | —   |                             |
| 64                     | 74.0                   | 83.5                  | 71.0                      | 81.0                      | —                         | —                         | 822                            | 800                   | —               | —   |                             |
| 63                     | 73.0                   | 83.0                  | 70.0                      | 80.0                      | 91.5                      | —                         | 799                            | 772                   | —               | —   |                             |
| 62                     | 72.0                   | 82.5                  | 69.0                      | 79.5                      | 91.0                      | —                         | 776                            | 746                   | —               | —   |                             |
| 61                     | 71.5                   | 82.0                  | 67.5                      | 78.5                      | 90.5                      | —                         | 754                            | 720                   | —               | —   |                             |
| 60                     | 70.5                   | 81.0                  | 66.5                      | 77.5                      | 90.0                      | —                         | 732                            | 697                   | —               | —   |                             |
| 59                     | 70.0                   | 80.5                  | 65.5                      | 76.5                      | —                         | —                         | 710                            | 674                   | —               | —   | 351                         |
| 58                     | 69.0                   | 80.0                  | 64.5                      | 75.5                      | 89.5                      | —                         | 690                            | 653                   | 2.47            | 615 | 338                         |
| 57                     | 68.5                   | 79.5                  | 63.0                      | 75.0                      | 89.0                      | —                         | 670                            | 633                   | 2.51            | 595 | 325                         |
| 56                     | 67.5                   | 79.0                  | 62.0                      | 74.0                      | 88.5                      | —                         | 650                            | 613                   | 2.55            | 577 | 313                         |
| 55                     | 67.0                   | 78.5                  | 61.0                      | 73.0                      | 88.0                      | —                         | 630                            | 595                   | 2.59            | 560 | 301                         |
| 54                     | 66.0                   | 78.0                  | 60.0                      | 72.0                      | 87.5                      | —                         | 612                            | 577                   | 2.63            | 543 | 292                         |
| 53                     | 65.5                   | 77.5                  | 58.5                      | 71.0                      | 87.0                      | —                         | 594                            | 560                   | 2.67            | 525 | 283                         |
| 52                     | 64.5                   | 77.0                  | 57.5                      | 70.0                      | 86.5                      | —                         | 576                            | 544                   | 2.70            | 512 | 273                         |
| 51                     | 64.0                   | 76.5                  | 56.0                      | 69.5                      | 86.0                      | —                         | 558                            | 528                   | 2.75            | 496 | 264                         |
| 50                     | 63.0                   | 76.0                  | 55.0                      | 68.5                      | 85.5                      | —                         | 542                            | 513                   | 2.79            | 481 | 255                         |
| 49                     | 62.0                   | 75.0                  | 54.0                      | 67.5                      | 85.0                      | —                         | 526                            | 498                   | 2.83            | 469 | 246                         |
| 48                     | 61.5                   | 74.5                  | 52.5                      | 66.5                      | 84.5                      | —                         | 510                            | 484                   | 2.87            | 455 | 238                         |
| 47                     | 61.0                   | 74.0                  | 51.5                      | 66.0                      | 84.0                      | —                         | 495                            | 471                   | 2.91            | 443 | 229                         |
| 46                     | 60.0                   | 73.5                  | 50.5                      | 65.0                      | 83.5                      | —                         | 480                            | 458                   | 2.94            | 432 | 221                         |
| 45                     | 59.0                   | 73.0                  | 49.0                      | 64.0                      | 83.0                      | —                         | 466                            | 446                   | 2.98            | 421 | 215                         |
| 44                     | 58.5                   | 72.5                  | 48.0                      | 63.0                      | 82.5                      | —                         | 452                            | 434                   | 3.02            | 409 | 208                         |
| 43                     | 57.5                   | 72.0                  | 46.5                      | 62.0                      | 82.0                      | —                         | 438                            | 423                   | 3.05            | 400 | 201                         |
| 42                     | 57.0                   | 71.5                  | 45.5                      | 61.5                      | 81.5                      | —                         | 426                            | 412                   | 3.09            | 390 | 194                         |
| 41                     | 56.0                   | 71.0                  | 44.5                      | 60.5                      | 81.0                      | —                         | 414                            | 402                   | 3.13            | 381 | 188                         |
| 40                     | 55.5                   | 70.0                  | 43.0                      | 59.5                      | 80.5                      | —                         | 402                            | 392                   | 3.17            | 371 | 182                         |
| 39                     | 54.5                   | 70.0                  | 42.0                      | 58.5                      | 80.0                      | —                         | 391                            | 382                   | 3.21            | 362 | 177                         |
| 38                     | 54.0                   | 69.5                  | 41.0                      | 57.5                      | 79.5                      | —                         | 380                            | 372                   | 3.24            | 353 | 171                         |
| 37                     | 53.0                   | 69.0                  | 39.5                      | 57.0                      | 79.0                      | —                         | 370                            | 363                   | 3.28            | 344 | 166                         |
| 36                     | 52.5                   | 68.5                  | 38.5                      | 56.0                      | 78.5                      | —                         | 360                            | 354                   | 3.32            | 336 | 161                         |
| 35                     | 51.5                   | 68.0                  | 37.0                      | 55.0                      | 77.5                      | —                         | 351                            | 345                   | 3.36            | 327 | 156                         |
| 34                     | 51.0                   | 67.5                  | 36.0                      | 54.0                      | 77.0                      | —                         | 342                            | 336                   | 3.41            | 319 | 152                         |
| 33                     | 50.0                   | 67.0                  | 35.0                      | 53.5                      | 76.5                      | —                         | 334                            | 327                   | 3.45            | 311 | 149                         |
| 32                     | 49.0                   | 66.5                  | 33.5                      | 52.0                      | 76.0                      | —                         | 326                            | 318                   | 3.50            | 301 | 146                         |
| 31                     | 48.5                   | 66.0                  | 32.5                      | 51.5                      | 75.5                      | —                         | 318                            | 310                   | 3.54            | 294 | 141                         |
| 30                     | 47.5                   | 65.5                  | 31.5                      | 50.5                      | 75.0                      | 92.0                      | 311                            | 302                   | 3.59            | 286 | 138                         |
| 29                     | 47.0                   | 65.0                  | 30.0                      | 49.5                      | 74.5                      | 91.0                      | 304                            | 294                   | 3.64            | 279 | 135                         |
| 28                     | 46.0                   | 64.5                  | 29.0                      | 48.5                      | 74.0                      | 90.0                      | 297                            | 286                   | 3.69            | 271 | 131                         |
| 27                     | 45.0                   | 64.0                  | 28.0                      | 47.5                      | 73.5                      | 89.0                      | 290                            | 279                   | 3.73            | 264 | 128                         |
| 26                     | 44.5                   | 63.5                  | 26.5                      | 47.0                      | 73.0                      | 88.0                      | 284                            | 272                   | 3.77            | 258 | 125                         |
| 25                     | 44.0                   | 63.0                  | 25.5                      | 46.0                      | 72.0                      | 87.0                      | 278                            | 266                   | 3.81            | 253 | 123                         |
| 24                     | 43.0                   | 62.5                  | 24.5                      | 45.0                      | 71.5                      | 86.0                      | 272                            | 260                   | 3.86            | 247 | 119                         |
| 23                     | 42.0                   | 62.0                  | 23.0                      | 44.0                      | 71.0                      | 84.5                      | 266                            | 254                   | 3.89            | 243 | 117                         |
| 22                     | 41.5                   | 61.5                  | 22.0                      | 43.0                      | 70.5                      | 83.5                      | 261                            | 248                   | 3.93            | 237 | 115                         |
| 21                     | 41.0                   | 61.0                  | 20.5                      | 42.5                      | 70.0                      | 82.5                      | 256                            | 243                   | 3.98            | 231 | 112                         |
| 20                     | 40.0                   | 60.5                  | 19.5                      | 41.5                      | 69.5                      | 81.0                      | 251                            | 238                   | 4.02            | 226 | 110                         |

- Conversion values are only approximate and may be inaccurate for specific applications. Conversion data from ASTM Standard E140 and A370 courtesy of ASTM. Rockwell numbers have been rounded to nearest 0.5 hardness numbers. Conversion values are based on tests on non-austenitic steels. ASTM E140 should be consulted for hardness conversion data for a number of other metals.
- Conversion of hardness values should be used only when it is impossible to test the material on the hardness scale specified. All hardness values should be considered approximate and Rockwell hardness numbers should be rounded to the nearest whole number.
- The hardness-tensile strength relationship is approximate and applies only for steel. The tensile strength information should not be used for austenitic stainless steels but has been shown to be applicable for ferritic and martensitic stainless steels.
- Brinell hardness values above 450HB are based on the use of a tungsten carbide ball.



# HARDNESS CONVERSIONS

| ROCKWELL SCALES           |                          |                           |                            |                            |                            |                          |                          |                       | KNOOP<br>500gm<br>& OVER<br>HK | 3000 KG      |          | 500 KG | TENSILE<br>STRENGTH<br>KPSI |
|---------------------------|--------------------------|---------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|-----------------------|--------------------------------|--------------|----------|--------|-----------------------------|
| B<br>100 KG<br>1/16" BALL | F<br>60 KG<br>1/16" BALL | G<br>150 KG<br>1/16" BALL | 45T<br>45 KG<br>1/16" BALL | 30T<br>30 KG<br>1/16" BALL | 15T<br>15 KG<br>1/16" BALL | E<br>100 KG<br>1/8" BALL | K<br>150 KG<br>1/8" BALL | A<br>60 KG<br>DIAMOND |                                | DIA.<br>(mm) | HB<br>HV | HB     |                             |
| 100                       | —                        | 82.5                      | 73.0                       | 83.0                       | 93.0                       | —                        | —                        | 61.5                  | 251                            | 3.91         | 240      | —      | 116                         |
| 99                        | —                        | 81.0                      | 72.0                       | 82.5                       | —                          | —                        | —                        | 61.0                  | 246                            | 3.96         | 234      | —      | 114                         |
| 98                        | —                        | 79.0                      | 71.0                       | 82.0                       | 92.5                       | —                        | —                        | 60.0                  | 241                            | 4.01         | 228      | —      | 109                         |
| 97                        | —                        | 77.5                      | 70.0                       | 81.0                       | 92.0                       | —                        | —                        | 59.5                  | 236                            | 4.06         | 222      | —      | 104                         |
| 96                        | —                        | 76.0                      | 69.0                       | 80.5                       | —                          | —                        | —                        | 59.0                  | 231                            | 4.11         | 216      | —      | 102                         |
| 95                        | —                        | 74.0                      | 68.0                       | 80.0                       | 91.5                       | —                        | —                        | 58.5                  | 226                            | 4.17         | 210      | —      | 100                         |
| 94                        | —                        | 72.5                      | 67.0                       | 79.0                       | —                          | —                        | —                        | 57.5                  | 221                            | 4.21         | 205      | —      | 98                          |
| 93                        | —                        | 71.0                      | 66.0                       | 78.5                       | 91.0                       | —                        | —                        | 57.0                  | 216                            | 4.26         | 200      | 166    | 94                          |
| 92                        | —                        | 69.0                      | 65.0                       | 78.0                       | 90.5                       | —                        | 100                      | 56.5                  | 211                            | 4.32         | 195      | 162    | 92                          |
| 91                        | —                        | 67.5                      | 64.0                       | 77.0                       | —                          | —                        | 99.5                     | 56.0                  | 206                            | 4.37         | 190      | 159    | 90                          |
| 90                        | —                        | 66.0                      | 63.0                       | 76.5                       | 90.0                       | —                        | 98.5                     | 55.0                  | 201                            | 4.43         | 185      | 156    | 89                          |
| 89                        | —                        | 64.0                      | 62.0                       | 76.0                       | 89.5                       | —                        | 98.0                     | 54.5                  | 196                            | 4.48         | 180      | 154    | 88                          |
| 88                        | —                        | 62.5                      | 61.0                       | 75.0                       | —                          | —                        | 97.0                     | 54.0                  | 192                            | 4.53         | 176      | 150    | 86                          |
| 87                        | —                        | 61.0                      | 60.0                       | 74.5                       | 89.0                       | —                        | 96.5                     | 53.5                  | 188                            | 4.58         | 172      | 147    | 84                          |
| 86                        | —                        | 59.0                      | 59.0                       | 74.0                       | 88.5                       | —                        | 95.5                     | 53.0                  | 184                            | 4.62         | 169      | 146    | 83                          |
| 85                        | —                        | 57.5                      | 58.0                       | 73.0                       | —                          | —                        | 94.5                     | 52.5                  | 180                            | 4.67         | 165      | 142    | 82                          |
| 84                        | —                        | 56.0                      | 57.0                       | 72.5                       | 88.0                       | —                        | 94.0                     | 51.5                  | 176                            | 4.71         | 162      | 141    | 81                          |
| 83                        | —                        | 54.0                      | 56.0                       | 72.0                       | 87.5                       | —                        | 93.0                     | 51.0                  | 173                            | 4.75         | 159      | 138    | 80                          |
| 82                        | —                        | 52.5                      | 55.0                       | 71.0                       | —                          | —                        | 92.0                     | 50.5                  | 170                            | 4.80         | 156      | 136    | 77                          |
| 81                        | —                        | 51.0                      | 54.0                       | 70.5                       | 87.0                       | —                        | 91.0                     | 50.0                  | 167                            | 4.84         | 153      | 134    | 73                          |
| 80                        | —                        | 49.0                      | 53.0                       | 69.5                       | 86.5                       | —                        | 90.5                     | 49.5                  | 164                            | 4.88         | 150      | 131    | 72                          |
| 79                        | —                        | 47.5                      | 52.0                       | 69.0                       | —                          | —                        | 89.5                     | 49.0                  | 161                            | 4.93         | 147      | 129    | 70                          |
| 78                        | —                        | 46.0                      | 51.0                       | 68.5                       | 86.0                       | —                        | 88.5                     | 48.5                  | 158                            | 4.98         | 144      | 128    | 69                          |
| 77                        | —                        | 44.0                      | 50.0                       | 67.5                       | 85.5                       | —                        | 88.0                     | 48.0                  | 155                            | 5.02         | 141      | 124    | 68                          |
| 76                        | —                        | 42.5                      | 49.0                       | 67.0                       | —                          | —                        | 87.0                     | 47.5                  | 152                            | 5.06         | 139      | 122    | 67                          |
| 75                        | 99.5                     | 41.0                      | 48.0                       | 66.5                       | 85.0                       | —                        | 86.0                     | 47.0                  | 150                            | 5.10         | 137      | 121    | 66                          |
| 74                        | 99.0                     | 39.0                      | 47.0                       | 65.5                       | 84.5                       | —                        | 85.0                     | 46.5                  | 147                            | 5.13         | 135      | 119    | 65                          |
| 73                        | 98.5                     | 37.5                      | 46.0                       | 65.0                       | —                          | —                        | 84.5                     | 46.0                  | 145                            | 5.18         | 132      | 116    | 64                          |
| 72                        | 98.0                     | 36.0                      | 45.0                       | 64.5                       | 84.0                       | —                        | 83.5                     | 45.5                  | 143                            | 5.22         | 130      | 114    | 63                          |
| 71                        | 97.5                     | 34.5                      | 44.0                       | 63.5                       | —                          | 100                      | 82.5                     | 45.0                  | 141                            | 5.27         | 127      | 113    | 62                          |
| 70                        | 97.0                     | 32.5                      | 43.0                       | 63.0                       | 83.5                       | 99.5                     | 81.5                     | 44.5                  | 139                            | 5.32         | 125      | 112    | 61                          |
| 69                        | 96.0                     | 31.0                      | 42.0                       | 62.5                       | 83.0                       | 99.0                     | 81.0                     | 44.0                  | 137                            | 5.36         | 123      | 110    | 60                          |
| 68                        | 95.5                     | 29.5                      | 41.0                       | 61.5                       | —                          | 98.0                     | 80.0                     | 43.5                  | 135                            | 5.40         | 121      | 108    | 59                          |
| 67                        | 95.0                     | 28.0                      | 40.0                       | 61.0                       | 82.5                       | 97.5                     | 79.0                     | 43.0                  | 133                            | 5.44         | 119      | 106    | 58                          |
| 66                        | 94.5                     | 26.5                      | 38.5                       | 60.5                       | 82.0                       | 97.0                     | 78.0                     | 42.5                  | 131                            | 5.48         | 117      | 105    | 57                          |
| 65                        | 94.0                     | 25.0                      | 37.5                       | 59.5                       | —                          | 96.0                     | 77.5                     | 42.0                  | 129                            | 5.51         | 116      | 103    | 56                          |
| 64                        | 93.5                     | 23.5                      | 36.5                       | 59.0                       | 81.5                       | 95.5                     | 76.5                     | 41.5                  | 127                            | 5.54         | 114      | 101    | —                           |
| 63                        | 93.0                     | 22.0                      | 35.5                       | 58.5                       | 81.0                       | 95.0                     | 75.5                     | 41.0                  | 125                            | 5.58         | 112      | 99     | —                           |
| 62                        | 92.0                     | 20.5                      | 34.5                       | 57.5                       | —                          | 94.5                     | 74.5                     | 40.5                  | 124                            | 5.63         | 110      | 97     | —                           |
| 61                        | 91.5                     | 19.0                      | 33.5                       | 57.0                       | 80.5                       | 93.5                     | 74.0                     | 40.0                  | 122                            | 5.68         | 108      | 95     | —                           |
| 60                        | 91.0                     | 17.5                      | 32.5                       | 56.5                       | 80.0                       | 93.0                     | 73.0                     | 39.5                  | 120                            | 5.70         | 107      | 94     | —                           |
| 59                        | 90.5                     | 16.0                      | 31.5                       | 55.5                       | —                          | 92.5                     | 72.0                     | 39.0                  | 118                            | 5.73         | 106      | 93     | —                           |
| 58                        | 90.0                     | 14.5                      | 30.5                       | 55.0                       | 79.5                       | 92.0                     | 71.0                     | 38.5                  | 117                            | 5.77         | 104      | 92     | —                           |
| 57                        | 89.5                     | 13.0                      | 29.5                       | 54.5                       | —                          | 91.0                     | 70.5                     | 38.0                  | 115                            | 5.81         | 103      | 90     | —                           |
| 56                        | 89.0                     | 11.5                      | 28.5                       | 53.5                       | 79.0                       | 90.5                     | 69.5                     | 37.5                  | 114                            | 5.85         | 101      | 88     | —                           |
| 55                        | 88.0                     | 10.0                      | 27.5                       | 53.0                       | 78.5                       | 90.0                     | 68.5                     | —                     | 112                            | 5.87         | 100      | 87     | —                           |
| 54                        | 87.5                     | 8.5                       | 26.5                       | 52.5                       | —                          | 89.5                     | 68.0                     | 37.0                  | 111                            | —            | —        | 86     | —                           |
| 53                        | 87.0                     | 7.0                       | 25.5                       | 51.5                       | 78.0                       | 89.0                     | 67.0                     | 36.5                  | 110                            | —            | —        | 85     | —                           |
| 52                        | 86.5                     | 5.5                       | 24.5                       | 51.0                       | 77.5                       | 88.0                     | 66.0                     | 36.0                  | 109                            | —            | —        | 84     | —                           |
| 51                        | 86.0                     | 4.0                       | 23.5                       | 50.5                       | —                          | 87.5                     | 65.0                     | 35.5                  | 108                            | —            | —        | 83     | —                           |
| 50                        | 85.5                     | 2.5                       | 22.5                       | 49.5                       | 77.0                       | 87.0                     | 64.5                     | 35.0                  | 107                            | —            | —        | 82     | —                           |
| 49                        | 85.0                     | —                         | 21.5                       | 49.0                       | 76.5                       | 86.5                     | 63.5                     | 34.5                  | 106                            | —            | —        | 81     | —                           |
| 48                        | 84.5                     | —                         | 20.5                       | 48.5                       | —                          | 85.5                     | 62.5                     | 34.0                  | 105                            | —            | —        | 80     | —                           |
| 47                        | 83.5                     | —                         | 19.5                       | 47.5                       | 76.0                       | 85.0                     | 61.5                     | 33.5                  | 104                            | —            | —        | —      | —                           |
| 46                        | 83.0                     | —                         | 18.5                       | 47.0                       | 75.5                       | 84.5                     | 61.0                     | —                     | 103                            | —            | —        | 79     | —                           |
| 45                        | 82.5                     | —                         | 17.5                       | 46.5                       | —                          | 84.0                     | 60.0                     | 33.0                  | 102                            | —            | —        | 78     | —                           |
| 44                        | 82.0                     | —                         | 16.5                       | 45.5                       | 75.0                       | 83.5                     | 59.0                     | 32.5                  | 101                            | —            | —        | 77     | —                           |
| 43                        | 81.5                     | —                         | 15.5                       | 45.0                       | 74.5                       | 82.5                     | 58.0                     | 32.0                  | 100                            | —            | —        | —      | —                           |
| 42                        | 81.0                     | —                         | 14.5                       | 44.5                       | —                          | 82.0                     | 57.5                     | 31.5                  | 99                             | —            | —        | 76     | —                           |
| 41                        | 80.5                     | —                         | 13.5                       | 43.5                       | 74.0                       | 81.5                     | 56.5                     | 31.0                  | 98                             | —            | —        | 75     | —                           |
| 40                        | 79.5                     | —                         | 12.5                       | 43.0                       | 73.5                       | 81.0                     | 55.5                     | —                     | 97                             | —            | —        | 74     | —                           |
| 39                        | 79.0                     | —                         | 11.5                       | 42.5                       | —                          | 80.0                     | 54.5                     | 30.5                  | 96                             | —            | —        | —      | —                           |
| 38                        | 78.5                     | —                         | 10.5                       | 41.5                       | 73.0                       | 79.5                     | 54.0                     | 30.0                  | 95                             | —            | —        | 73     | —                           |
| 37                        | 78.0                     | —                         | 9.5                        | 41.0                       | 72.5                       | 79.0                     | 53.0                     | 29.5                  | 94                             | —            | —        | 72     | —                           |
| 36                        | 77.5                     | —                         | 8.5                        | 40.5                       | —                          | 78.5                     | 52.0                     | 29.0                  | 93                             | —            | —        | 71     | —                           |
| 35                        | 77.0                     | —                         | 7.5                        | 39.5                       | 72.0                       | 78.0                     | 51.5                     | 28.5                  | 92                             | —            | —        | 70     | —                           |
| 34                        | 76.5                     | —                         | 6.5                        | 39.0                       | —                          | 77.0                     | 50.5                     | 28.0                  | 91                             | —            | —        | 69     | —                           |
| 33                        | 75.5                     | —                         | 5.5                        | 38.5                       | 71.5                       | 76.5                     | 49.5                     | —                     | 90                             | —            | —        | 68     | —                           |
| 32                        | 75.0                     | —                         | 4.5                        | 37.5                       | 71.0                       | 76.0                     | 48.5                     | 27.5                  | 89                             | —            | —        | 67     | —                           |
| 31                        | 74.5                     | —                         | 3.5                        | 37.0                       | —                          | 75.5                     | 48.0                     | 27.0                  | 88                             | —            | —        | —      | —                           |
| 30                        | 74.0                     | —                         | 2.5                        | 36.5                       | 70.5                       | 75.0                     | 47.0                     | 26.5                  | 87                             | —            | —        | 66     | —                           |

With pride, we participate in these organizations:



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Solutions that Work!**