

**Tabelle: Saitenmaterialvergleich / string material comparison**

Anbei erhalten Sie einen tabellarischen Vergleich der Reißfestigkeiten der bei uns erhältlichen Saitenmaterialien. Die Vergleichsdaten sind Richtwerte, die nach oben oder unten abweichen können. Die genauen Daten (Reisstests) erhalten Sie mit dem gelieferten Saitenmaterial.

Enclosed you get a tabulated comparison of tensile strengthes of our available string materials. All datas are reference values and can vary up or down. You receive the exact (tearing test) with the delivered string material.

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| nNb.Syst. | Material-> | Parameter<br>spez. Gewicht / density -> | Kupferhof | Lorraine | Rose   | Märkisch | Freiberg | Gug    | Stolberg | Rose   | Vogel   | Vogel*** | <-Material |  |
|-----------|------------|---|-----------|----------|--------|----------|----------|--------|----------|--------|---------|----------|------------|--|
| Darht N°  | ø          |   | CuZn05    | CuZn10   | CuZn10 | CuZn15   | CuZn20   | CuZn28 | CuZn30   | CuZn30 | CuSn06  | CuSn08   | ø          |  |
| 9 ½       | 0,160      | Bruch N/mm²                             |           |          |        |          |          |        |          |        |         |          | 0,160      |  |
|           |            | max.Kraft %                             |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        |          |        |         |          |            |  |
| 9         | 0,169      | Bruch N/mm²                             |           |          |        |          |          | 811    |          |        |         |          | 0,169      |  |
|           |            | max.Kraft %                             |           |          |        |          |          | 72%    |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        | 583      |        |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        | 263      |        |         |          |            |  |
| 8 ½       | 0,179      | Bruch N/mm²                             |           |          |        |          |          | 813    | 1024 C   |        |         |          | 0,179      |  |
|           |            | max.Kraft %                             |           |          |        |          |          | 72%    | 60%      |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        | 581      | 621    |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        | 263      | 273    |         |          |            |  |
| 8         | 0,190      | Bruch N/mm²                             |           |          |        |          |          |        |          |        |         |          | 0,190      |  |
|           |            | max.Kraft %                             |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        |          | 1017 C | 975 (C) | 1102 (C) |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        |          | 58%    | 60%     | 82%      |            |  |
| 7 ½       | 0,200      | Bruch N/mm²                             |           |          |        |          |          |        |          |        |         |          | 0,200      |  |
|           |            | max.Kraft %                             |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        |          |        |         |          |            |  |
| 7         | 0,211      | Bruch N/mm²                             |           |          |        |          |          |        |          |        |         |          | 0,211      |  |
|           |            | max.Kraft %                             |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        |          |        |         |          |            |  |
| 6 ½       | 0,223      | Bruch N/mm²                             |           |          |        |          |          |        |          |        |         |          | 0,223      |  |
|           |            | max.Kraft %                             |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Spannung N/mm²                      |           |          |        |          |          |        |          |        |         |          |            |  |
|           |            | Max.Mens. c² in mm bei 415 Hz a¹        |           |          |        |          |          |        |          |        |         |          |            |  |

| nNb.Syst. |       | Parameter  | Kupferhof          | Lorraine           | Rose               | Märkisch           | Freiberg           | Gug                | Stolberg           | Rose               | Vogel              | Vogel***           |                      |
|-----------|-------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|
| Darht N°  | ø     |  | CuZn <sub>05</sub> | CuZn <sub>10</sub> | CuZn <sub>10</sub> | CuZn <sub>15</sub> | CuZn <sub>20</sub> | CuZn <sub>28</sub> | CuZn <sub>30</sub> | CuZn <sub>30</sub> | CuSn <sub>06</sub> | CuSn <sub>08</sub> | ø                    |
| 6         | 0,235 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 938                | 904                | 1010 (C)           | 992 (C)            | 1114               |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 61%                | 63%                | 60%                | 61%                | 68%                |                    | 0,23 <sub>Rose</sub> |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 579                | 569                | 610                | 602                | 759                |                    | 0,235                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 261                | 260                | 270                | 269                | 296                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 246                | 245                | 255                | 254                | 280                |                    |                      |
| 5 ½       | 0,248 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 948                | 890                | 1018               | 1022 (C)           | 1011               |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 60%                | 64%                | 58%                | 59%                | 82%                |                    |                      |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 572                | 569                | 592                | 604                | 825                |                    | 0,248                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 260                | 569                | 267                | 269                | 309                |                    | 0,25 <sub>Rose</sub> |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 245                | 245                | 252                | 254                | 291                |                    |                      |
| 5         | 0,262 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 1018               | 877                | 966                |                    | 1115 (C)           |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 60%                | 64%                | 61%                |                    | 65%                |                    |                      |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 606                | 565                | 589                |                    | 734                |                    | 0,262                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 267                | 258                | 266                |                    | 289                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 252                | 244                | 251                |                    | 273                |                    |                      |
| 4 ½       | 0,277 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 987                | 879                | 1004 (C)           | 984 (C)            | 1036 (C)           |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 57%                | 63%                | 59%                | 59%                | 71 %               |                    | 0,27 <sub>Rose</sub> |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 567                | 554                | 600                | 585                | 844                |                    | 0,277                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 258                | 256                | 268                | 265                | 312                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 244                | 242                | 253                | 250                | 285                |                    |                      |
| 4         | 0,292 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 948                | 864                | 1005               |                    | 1091 (C)           |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 60%                | 62%                | 58%                |                    | 61%                |                    |                      |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 573                | 536                | 588                |                    | 674                |                    | 0,292                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 260                | 252                | 265                |                    | 279                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 245                | 238                | 250                |                    | 263                |                    |                      |
| 3 ½       | 0,309 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 959                | 868                | 1003               | 976 (C)            | 1155 (C)           |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 59%                | 62%                | 58%                | 62%                | 66%                |                    | 0,30 <sub>Rose</sub> |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 561                | 538                | 581                | 604                | 763                |                    | 0,309                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 257                | 252                | 263                | 269                | 297                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 243                | 238                | 249                | 254                | 280                |                    |                      |
| 3         | 0,326 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    |                    | 945                | 869                | 982                | 980 (C)            | 1262               |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    |                    | 59%                | 61%                | 57%                | 60%                | 58%                |                    |                      |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    |                    | 557                | 526                | 565                | 591                | 736                |                    | 0,326                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    |                    | 256                | 250                | 260                | 266                | 292                |                    | 0,33 <sub>Rose</sub> |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    |                    | 242                | 236                | 246                | 251                | 275                |                    |                      |
| 2 ½       | 0,344 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    | 806                | 971                | 854                | 979                |                    | 1251               |                    |                      |
|           |       | max.Kraft %  |                    |                    |                    | 65%                | 60%                | 58%                | 57%                |                    | 60%                |                    |                      |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    | 529                | 587                | 494                | 565                |                    | 750                |                    | 0,344                |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    | 249                | 263                | 242                | 26                 |                    | 294                |                    |                      |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    | 235                | 248                | 228                | 245                |                    | 278                |                    |                      |

| nNb.Syst. |                      | Parameter  | Kupferhof          | Lorraine           | Rose               | Märkisch           | Freiberg           | Gug                | Stolberg           | Rose               | Vogel              | Vogel***           |                      |
|-----------|----------------------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------|
| Darht N°  | ø                    |  | CuZn <sub>05</sub> | CuZn <sub>10</sub> | CuZn <sub>10</sub> | CuZn <sub>15</sub> | CuZn <sub>20</sub> | CuZn <sub>28</sub> | CuZn <sub>30</sub> | CuZn <sub>30</sub> | CuSn <sub>06</sub> | CuSn <sub>08</sub> | ø                    |
| 2         | 0,36 <sub>Rose</sub> | Bruch N/mm <sup>2</sup>                                  |                    |                    | 661                | 800 (C)            | 948                | 846                | 985                | 950 (C)            | 1237               |                    |                      |
|           |                      | max.Kraft %  |                    |                    | 71%                | 57%                | 61%                | 58%                | 56%                | 64%                | 60%                |                    | 0,36 <sub>Rose</sub> |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           |                    |                    | 473                | 459                | 574                | 493                | 554                | 607                | 750                |                    | 0,364                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    | 234                | 232                | 260                | 242                | 258                | 270                | 294                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    | 222                | 219                | 245                | 228                | 243                | 255                | 277                |                    |                      |
| 1 ½       | 0,384                | Bruch N/mm <sup>2</sup>                                  | 585                |                    |                    | 790 (C)            | 972                | 876                | 991                |                    | 1233               |                    |                      |
|           |                      | max.Kraft %  | 65%                |                    |                    | 61%                | 61%                | 59%                | 56%                |                    | 60%                |                    |                      |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 384                |                    |                    | 480                | 597                | 521                | 557                |                    | 746                |                    | 0,384                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 209                |                    |                    | 237                | 265                | 249                | 259                |                    | 294                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 198                |                    |                    | 223                | 250                | 235                | 244                |                    | 277                |                    |                      |
| 1         | 0,40 <sub>Rose</sub> | Bruch N/mm <sup>2</sup>                                  | 580                |                    | 649                | 762 (C)            | 935                | 859                | 963                | 938 (C)            | 1231               |                    |                      |
|           |                      | max.Kraft %  | 64%                |                    | 71%                | 65%                | 60%                | 60%                | 59%                | 59%                | 58%                |                    | 0,40 <sub>Rose</sub> |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 370                |                    | 458                | 501                | 565                | 512                | 569                | 554                | 718                |                    | 0,406                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 206                |                    | 231                | 242                | 258                | 247                | 261                | 258                | 288                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 195                |                    | 218                | 229                | 243                | 233                | 246                | 243                | 272                |                    |                      |
| ½         | 0,429                | Bruch N/mm <sup>2</sup>                                  | 567                |                    | 649                | 751 (C)            | 921                | 889                | 963                |                    | 1191               |                    |                      |
|           |                      | max.Kraft %  | 64%                |                    | 67%                | 59%                | 62%                | 58%                | 57%                |                    | 60%                |                    |                      |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 367                |                    | 433                | 445                | 568                | 515                | 552                |                    | 711                |                    | 0,429                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 205                |                    | 225                | 228                | 259                | 247                | 257                |                    | 287                |                    | 0,44 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 193                |                    | 212                | 215                | 244                | 233                | 243                |                    | 271                |                    |                      |
| 0         | 0,453                | Bruch N/mm <sup>2</sup>                                  | 567                |                    |                    | 721 (C)            | 963                | 891                | 958                | 929 (C)            | 1203               |                    |                      |
|           |                      | max.Kraft %  | 64%                |                    |                    | 66%                | 63%                | 59%                | 55%                | 58%                | 63%                |                    |                      |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 362                |                    |                    | 482                | 602                | 526                | 530                | 544                | 760                |                    | 0,453                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 204                |                    |                    | 238                | 266                | 250                | 252                | 256                | 296                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 192                |                    |                    | 225                | 251                | 236                | 238                | 241                | 280                |                    |                      |
| ½ 00      | 0,478                | Bruch N/mm <sup>2</sup>                                  | 559                |                    | 614                | 758                | 949                | 870                | 950                | 919 (C)            | 1195               |                    |                      |
|           |                      | max.Kraft %  | 62%                |                    | 70%                | 64%                | 59%                | 58%                | 53%                | 61%                | 52%                |                    |                      |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 345                |                    | 430                | 486                | 559                | 500                | 508                | 564                | 626                |                    | 0,478                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 199                |                    | 224                | 238                | 257                | 243                | 247                | 26                 | 269                |                    | 0,48 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 188                |                    | 212                | 225                | 242                | 233                | 233                | 246                | 254                |                    |                      |
| 2/0       | 0,505                | Bruch N/mm <sup>2</sup>                                  | 550                |                    |                    | 738                | 877                | 884                | 943                |                    | 1173               |                    |                      |
|           |                      | max.Kraft %  | 62%                |                    |                    | 62%                | 61%                | 59%                | 55%                |                    | 63%                |                    |                      |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 345                |                    |                    | 457                | 531                | 492                | 520                |                    | 741                |                    | 0,505                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 199                |                    |                    | 231                | 250                | 242                | 250                |                    | 292                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 188                |                    |                    | 218                | 236                | 228                | 237                |                    | 276                |                    |                      |
| ½ 000     | 0,52 <sub>Rose</sub> | Bruch N/mm <sup>2</sup>                                  | 543                |                    | 620                | 747 (C)            | 858                | 866                | 946                | 889 (C)            | 1155               |                    |                      |
|           |                      | max.Kraft %  | 61%                |                    | 69%                | 59%                | 62%                | 57%                | 55%                | 57%                | 58%                |                    | 0,52 <sub>Rose</sub> |
|           |                      | Max.Spannung N/mm <sup>2</sup>                           | 332                |                    | 430                | 444                | 529                | 492                | 520                | 509                | 668                |                    | 0,533                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 195                |                    | 224                | 228                | 250                | 242                | 250                | 247                | 278                |                    |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 184                |                    | 211                | 215                | 237                | 228                | 235                | 233                | 262                |                    |                      |

| nNb.Syst. |                      | Parameter  | Kupferhof | Lorraine | Rose   | Märkisch | Freiberg | Gug    | Stolberg | Rose    | Vogel  | Vogel*** |                      |
|-----------|----------------------|--|-----------|----------|--------|----------|----------|--------|----------|---------|--------|----------|----------------------|
| Darht N°  | ø                    |  | CuZn05    | CuZn10   | CuZn10 | CuZn15   | CuZn20   | CuZn28 | CuZn30   | CuZn30  | CuSn06 | CuSn08   | ø                    |
| 3/0       |                      | Bruch N/mm <sup>2</sup>                                  | 539       |          | 623    | 735 (C)  | 873      | 866    | 919      | 884 (C) | 1152   |          |                      |
|           | 0,56 <sub>Rose</sub> | max.Kraft %  | 61%       |          | 65%    | 58%      | 63%      | 57%    | 58%      | 61      | 61%    |          | 0,56 <sub>Rose</sub> |
|           | 0,563                | Max.Spannung   | 329       |          | 407    | 426      | 555      | 492    | 539      | 543     | 712    |          | 0,563                |
|           |                      | Max.Mens. c <sup>2</sup> bei 415 Hz a <sup>1</sup>       | 194       |          | 218    | 223      | 256      | 242    | 254      | 255     | 287    |          |                      |
|           |                      | Max.Mens. c <sup>2</sup> bei 440 Hz a <sup>1</sup>       | 183       |          | 206    | 211      | 241      | 228    | 240      | 241     | 270    |          |                      |
| ½ 4/0     |                      | Bruch N/mm <sup>2</sup>                                  | 534       |          | 582    | 701      | 933      | 848    | 928      | 848 (C) | 1151   |          |                      |
|           |                      | max.Kraft %  | 61%       |          | 64%    | 63%      | 61%      | 58%    | 59%      | 58%     | 59%    |          |                      |
|           | 0,595                | Max.Spannung N/mm <sup>2</sup>                           | 328       |          | 372    | 447      | 575      | 493    | 550      | 492     | 683    |          | 0,595                |
|           | 0,60 <sub>Rose</sub> | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 194       |          | 208    | 229      | 260      | 242    | 256      | 243     | 281    |          | 0,60 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 183       |          | 197    | 216      | 246      | 228    | 242      | 229     | 265    |          |                      |
| 4/0       |                      | Bruch N/mm <sup>2</sup>                                  | 526       |          |        | 738      | 930      | 895    | 906      |         | 1115   |          |                      |
|           |                      | max.Kraft %  | 64%       |          |        | 63%      | 61%      | 56%    | 55%      |         | 57%    |          |                      |
|           | 0,628                | Max.Spannung N/mm <sup>2</sup>                           | 338       |          |        | 471      | 569      | 52     | 496      |         | 641    |          | 0,628                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 197       |          |        | 234      | 259      | 244    | 244      |         | 272    |          |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 187       |          |        | 222      | 244      | 230    | 230      |         | 257    |          |                      |
| ½ 5/0     |                      | Bruch N/mm <sup>2</sup>                                  | 516       |          | 567    | 729      | 829      | 897    | 929      | 838 (C) | 1101   |          |                      |
|           | 0,65 <sub>Rose</sub> | max.Kraft %  | 64%       |          | 66%    | 59%      | 61%      | 55%    | 55%      | 60%     | 55%    |          | 0,65 <sub>Rose</sub> |
|           | 0,663                | Max.Spannung N/mm <sup>2</sup>                           | 331       |          | 371    | 427      | 506      | 489    | 511      | 506     | 602    |          | 0,663                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 196       |          | 208    | 223      | 244      | 241    | 248      | 247     | 263    |          |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 185       |          | 197    | 211      | 231      | 227    | 234      | 233     | 249    |          |                      |
| 5/0       |                      | Bruch N/mm <sup>2</sup>                                  | 515       |          | 576    | 703      | 849      | 846    | 941      | 823 (C) | 1102   |          |                      |
|           | 0,70 <sub>Rose</sub> | max.Kraft %  | 66%       |          | 64%    | 62%      | 59%      | 55%    | 56%      | 58%     | 57%    |          | 0,70 <sub>Rose</sub> |
|           | 0,701                | Max.Spannung N/mm <sup>2</sup>                           | 337       |          | 369    | 473      | 499      | 476    | 526      | 480     | 634    |          | 0,701                |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 197       |          | 207    | 226      | 242      | 237    | 251      | 240     | 270    |          |                      |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 186       |          | 196    | 213      | 229      | 224    | 237      | 227     | 255    |          |                      |
| ½ 6/0     |                      | Bruch N/mm <sup>2</sup>                                  | 518       |          | 570    | 702      | 848      | 866    | 939      | 770 (C) | 1074   |          |                      |
|           |                      | max.Kraft %  | 68%       |          | 60%    | 59%      | 58%      | 55%    | 56%      | 60%     | 58%    |          |                      |
|           | 0,740                | Max.Spannung N/mm <sup>2</sup>                           | 354       |          | 340    | 415      | 492      | 476    | 531      | 458     | 623    |          | 0,740                |
|           | 0,75 <sub>Rose</sub> | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 201       |          | 199    | 232      | 241      | 237    | 252      | 235     | 268    |          | 0,75 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 190       |          | 188    | 219      | 227      | 224    | 238      | 221     | 253    |          |                      |
| 6/0       |                      | Bruch N/mm <sup>2</sup>                                  | 508       |          | 511    | 680      | 834      | 858    | 886      | 749 (C) | 1051   |          |                      |
|           |                      | max.Kraft %  | 68%       |          | 64%    | 57%      | 60%      | 55%    | 55%      | 60%     | 57%    |          |                      |
|           | 0,781                | Max.Spannung N/mm <sup>2</sup>                           | 347       |          | 329    | 391      | 500      | 470    | 489      | 452     | 596    |          | 0,781                |
|           | 0,80 <sub>Rose</sub> | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 199       |          | 196    | 214      | 243      | 236    | 242      | 233     | 262    |          | 0,80 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 188       |          | 185    | 202      | 229      | 223    | 228      | 220     | 247    |          |                      |
| ½ 7/0     |                      | Bruch N/mm <sup>2</sup>                                  | 495       |          |        | 635 (C)  | 952      | 763    | 884      | 776 (C) | 1024   |          |                      |
|           |                      | max.Kraft %  | 70%       |          |        | 64%      | 56%      | 59%    | 56%      | 58%     | 57%    |          |                      |
|           | 0,825                | Max.Spannung N/mm <sup>2</sup>                           | 346       |          |        | 409      | 530      | 451    | 498      | 448     | 588    |          | 0,825                |
|           | 0,85 <sub>Rose</sub> | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 199       |          |        | 219      | 250      | 231    | 244      | 232     | 260    |          | 0,85 <sub>Rose</sub> |
|           |                      | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 188       |          |        | 207      | 236      | 218    | 230      | 219     | 246    |          |                      |

| nNb.Syst. |       | Parameter  | Kupferhof          | Lorraine           | Rose               | Märkisch           | Freiberg           | Gug                | Stolberg           | Rose               | Vogel              | Vogel***           |                            |           |
|-----------|-------|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------------------|-----------|
| Darht N°  | ø     |  | CuZn <sub>05</sub> | CuZn <sub>10</sub> | CuZn <sub>10</sub> | CuZn <sub>15</sub> | CuZn <sub>20</sub> | CuZn <sub>28</sub> | CuZn <sub>30</sub> | CuZn <sub>30</sub> | CuSn <sub>06</sub> | CuSn <sub>08</sub> | ø                          |           |
| 7/0       | 0,871 | Bruch N/mm <sup>2</sup>                                  | 488                |                    |                    | 717 (C)            | 945                | 844                | 887                | 641 (C)            | 1057               |                    | 0,871                      |           |
|           |       | max.Kraft %  | 70%                |                    |                    | 57%                | 56%                | 55%                | 55%                | 60%                | 55%                |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 344                |                    |                    | 408                | 535                | 461                | 492                | 385                | 579                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 198                |                    |                    | 218                | 251                | 234                | 243                | 215                | 259                |                    |                            | 0,90Rose  |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 187                |                    |                    | 206                | 237                | 221                | 229                | 203                | 244                |                    |                            |           |
| ½ 8/0     | 0,920 | Bruch N/mm <sup>2</sup>                                  | 457                |                    |                    | 709 (C)            | 944                | 752                | 875                | 643 (C)            | 1044               |                    | 0,920                      |           |
|           |       | max.Kraft %  | 67%                |                    |                    | 59%                | 56%                | 57%                | 55%                | 59%                | 56%                |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 307                |                    |                    | 417                | 528                | 428                | 480                | 377                | 586                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 188                |                    |                    | 221                | 249                | 225                | 240                | 213                | 260                |                    |                            | 0,95Rose  |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 178                |                    |                    | 208                | 235                | 213                | 226                | 201                | 246                |                    |                            |           |
| 8/0       | 0,972 | Bruch N/mm <sup>2</sup>                                  | 426                |                    |                    | 671 (C)            | 941                | 791                | 870                | 713 (C)            | 1019               |                    | 0,972                      |           |
|           |       | max.Kraft %  | 62%                |                    |                    | 59%                | 54%                | 55%                | 55%                | 57%                | 57%                |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 265                |                    |                    | 396                | 508                | 434                | 480                | 409                | 585                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 175                |                    |                    | 215                | 245                | 227                | 240                | 222                | 260                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 165                |                    |                    | 203                | 231                | 214                | 226                | 209                | 245                |                    |                            |           |
| ½ 9/0     | 1,027 | Bruch N/mm <sup>2</sup>                                  |                    |                    |                    | 668 (C)            | 778                | 810                | 861                | 641 (C)            | 1026               |                    | 1,027                      |           |
|           |       | max.Kraft %  |                    |                    |                    | 60%                | 56%                | 53%                | 56%                | 60%                | 83%                |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |                    |                    |                    | 329                | 436                | 433                | 481                | 385                | 857                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |                    |                    |                    | 215                | 227                | 227                | 240                | 215                | 314                |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |                    |                    |                    | 203                | 214                | 214                | 227                | 203                | 297                |                    |                            |           |
| 9/0       | 1,084 | Bruch N/mm <sup>2</sup>                                  | 399                |                    |                    | **664 (C)          | 773                | 802                | 855                | 641 (C)            |                    |                    | **1,055 <sub>alter</sub> Ø |           |
|           |       | max.Kraft %  | 64%                |                    |                    | **60%              | 56%                | 56%                | 56%                | 60%                |                    |                    | *1,07Rose                  |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 259                |                    |                    | **343              | 432                | 446                | 481                | 385                |                    |                    | 1,084                      |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 173                |                    |                    | **214              | 225                | 230                | 240                | 215                |                    |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 163                |                    |                    | **202              | 213                | 217                | 227                | 203                |                    |                    |                            |           |
| ½ 10/0    | 1,145 | Bruch N/mm <sup>2</sup>                                  | 376                |                    |                    | **635 (C)          |                    | 786                | 840                | 643 (C)            |                    |                    | **1,115 <sub>alter</sub> Ø |           |
|           |       | max.Kraft %  | 64%                |                    |                    | **61%              |                    | 62%                | 57%                | 59%                |                    |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 240                |                    |                    | **387              |                    | 484                | 477                | 377                |                    |                    | 1,145                      |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 170                |                    |                    | **212              |                    | 239                | 239                | 213                |                    |                    | *1,15Rose                  |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 160                |                    |                    | **200              |                    | 226                | 226                | 201                |                    |                    |                            |           |
| 10        | 1,21  | Bruch N/mm <sup>2</sup>                                  | 376                |                    |                    |                    | 739                |                    | 813                | 713 (C)            |                    |                    | 1,21                       |           |
|           |       | max.Kraft %  | 63%                |                    |                    |                    | 56%                |                    | 60%                | 57%                |                    |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 238                |                    |                    |                    | 413                |                    | 491                | 409                |                    |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 166                |                    |                    |                    | 220                |                    | 242                | 222                |                    |                    |                            | *1,23Rose |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 156                |                    |                    |                    | 208                |                    | 228                | 209                |                    |                    |                            |           |
| ½ 11/0    | 1,278 | Bruch N/mm <sup>2</sup>                                  | 365                |                    |                    |                    | 724                |                    |                    | 681 (C)            |                    |                    | 1,278                      |           |
|           |       | max.Kraft %  | 65%                |                    |                    |                    | 56%                |                    |                    | 58%                |                    |                    |                            |           |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 238                |                    |                    |                    | 404                |                    |                    | 398                |                    |                    |                            |           |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 166                |                    |                    |                    | 218                |                    |                    | 218                |                    |                    |                            | *1,30Rose |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 156                |                    |                    |                    | 206                |                    |                    | 206                |                    |                    |                            |           |

| nNb.Syst. |       | Parameter  | Kupferhof  | Lorraine | Rose   | Märkisch | Freiberg | Gug    | Stolberg | Rose     | Vogel  | Vogel*** |       |
|-----------|-------|--|--|----------|--------|----------|----------|--------|----------|----------|--------|----------|-------|
| Darht N°  | Ø     |  | CuZn05   | CuZn10   | CuZn10 | CuZn15   | CuZn20   | CuZn28 | CuZn30   | CuZn30   | CuSn06 | CuSn08   | Ø     |
| 12        | 1,349 | Bruch N/mm <sup>2</sup>                                  |  |          |        |          | 690      |        |          |          |        |          | 1,349 |
|           |       | max.Kraft %  |  |          |        |          | 55%      |        |          |          |        |          |       |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |  |          |        |          | 382      |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |  |          |        |          | 212      |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |  |          |        |          | 200      |        |          |          |        |          |       |
| ½ 12/0    | 1,425 | Bruch N/mm <sup>2</sup>                                  | 303  |          |        |          | 650      |        |          | 6011 (C) |        |          | 1,425 |
|           |       | max.Kraft %  | 67%  |          |        |          | 57%      |        |          | 57%      |        |          |       |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 203  |          |        |          | 372      |        |          | 351      |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 153  |          |        |          | 209      |        |          | 205      |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 144  |          |        |          | 197      |        |          | 194      |        |          |       |
| 13        | 1,505 | Bruch N/mm <sup>2</sup>                                  | 216  |          |        |          |          |        |          |          |        |          | 1,505 |
|           |       | max.Kraft %  | 51%  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Spannung N/mm <sup>2</sup>                           | 110  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> | 112  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> | 106  |          |        |          |          |        |          |          |        |          |       |
|           |       | Bruch N/mm <sup>2</sup>                                  |  |          |        |          |          |        |          |          |        |          |       |
|           |       | max.Kraft %  |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Bruch N/mm <sup>2</sup>                                  |  |          |        |          |          |        |          |          |        |          |       |
|           |       | max.Kraft %  |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Spannung N/mm <sup>2</sup>                           |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 415 Hz a <sup>1</sup> |  |          |        |          |          |        |          |          |        |          |       |
|           |       | Max.Mens. c <sup>2</sup> in mm bei 440 Hz a <sup>1</sup> |  |          |        |          |          |        |          |          |        |          |       |
|           |       | * Ø von Malcom Rose                                      | CuZn10 / CuZn30  |          |        |          |          |        |          |          |        |          |       |
|           |       | ** alte GUG- Ø   | CuZn15 / CuZn28  |          |        |          |          |        |          |          |        |          |       |
|           |       | *** Vogel CuSn08   | IM MOMENT NICHT IM PROGRAMM<br>NOT IN THE PROGRAMM YET |          |        |          |          |        |          |          |        |          |       |
|           |       | C  | Tests vor 2004<br>0,95Rose                             |          |        |          |          |        |          |          |        |          |       |