

| LINE SIZING          |                                   |                         |                   |                          |                     |                   |                       |                |                                 |             |                           |                                  |             |
|----------------------|-----------------------------------|-------------------------|-------------------|--------------------------|---------------------|-------------------|-----------------------|----------------|---------------------------------|-------------|---------------------------|----------------------------------|-------------|
| Leitung / Strom-Nr.: | 1. Gewählte nominale Durchmesser. | Leitungs-Länge m +(10%) | Medium            | Rohrrohig keitsfaktor KT | Korrektur Faktor Kk | Reibungsbeiwert λ | Summe einzel- Widerst | Dichte / Kg/m³ | Gewählte Geschwin- digkeit, m/s | Rohr-Klasse | 2. Gewählte nominaler D m | Zu erwarten den Druck- Δ P in Pa | Durchmesser |
| 10                   | 65 mm                             | 5                       | Hydrogen          | 0,045                    | 1,11                | 0,0185            | 46                    | 0,571          | 18                              | FF18B3      | 0,065                     | 0,67628746                       | 65 mm       |
| 20                   | 25 mm                             | 10                      | Meth. Suppl.      | 0,045                    | 1,11                | 0,02              | 8,47                  | 792            | 1,3                             | BD18B2      | 0,025                     | 325,779894                       | 25 mm       |
| 21                   | 20 mm                             | 10                      | Meth. Return      | 0,045                    | 1,11                | 0,022             | 8,47                  | 792            | 1,3                             | BD18B2      | 0,02                      | 385,120494                       | 20 mm       |
| 22                   | 40 mm                             | 65                      | W-Wat+Met.        | 0,045                    | 1,11                | 0,023             | 10,82                 | 992,355        | 1,3                             | BD18B2      | 0,04                      | 1194,46807                       | 40 mm       |
| 30                   | 40 mm                             | 90                      | Hydrogen-Sta      | 0,045                    | 1,11                | 0,028             | 26,82                 | 1,241          | 18                              | FF18B3      | 0,04                      | 2,78387883                       | 40 mm       |
| 31                   | 65 mm                             | 11                      | Hydrogen-Buf.     | 0,045                    | 1,11                | 0,029             | 26,82                 | 0,09           | 18                              | FF18B3      | 0,065                     | 0,07131592                       | 65 mm       |
| 40                   | 32 mm                             | 50                      | Hydrogen-back     | 0,045                    | 1,11                | 0,0185            | 26,82                 | 0,321          | 18                              | FF18B3      | 0,032                     | 0,44675595                       | 32 mm       |
| 50                   | 50 mm                             | 45                      | Hydrochloride     | 0,045                    | 1,11                | 0,029             | 26,82                 | 5,149          | 18                              | BD22B2      | 0,05                      | 6,80531487                       | 50 mm       |
| 51                   | 25 mm                             | 75                      | HCD-gaseous       | 0,045                    | 1,11                | 0,029             | 26,82                 | 18,402         | 18                              | BD22B2      | 0,025                     | 52,3105281                       | 25 mm       |
| 59                   | 25 mm                             | 51                      | WWAC              | 0,045                    | 1,11                | 0,029             | 10,82                 | 1000,114       | 1,3                             | RP18B1      | 0,025                     | 1747,94974                       | 25 mm       |
| 60                   | 15 mm                             | 10                      | Chlor. Liq. Supp. | 0,045                    | 1,11                | 0,029             | 10,82                 | 1600           | 1,3                             | BM20B5      | 0,015                     | 1204,9272                        | 15 mm       |
| 61                   | 600 mm                            | 54                      | Off-Gas+Chlori    | 0,045                    | 1,11                | 0,01              | 5,88                  | 1,161          | 18                              | BD18B2      | 0,6                       | 0,19659271                       | 600 mm      |
| 62                   | 32 mm                             | 48                      | Bio down+HCL      | 0,045                    | 1,11                | 0,029             | 26,82                 | 1,505          | 18                              | BM20B5      | 0,032                     | 2,64314421                       | 32 mm       |
| 63                   | 50 mm                             | 38                      | WWAC              | 0,045                    | 1,11                | 0,029             | 10,82                 | 997,182        | 1,3                             | RP18B1      | 0,05                      | 818,365828                       | 50 mm       |
| 70                   | 15 mm                             | 53                      | Chlorine Gaseo    | 0,045                    | 1,11                | 0,02              | 26,82                 | 11,529         | 18                              | FF18B2      | 0,015                     | 28,0699964                       | 15 mm       |
| 71                   | 300 mm                            | 47                      | Caulic Soda       | 0,045                    | 1,11                | 0,028             | 17,41                 | 1328           | 1,3                             | BD16B4M     | 0,3                       | 722,925684                       | 300 mm      |
| 80                   | 15 mm                             | 2                       | Vent.+ Chlorine   | 0,045                    | 1,11                | 0,012             | 8,47                  | 1,293          | 18                              | BD18B2      | 0,015                     | 0,32518724                       | 15 mm       |
| 81                   | 700 mm                            | 3                       | WWCS              | 0,045                    | 1,11                | 0,018             | 25                    | 999,844        | 1,3                             | BD16B4M     | 0,7                       | 626,20394                        | 700 mm      |
| 82                   | 50 mm                             | 29                      | WCRR              | 0,045                    | 1,11                | 0,018             | 12                    | 992,013        | 1,3                             | BD18B1      | 0,05                      | 555,962774                       | 50 mm       |
| 90                   | 80 mm                             | 25                      | WCRR              | 0,045                    | 1,11                | 0,018             | 12                    | 994,598        | 1,3                             | BD18B1      | 0,08                      | 437,806499                       | 80 mm       |
| 91                   | 80 mm                             | 25                      | WCRR              | 0,045                    | 1,11                | 0,019             | 12                    | 997,182        | 1,3                             | BD18B1      | 0,08                      | 446,726629                       | 80 mm       |
| 92                   | 32 mm                             | 30                      | WCRR              | 0,045                    | 1,11                | 0,02              | 12                    | 997,182        | 1,3                             | BD18B1      | 0,032                     | 765,817079                       | 32 mm       |
| 93                   | 32 mm                             | 30                      | WCRR to HCL-S     | 0,045                    | 1,11                | 0,017             | 12                    | 994,598        | 1,3                             | BD18B1      | 0,032                     | 693,969876                       | 32 mm       |
| 94                   | 125 mm                            | 25                      | WCRR HCL          | 0,045                    | 1,11                | 0,016             | 12                    | 991,904        | 1,3                             | BD18B1      | 0,125                     | 376,546596                       | 125 mm      |
| 95                   | 125 mm                            | 25                      | WCRR - HCL-S      | 0,045                    | 1,11                | 0,018             | 12,94                 | 994,598        | 1,3                             | BD18B1      | 0,125                     | 410,855007                       | 125 mm      |
| 96                   | 50 mm                             | 20                      | HCL WCRR          | 0,045                    | 1,11                | 0,018             | 12,94                 | 997,182        | 1,3                             | BD18B1      | 0,05                      | 501,579056                       | 50 mm       |
| 97                   | 50 mm                             | 20                      | WDI-Supply        | 0,045                    | 1,11                | 0,022             | 24                    | 997,182        | 1,3                             | BD18B1      | 0,05                      | 816,871551                       | 50 mm       |
| 98                   | 15 mm                             | 78                      | WFF to Chlorine   | 0,045                    | 1,11                | 0,022             | 24                    | 997,182        | 1,3                             | BD18B1      | 0,015                     | 3446,79947                       | 15 mm       |
| 99                   | 15 mm                             | 78                      | Bio down+HCL      | 0,045                    | 1,11                | 0,019             | 26                    | 8,202          | 18                              | FF18B2      | 0,015                     | 25,5646498                       | 15 mm       |
| 100                  | 25 mm                             | 112                     | All6-H2-Buffer    | 0,045                    | 1,11                | 0,019             | 17,41                 | 8,201          | 18                              | BD16B1      | 0,025                     | 21,000192                        | 25 mm       |
| 102                  | 60 mm                             | 107                     | All6-Suppl.HCL    | 0,045                    | 1,11                | 0,019             | 24                    | 8,201          | 18                              | BD16B1      | 0,06                      | 11,8556629                       | 60 mm       |
| 103                  | 15 mm                             | 103                     | All6-HCL-Compr    | 0,045                    | 1,11                | 0,028             | 26,82                 | 8,201          | 18                              | BD16B1      | 0,015                     | 44,8733256                       | 15 mm       |
| 104                  | 15 mm                             | 95                      | All6-Sup.Chlorin  | 0,045                    | 1,11                | 0,028             | 26,82                 | 8,201          | 18                              | BD16B1      | 0,015                     | 41,8146806                       | 15 mm       |
| 105                  | 15 mm                             | 112                     | All6-Sup.Chlorin  | 0,045                    | 1,11                | 0,028             | 26,82                 | 8,201          | 18                              | BD16B1      | 0,015                     | 48,3143012                       | 15 mm       |
| 106                  | 15 mm                             | 111                     | All6-Chlor-Scru   | 0,045                    | 1,11                | 0,028             | 26,82                 | 8,201          | 18                              | BD16B1      | 0,015                     | 47,9319705                       | 15 mm       |
| 107                  | 15 mm                             | 107                     | All6-Sup-Meth     | 0,045                    | 1,11                | 0,028             | 26,82                 | 1,293          | 18                              | BD16B1      | 0,015                     | 7,31601316                       | 15 mm       |
| 108                  | 15 mm                             | 94                      | N2-Suppl-H2       | 0,045                    | 1,11                | 0,016             | 17                    | 6,798          | 18                              | FF16B1      | 0,015                     | 19,9095405                       | 15 mm       |
| 110                  | 40 mm                             | 74                      | N2-Sup-H2-Buf     | 0,045                    | 1,11                | 0,028             | 26,82                 | 6,798          | 18                              | FF16B1      | 0,04                      | 13,3481075                       | 40 mm       |
| 112                  | 65 mm                             | 70                      | N2-Sup-HCl-Sy     | 0,045                    | 1,11                | 0,029             | 9                     | 6,798          | 18                              | FF16B1      | 0,065                     | 6,83038201                       | 65 mm       |
| 113                  | 15 mm                             | 105                     | N2-Sup-Hcl-Co     | 0,045                    | 1,11                | 0,018             | 26,82                 | 6,798          | 18                              | FF16B1      | 0,015                     | 25,9457872                       | 15 mm       |
| 114                  | 50 mm                             | 100                     | N2-sup-Chlorin    | 0,045                    | 1,11                | 0,018             | 26,82                 | 6,798          | 18                              | FF16B1      | 0,05                      | 10,6655827                       | 50 mm       |
| 115                  | 40 mm                             | 107                     | N2-sup-Chi-Eva    | 0,045                    | 1,11                | 0,018             | 26,82                 | 6,798          | 18                              | FF16B1      | 0,04                      | 12,7284103                       | 40 mm       |
| 116                  | 25 mm                             | 107                     | N2-sup-Chi-Scr    | 0,045                    | 1,11                | 0,018             | 26,82                 | 6,798          | 18                              | FF16B1      | 0,025                     | 17,633356                        | 25 mm       |
| 117                  | 600 mm                            | 114                     | N2-sup-Scrub      | 0,045                    | 1,11                | 0,018             | 26,82                 | 1,25           | 18                              | FF16B1      | 0,6                       | 0,944055                         | 600 mm      |
| 118                  | 250 mm                            | 40                      | N2-sup-Meth       | 0,045                    | 1,11                | 0,023             | 8,94                  | 1000,149       | 1,3                             | FF18B1      | 0,25                      | 315,231462                       | 250 mm      |
| 120                  | 15 mm                             | 40                      | COBS HCl-Sy       | 0,045                    | 1,11                | 0,01              | 8,94                  | 999,996        | 1,3                             | FF18B1      | 0,015                     | 889,272943                       | 15 mm       |
| 121                  | 15 mm                             | 54                      | COBR HCl-Sy       | 0,045                    | 1,11                | 0,029             | 26,82                 | 997,182        | 1,3                             | BD18B1      | 0,015                     | 3267,9843                        | 15 mm       |
| 190                  | 50 mm                             | 54                      | Process Water     | 0,045                    | 1,11                | 0,029             | 26,82                 | 997,182        | 1,3                             | BD18B1      | 0,05                      | 1447,95463                       | 50 mm       |

