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PURE IRON

# = class, where 1 = CRM and 2 = RM

\* Provisional Analysis

17025

T = total

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Mo, Al, Co, N, O. Rows include SRM 1265a, BS 50F, CZ LA-0A, CZ LA-0B, IARM 27G, BS LC-7B, BS LC-7A, BS 50G, TH 1045D, VS RG24/1, TL 1669 \*\*, ECRM 097-1D, SRM 1768, ECRM 098-1D, ECRM 097-2D.

Table with columns: Number, As, B, Mg, Nb, Pb, Sn, Ti, V, W, Units. Rows include SRM 1265a, BS 50F, CZ LA-0A, CZ LA-0B, IARM 27G, BS LC-7B, BS LC-7A, BS 50G, TH 1045D, VS RG24/1, TL 1669 \*\*, ECRM 097-1D, SRM 1768, ECRM 098-1D, ECRM 097-2D.

\*\* TL-1669 also contains in ppm Ca: 1.7, Sb: 4.9, Zn: 2.7

RM CARBON STEEL XRF SET

Part Number: BS CS-10 AVAILABLE INDIVIDUALLY 17025 ~7 mm discs

Table with columns: Grade, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Mo, Al, As, Co, N, Sn, V. Rows include Pure Iron, 1020, 1035, 1040, 1045, 1095, 1522 (LF2), 1345.

CRM CARBON STEEL SET

AVAILABLE IN SET/6 ONLY

38 mm Ø x 30 mm

Table with columns: Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Al.Sol, Ti, Ti.Sol, V. Rows include NCS HS11719-5 through -9.

CRM SOLUBLE ALUMINUM AND SOLUBLE BORON STEEL SET

available in set/6 only as grouped .T = total .S = soluble

37 mm Ø x 30 mm

Table with columns: Number, Al.T, Al.S, B.T, B.S, C, Mn, P, S, Si, Cu, Ni, Cr, Co, Mo. Rows include NCS HS93703-1a through -6.

Table with columns: Number, As, Bi, Ca, Nb, Pb, Sb, Sn, Ti, V, W, Zr. Rows include NCS HS93703-1a through -5.

CARBON STEEL

CONTINUED ON THE NEXT PAGE

# = Class, where 1 = CRM and 2 = RM

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, As, B, Ca, Co, Mo. It lists various steel grades and their chemical compositions across multiple rows.



## ARSENIC AND ANTIMONY IN STEEL

# = Class, where 1 = CRM and 2 = RM analysis listed in mass % except \* which is mg/kg

| # | Number      | As     | Sb      | C      | Mn     | P       | S      | Si     | Cu     | Ni      | Cr      | Al      | Als   | Co     | Mo      | Sn     | Ti      |
|---|-------------|--------|---------|--------|--------|---------|--------|--------|--------|---------|---------|---------|-------|--------|---------|--------|---------|
| 2 | CZ CM-2B    | 0.12   | 0.020   | 0.247  | 0.894  | 0.082   | 0.0114 | 1.95   | 0.99   | 1.20    | 1.53    | 0.046   | .     | 0.45   | 0.33    | 0.091  | 0.342   |
| 1 | 12X 12749X  | 0.081  | .       | 0.176  | 1.41   | 0.023   | 0.066  | 0.48   | 0.253  | 0.47    | 0.453   | 0.202   | .     | 0.426  | 0.195   | 0.018  | 0.0178  |
| 1 | 12X 120     | 0.065  | 0.031   | 0.60   | 0.40   | (0.049) | 0.026  | 0.34   | 0.10   | 0.085   | 0.20    | 0.033   | .     | .      | .       | 0.008  | .       |
| 1 | 12X 15266V  | 0.0640 | .       | 0.455  | 1.240  | 0.0344  | 0.0258 | 0.674  | 0.226  | 1.317   | 3.49    | 0.526   | .     | 0.286  | 0.298   | 0.0082 | .       |
| 1 | 12X 350C    | 0.057  | .       | 0.159  | 0.758  | 0.0296  | 0.040  | 0.467  | 0.196  | 0.160   | 0.335   | 0.290   | .     | 0.030  | 0.147   | 0.0382 | 0.076   |
| 1 | IRSID 1656  | 0.055  | .       | 0.477  | 0.730  | 0.027   | 0.013  | 0.277  | .      | (0.048) | (0.017) | (0.002) | .     | .      | (0.007) | .      | .       |
| 1 | 12X 355C    | 0.0331 | 0.0796  | 0.159  | 0.508  | 0.0214  | 0.0241 | 0.494  | 0.657  | 0.0710  | 0.113   | 0.1104  | .     | 0.0495 | 0.1010  | 0.0564 | 0.153   |
| 1 | 12X 354B    | 0.023  | .       | 0.252  | 5.03   | 0.0478  | 0.0105 | 0.200  | 0.0679 | 0.082   | 0.0487  | 0.0150  | .     | 0.0237 | 0.0328  | 0.0154 | 0.0248  |
| 1 | BS 1762     | 0.025  | (0.02)  | 0.363  | 2.04   | 0.032   | 0.037  | 0.38   | 0.133  | 1.16    | 0.929   | 0.049   | .     | 0.064  | 0.347   | 0.079  | 0.096   |
| 1 | ECRM 055-2D | 0.0187 | 0.00376 | 0.5199 | 0.687  | 0.0102  | 0.0205 | 0.3094 | 0.2089 | 0.3121  | 0.3217  | .       | .     | 0.0257 | 0.0960  | 0.0162 | 0.00104 |
| 1 | 12X 357D    | 0.0127 | 0.018   | 0.312  | 0.219  | 0.0101  | 0.066  | 0.211  | 0.203  | 0.188   | 0.21    | 0.138   | .     | 0.198  | 0.025   | 0.0145 | 0.074   |
| 1 | BS 1030     | 0.0055 | 0.0024  | 0.331  | 0.682  | 0.0101  | 0.0299 | 0.261  | 0.269  | 0.078   | 0.124   | 0.0014  | .     | 0.0069 | 0.0182  | 0.0114 | 0.0005  |
| 1 | VS UG90     | 0.0044 | 0.0011  | 0.34   | 0.286  | 0.0079  | 0.012  | 0.221  | 0.200  | 0.265   | 0.261   | 0.037   | 0.032 | .      | 0.046   | .      | 0.039   |
| 1 | VS UG89     | 0.0043 | 0.0011  | 0.92   | 0.76   | 0.0085  | 0.01   | 0.385  | 0.373  | 0.51    | 0.420   | 0.01    | 0.007 | .      | 0.044   | .      | 0.012   |
| 1 | VS UG92     | 0.0027 | 0.0005  | 0.69   | 0.79   | 0.05    | 0.0029 | 1.98   | 0.111  | 0.155   | 0.200   | 0.091   | 0.08  | .      | 0.119   | .      | 0.022   |
| 1 | IRSID 1670  | 0.0018 | .       | 0.0011 | 0.3981 | 0.0128  | 0.0075 | 0.0046 | 0.0134 | 0.0142  | 0.0174  | 0.0479  | .     | 0.0018 | 0.0009  | 0.0017 | 0.0078  |
| 1 | VS UG88     | 0.0007 | 0.0003  | 0.62   | 1.26   | 0.0026  | 0.0043 | 1.22   | 0.171  | 0.52    | 0.474   | 0.01    | 0.009 | .      | 0.104   | .      | 0.107   |
| 1 | VS UG91     | 0.0004 | 0.00009 | 0.49   | .      | 0.0038  | 0.0021 | 2.23   | 0.057  | 0.039   | 0.064   | 0.048   | 0.048 | .      | 0.058   | .      | 0.038   |
| 1 | SS 458/2    | .      | 0.089   | 0.198  | 0.479  | 0.0281  | 0.0314 | 0.504  | .      | .       | .       | 0.055   | 0.053 | 0.198  | .       | .      | .       |
| 1 | SS 457/2    | .      | 0.050   | 0.307  | 0.327  | 0.0098  | 0.0448 | 0.105  | .      | .       | .       | 0.088   | 0.084 | 0.0217 | .       | .      | .       |

| Number      | B        | Bi     | Ca*  | Ce* | Mg* | N       | Nb       | O*     | Pb      | Se      | Ta      | V        | W      | Zn     | Zr       | Units                        |
|-------------|----------|--------|------|-----|-----|---------|----------|--------|---------|---------|---------|----------|--------|--------|----------|------------------------------|
| CZ CM-2B    | 0.0010   | .      | .    | .   | .   | 0.0062  | (0.58)   | .      | 0.087   | .       | .       | 0.109    | 0.22   | .      | 0.013    | ~39 mm Ø x ~25 mm            |
| 12X 12749X  | .        | .      | .    | .   | .   | .       | .        | .      | 0.016   | .       | .       | 0.068    | 0.036  | .      | .        | ~40 mm Ø x ~15 mm            |
| 12X 120     | .        | .      | .    | .   | .   | 0.0115  | .        | .      | 0.077   | .       | .       | .        | .      | .      | .        | 40 mm Ø x 40 mm              |
| 12X 15266V  | .        | .      | .    | .   | .   | .       | 1.438    | .      | .       | .       | 0.116   | 0.106    | .      | .      | .        | ~40 mm Ø x ~15 mm            |
| 12X 350C    | .        | .      | .    | .   | .   | .       | .        | .      | .       | .       | .       | 0.0115   | 0.260  | .      | .        | ~40 mm Ø x ~15 mm            |
| IRSID 1656  | .        | .      | .    | .   | .   | .       | .        | .      | .       | .       | .       | (0.002)  | .      | .      | .        | 40 mm Ø x 35 mm              |
| 12X 355C    | (0.0012) | .      | .    | .   | .   | 0.0023  | 0.023    | .      | .       | 0.0395  | .       | 0.1265   | 0.037  | .      | 0.0192   | ~40 mm Ø x ~15 mm            |
| 12X 354B    | .        | .      | .    | .   | .   | 0.0027  | 0.0802   | .      | .       | .       | .       | 0.0204   | 0.0248 | .      | .        | ~40 mm Ø x ~15 mm            |
| BS 1762     | 0.0048   | .      | (20) | .   | (3) | 0.017   | 0.074    | 64     | (0.011) | Fe:93.9 | (0.03)  | 0.193    | 0.029  | (0.01) | (0.01)   | 37 mm Ø x 25 mm 17025        |
| ECRM 055-2D | .        | .      | .    | .   | .   | 0.01069 | .        | .      | .       | .       | .       | 0.00245  | 0.0166 | .      | .        | 38 mm Ø x 25 or 30 mm        |
| 12X 357D    | 0.0036   | 0.0024 | .    | .   | .   | 0.011   | .        | 0.040  | 0.0057  | .       | .       | 0.127    | 0.0213 | .      | 0.0049   | ~40 mm Ø x ~15 mm            |
| BS 1030     | 0.0003   | .      | 12   | .   | (2) | 0.0107  | (0.0004) | 50     | 0.0005  | .       | (0.001) | 0.031    | 0.0012 | .      | (0.0002) | 38 mm Ø x ~7 or 19+ mm 17025 |
| VS UG90     | .        | .      | .    | .   | .   | 0.015   | .        | .      | .       | .       | .       | .        | .      | .      | .        | ~47 mm Ø x ~30 mm            |
| VS UG89     | .        | .      | .    | .   | .   | 0.017   | 0.0043   | .      | 0.0003  | .       | .       | 0.021    | .      | .      | .        | ~47 mm Ø x ~30 mm            |
| VS UG92     | .        | .      | .    | .   | .   | 0.016   | 0.034    | .      | 0.00017 | .       | .       | 0.024    | .      | .      | .        | ~47 mm Ø x ~30 mm            |
| IRSID 1670  | 0.0007   | .      | .    | (2) | .   | 0.0016  | (0.0003) | .      | .       | .       | .       | (0.0005) | .      | .      | .        | 37 mm Ø x 30 mm              |
| VS UG88     | .        | .      | .    | .   | .   | 0.020   | 0.059    | .      | 0.00015 | .       | .       | 0.117    | .      | .      | .        | ~47 mm Ø x ~30 mm            |
| VS UG91     | .        | .      | .    | .   | .   | 0.010   | 0.097    | .      | 0.00006 | .       | .       | 0.049    | .      | .      | .        | ~47 mm Ø x ~30 mm            |
| SS 458/2    | 0.0069   | .      | .    | .   | .   | 0.0510  | .        | 0.0140 | .       | .       | .       | 0.105    | .      | .      | (0.064)  | 38 mm Ø x 19 mm              |
| SS 457/2    | 0.0046   | .      | .    | .   | .   | 0.0174  | .        | 0.0098 | .       | .       | .       | 0.153    | .      | .      | 0.025    | 38 mm Ø x 19 mm              |

## BISMUTH AND SELENIUM STEEL

# = Class, where 1 = CRM and 2 = RM

| #          | Number     | Bi       | Se    | C        | Mn      | P     | S       | Si      | Cu    | Ni    | Cr    | Al    | As                     | Co    | Mo    | N      |
|------------|------------|----------|-------|----------|---------|-------|---------|---------|-------|-------|-------|-------|------------------------|-------|-------|--------|
| 2          | BS 4140A   | 0.105    | .     | 0.40     | 0.84    | 0.021 | 0.076   | 0.21    | 0.15  | 0.15  | 0.97  | 0.016 | 0.005                  | 0.010 | 0.16  | 0.0098 |
| 2          | BS 53MOD   | 0.102    | .     | 1.01     | 0.36    | 0.011 | 0.012   | 0.26    | 0.070 | 0.072 | 1.37  | 0.019 | 0.004                  | 0.007 | 0.024 | 0.0086 |
| 2          | BS 4140B   | 0.087    | .     | 0.43     | 0.76    | 0.027 | 0.037   | 0.20    | 0.006 | 0.012 | 0.84  | 0.036 | (0.002)                | 0.005 | 0.16  | 0.0064 |
| 2          | BS 4150MOD | 0.070    | .     | 0.47     | 0.90    | 0.024 | 0.079   | 0.21    | 0.19  | 0.15  | 1.01  | 0.012 | 0.005                  | 0.012 | 0.21  | 0.0087 |
| 2          | CZ CM-16A  | 0.039    | .     | 0.355    | 0.92    | 0.043 | 0.033   | 0.77    | 0.293 | 0.72  | 0.70  | 0.125 | 0.058                  | 0.056 | 0.405 | 0.015  |
| Number     | B          | Ca       | Nb    | O        | Pb      | Sb    | Sn      | Ti      | V     | W     | Zn    | Zr    | Units                  |       |       |        |
| BS 4140A   | .          | (0.0003) | .     | (0.0025) | (0.001) | .     | 0.011   | (0.003) | 0.004 | .     | .     | last  | 38 mm Ø x ~7 or ~12 mm |       |       |        |
| BS 53MOD   | .          | (0.001)  | .     | (0.002)  | 0.0005  | .     | 0.008   | .       | 0.005 | .     | .     | .     | 38 mm Ø x ~7 or 19+ mm |       |       |        |
| BS 4140B   | .          | (0.0002) | .     | (0.002)  | 0.004   | .     | (0.002) | 0.003   | 0.005 | .     | .     | .     | 38 mm Ø x ~7 or 19+ mm |       |       |        |
| BS 4150MOD | .          | 0.0010   | .     | (0.003)  | 0.0010  | .     | 0.013   | (0.002) | 0.008 | .     | .     | last  | 38 mm Ø x ~7 mm        |       |       |        |
| CZ CM-16A  | 0.012      | 0.0006   | 0.066 | .        | 0.053   | 0.027 | 0.025   | 0.099   | 0.319 | 0.141 | 0.021 | 0.062 | ~39 mm Ø x 25 mm       |       |       |        |

## CALCIUM IN STEEL

# = Class, where 1 = CRM and 2 = RM analysis listed in mass % except \* which is mg/kg

| # | Number            | Ca      | C       | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Al            | Als    | Co     | Mo     | N      | V        |
|---|-------------------|---------|---------|--------|---------|---------|--------|--------|--------|--------|---------------|--------|--------|--------|--------|----------|
| 1 | <b>BS HiCal-1</b> | 0.0140  | 0.271   | 1.00   | (0.007) | 0.0007  | 1.29   | 0.152  | 3.28   | 1.55   | 0.070         | .      | 0.0024 | 0.379  | .      | 0.0027   |
| 1 | SS 115            | 0.0058  | 0.6224  | 0.682  | 0.0123  | 0.00093 | 0.2078 | .      | 0.0196 | 0.0198 | 0.0527        | .      | .      | .      | 0.0067 | .        |
| 1 | <b>BS 9325A</b>   | 0.0039  | 0.203   | 0.969  | 0.0079  | 0.0045  | 0.612  | 0.163  | 3.29   | 1.50   | 0.0056        | .      | 0.0093 | 0.358  | 0.0076 | (0.0024) |
| 1 | SS 116            | 0.0036  | 0.617   | 0.6756 | 0.0092  | 0.00176 | 0.201  | .      | 0.0155 | 0.0141 | 0.0587        | .      | .      | .      | 0.0069 | .        |
| 1 | <b>BS XCCS-1</b>  | 0.0024  | 0.0441  | 0.356  | 0.0068  | 0.0022  | 0.292  | 0.0143 | 0.0132 | 0.0288 | 0.061         | .      | 0.0017 | 0.0060 | 0.0052 | 0.0012   |
| 1 | <b>BS 1020</b>    | 0.0022  | 0.210   | 0.568  | 0.0058  | 0.0249  | 0.250  | 0.184  | 0.059  | 0.109  | 0.0006        | .      | 0.0070 | 0.018  | 0.0109 | 0.0363   |
| 2 | HRT FE2009-N      | 0.0020  | 0.12    | 0.55   | 0.010   | 0.003   | 0.32   | 0.08   | 0.25   | 2.56   | 0.030         | .      | .      | 1.02   | .      | 0.015    |
| 1 | IRSID 1665        | 0.0017  | 0.1209  | 0.446  | 0.0104  | 0.0135  | 0.187  | 0.0469 | 0.0308 | 0.0363 | .             | 0.0379 | 0.0046 | 0.0047 | 0.0049 | (0.0006) |
| 1 | <b>BS 3941</b>    | 0.0011  | 0.407   | 0.802  | 0.016   | 0.023   | 0.257  | 0.053  | 0.018  | 0.069  | 0.0019        | .      | 0.0042 | 0.0061 | 0.0069 | 0.0025   |
| 2 | BS 4150MOD        | 0.0010  | 0.47    | 0.90   | 0.024   | 0.079   | 0.21   | 0.19   | 0.15   | 1.01   | 0.012         | .      | 0.012  | 0.21   | 0.0087 | 0.008    |
| 2 | BS 4330V          | 0.0010  | 0.318   | 0.91   | 0.008   | 0.0009  | 0.240  | 0.181  | 1.91   | 0.91   | 0.021         | .      | 0.011  | 0.475  | 0.0076 | 0.094    |
| 1 | <b>BS 4130</b>    | 0.0007  | 0.303   | 0.541  | 0.0105  | 0.0113  | 0.245  | 0.221  | 0.088  | 0.924  | 0.0242        | .      | 0.0065 | 0.168  | 0.0072 | 0.0037   |
| 2 | BS 4942           | 0.0006  | 0.414   | 0.56   | 0.015   | 0.021   | 0.22   | 0.165  | 0.16   | 0.97   | (0.004)       | .      | 0.010  | 0.54   | 0.0080 | 0.28     |
| 1 | <b>BS PP20</b>    | 0.0003  | 0.382   | 1.41   | 0.018   | 0.0070  | 0.262  | 0.119  | 1.00   | 1.94   | 0.0132        | .      | 0.0145 | 0.212  | 0.0080 | 0.066    |
| 1 | IMZ 111           | 0.0003  | 0.106   | 0.31   | 0.010   | 0.039   | 0.55   | 0.036  | 0.23   | 0.072  | 0.017         | 0.007  | .      | 0.084  | 0.0133 | 0.022    |
| 2 | TL 1669           | 0.00017 | 0.00226 | 0.0955 | 0.0137  | 0.0100  | 0.0093 | 0.0217 | 0.0160 | 0.0246 | 0.03553 (tot) | .      | 0.0019 | 0.0011 | 0.0024 | (0.0006) |

| Number            | As     | B         | Bi    | Nb       | O        | Pb        | Sb       | Sn       | Ti       | W        | Zr         | Other                       |                       |  |  |
|-------------------|--------|-----------|-------|----------|----------|-----------|----------|----------|----------|----------|------------|-----------------------------|-----------------------|--|--|
| <b>BS HiCal-1</b> | 0.0022 | (0.0001)  | .     | (0.002)  | .        | (0.0005)  | .        | (0.0002) | 0.0037   | (0.0009) | (0.0008)   | ~38 mm Ø x ~30 mm           | <b>17025</b>          |  |  |
| SS 115            | .      | .         | .     | .        | .        | .         | .        | .        | 0.0027   | .        | .          | 38 mm Ø x 19 mm             |                       |  |  |
| <b>BS 9325A</b>   | 0.0024 | (0.0001)  | .     | 0.0017   | .        | (0.0003)  | Fe: 92.8 | (0.0003) | 0.0030   | 0.024    | (0.001)    | ~40 mm Ø x ~30 mm           | <b>17025</b>          |  |  |
| SS 116            | .      | .         | .     | .        | .        | 0.00012   | .        | .        | 0.00171  | .        | .          | 44 mm Ø x 19 mm             |                       |  |  |
| <b>BS XCCS-1</b>  | 0.0024 | (0.0004)  | .     | (0.001)  | Fe: 99.2 | (0.0006)  | (0.0005) | 0.0002   | 0.0015   | (0.003)  | 0.0006     | ~40 mm Ø x ~30 mm           | <b>17025</b> Fe: 99.2 |  |  |
| <b>BS 1020</b>    | 0.0074 | (0.0001)  | .     | (0.0003) | 0.0046   | (0.0002)  | (0.0018) | 0.0090   | (0.0005) | (0.0004) | (0.0005)   | 44 mm Ø x ~7 or 19+ mm      | <b>17025</b>          |  |  |
| HRT FE2009-N      | .      | .         | .     | .        | .        | .         | .        | .        | .        | .        | Zn: 0.004  | 40 mm Ø x 40 mm             |                       |  |  |
| IRSID 1665        | 0.0067 | (0.00032) | .     | .        | .        | (0.0014)  | (0.0008) | 0.0031   | (0.0008) | .        | .          | 37 mm Ø x 30 mm             |                       |  |  |
| <b>BS 3941</b>    | 0.0036 | (0.0001)  | .     | 0.033    | 0.0055   | 0.0010    | 0.0005   | 0.0019   | 0.0017   | (0.0004) | (0.0003)   | 41 mm Ø x ~7 or 19+ mm      | <b>17025</b>          |  |  |
| BS 4150MOD        | 0.005  | .         | 0.070 | .        | (0.003)  | 0.0010    | .        | 0.013    | (0.002)  | .        | .          | 38 mm Ø x ~7 or 19 mm last  |                       |  |  |
| BS 4330V          | .      | .         | .     | .        | 0.0018   | .         | .        | 0.010    | .        | .        | .          | 37 mm Ø x ~7 or 19 mm last  |                       |  |  |
| <b>BS 4130</b>    | 0.0048 | (0.0002)  | .     | 0.0015   | 0.0015   | (0.00003) | (0.0021) | 0.0099   | 0.0009   | 0.0011   | Mg: 0.0002 | 38 mm Ø x ~7 or 19+ mm      | <b>17025</b>          |  |  |
| BS 4942           | 0.005  | .         | .     | .        | (0.0021) | .         | .        | 0.014    | .        | .        | .          | 38 mm Ø x ~7 or 19+ mm last |                       |  |  |
| <b>BS PP20</b>    | 0.0049 | 0.00011   | .     | 0.0048   | (0.0010) | .         | 0.0013   | 0.0069   | 0.0007   | 0.0058   | .          | 38 mm Ø x ~7 or 19+ mm      | <b>17025</b>          |  |  |
| IMZ 111           | .      | .         | .     | .        | .        | .         | .        | .        | .        | .        | .          | 40 mm Ø x 40 mm             |                       |  |  |
| TL 1669           | 0.0017 | 0.00038   | .     | 0.00046  | .        | 0.00013   | 0.00049  | 0.0071   | 0.0504   | .        | (0.00021)  | 38 mm Ø x 25 mm             | Zn: 2.7*              |  |  |

## CRM AL, Ca, AND N IN LOW ALLOY STEEL

| Number  | Al      | Ca      | N             | Units           |
|---------|---------|---------|---------------|-----------------|
| IMZ 133 | .       | .       | <b>0.0360</b> | 40 mm Ø x 40 mm |
| IMZ 131 | 0.0043  | .       | <b>0.0333</b> | 40 mm Ø x 40 mm |
| IMZ 135 | 0.0274  | 0.0008  | <b>0.0238</b> | 40 mm Ø x 40 mm |
| IMZ 169 | 0.075   | .       | <b>0.0193</b> | 40 mm Ø x 40 mm |
| IMZ 141 | 0.0071  | .       | <b>0.0154</b> | 40 mm Ø x 40 mm |
| IMZ 130 | 0.0046  | 0.0024  | <b>0.0153</b> | 40 mm Ø x 40 mm |
| IMZ 139 | (0.029) | 0.0031  | <b>0.0113</b> | 40 mm Ø x 40 mm |
| IMZ 132 | 0.0021  | 0.0002  | <b>0.0097</b> | 40 mm Ø x 40 mm |
| IMZ 137 | 0.0017  | 0.00025 | <b>0.0083</b> | 40 mm Ø x 40 mm |
| IMZ 140 | 0.0307  | 0.0015  | <b>0.0083</b> | 40 mm Ø x 40 mm |
| IMZ 138 | 0.0022  | .       | <b>0.0063</b> | 40 mm Ø x 40 mm |
| IMZ 134 | 0.0124  | 0.0005  | .             | 40 mm Ø x 40 mm |
| IMZ 136 | 0.0034  | 0.00031 | .             | 40 mm Ø x 40 mm |

## C-Mo and Cr-Mo STEEL XRF SET

# = class, where 1 = CRM ISO 17025 and 2 = RM, Set Part Number: BS MOLY-5 AVAILABLE INDIVIDUALLY ~7 mm discs

| # | Grade       | Alloy | Number        | C     | Mn    | P      | S      | Si    | Cu    | Ni    | Cr    | Mo    | Al     | Co     | N        | Sn     | V      |
|---|-------------|-------|---------------|-------|-------|--------|--------|-------|-------|-------|-------|-------|--------|--------|----------|--------|--------|
| 2 | C-.5Mo      | 4419  | BS 3952       | 0.208 | 0.546 | 0.011  | 0.021  | 0.264 | 0.202 | 0.112 | 0.105 | 0.519 | 0.048  | .      | (0.0005) | .      | .      |
| 1 | 1.25Cr-.5Mo | F-11  | <b>BS 45B</b> | 0.140 | 0.502 | 0.0068 | 0.017  | 0.583 | 0.101 | 0.136 | 1.14  | 0.60  | 0.030  | 0.0090 | 0.0066   | 0.0069 | 0.0083 |
| 1 | 2.25Cr-1Mo  | F-22  | <b>BS 46B</b> | 0.126 | 0.472 | 0.0087 | 0.0187 | 0.219 | 0.128 | 0.081 | 2.28  | 1.00  | 0.020  | 0.0074 | 0.0100   | 0.0073 | 0.0073 |
| 2 | 5Cr-.5Mo    | F-5   | BS 47A        | 0.130 | 0.44  | 0.017  | 0.015  | 0.27  | 0.11  | 0.12  | 4.22  | 0.47  | 0.015  | 0.011  | 0.018    | 0.008  | 0.016  |
| 1 | 9Cr-1Mo     | F-9   | <b>BS 48B</b> | 0.110 | 0.365 | 0.0228 | 0.0068 | 0.75  | 0.070 | 0.165 | 8.78  | 0.949 | 0.0157 | 0.0165 | 0.0088   | 0.0049 | 0.033  |

## CRM EPMA SETS

available in sets only, as grouped 4x10x15mm

| Number      | Cr    | Number      | Ni    |
|-------------|-------|-------------|-------|
| NMIJ 1001-a | 5.00  | NMIJ 1006-a | 5.04  |
| NMIJ 1002-a | 14.96 | NMIJ 1007-a | 10.05 |
| NMIJ 1003-a | 19.87 | NMIJ 1008-a | 20.02 |
| NMIJ 1004-a | 29.84 | NMIJ 1009-a | 39.92 |
| NMIJ 1005-a | 39.69 | NMIJ 1010-a | 60.07 |











Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, # = Class, where 1=CRM, 2=RM, 3=RM no uncertainties, Co, Mo, N, Nb, Ti. Rows include various steel grades like 1 VS UG0/6, 1 CKD 182B, 1 IMZ 65/2, etc.





LOW ALLOY STEEL WITH 0.13 % < C < 0.3 %

CONTINUED FROM THE PREVIOUS PAGE

| Number            | B         | Ca            | Fe       | Mg       | Nb       | O        | Pb       | Sb       | Ta           | Ti       | W        | Zn           | Zr       | Units                          |
|-------------------|-----------|---------------|----------|----------|----------|----------|----------|----------|--------------|----------|----------|--------------|----------|--------------------------------|
| 12X 15254AA       | 0.0039    | .             | .        | .        | 0.310    | .        | .        | .        | (0.003)      | 0.285    | 0.310    | .            | .        | -40 mm Ø x ~15 mm              |
| IARM 330A         | 0.0003    | 0.0010        | .        | .        | (0.003)  | (0.0009) | (0.0004) | (0.001)  | .            | 0.006    | (0.004)  | .            | 0.0015   | 31 mm Ø x 2 mm                 |
| 12X 16604A        | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | -40 mm Ø x ~15 mm              |
| SRM 1269          | .         | .             | .        | .        | .        | .        | 0.005    | .        | .            | .        | .        | .            | .        | 32 mm Ø x 19 mm                |
| ECRM 086-1D       | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 38 mm Ø x 25 or 30 mm          |
| CZ CM-3A          | 0.0002    | .             | .        | .        | 0.006    | .        | .        | .        | .            | 0.006    | 0.015    | .            | .        | -39 mm Ø x 25 mm               |
| VS UG9/10         | .         | .             | .        | .        | .        | .        | .        | .        | .            | 0.163    | 1.34     | .            | .        | -45 mm Ø x ~28 mm              |
| VS RG27/1         | .         | .             | .        | .        | .        | .        | .        | .        | .            | 0.110    | 0.170    | .            | .        | -45 mm Ø x ~28 mm              |
| IMZ 178           | .         | .             | .        | .        | 0.105    | .        | .        | .        | .            | .        | 0.017    | .            | .        | 40 mm Ø x 40 mm                |
| SRM 1225          | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 32 mm Ø x 19 mm                |
| <b>BS HiCal-1</b> | (0.0001)  | 0.0140 [91.9] | (0.0003) | (0.002)  | .        | .        | (0.0005) | .        | .            | 0.0037   | (0.0009) | .            | (0.0008) | -38 mm Ø x ~30 mm <b>17025</b> |
| IARM 380A         | .         | .             | .        | (0.0020) | .        | .        | .        | .        | .            | .        | (0.009)  | .            | .        | 31 mm Ø x 2 or 18 mm           |
| RM Fe 2/4         | (0.0027)  | <0.001        | .        | .        | (0.011)  | .        | <0.02    | <0.03    | .            | (0.0065) | 0.19     | .            | <0.02    | 40 mm Ø x 40 mm                |
| BS 69B            | .         | .             | .        | .        | .        | .        | .        | .        | .            | (0.002)  | .        | .            | .        | 38 mm Ø x ~7 or 19+ mm         |
| 12X 12750U        | .         | .             | .        | .        | 0.111    | .        | .        | .        | .            | 0.159    | 0.100    | .            | .        | -40 mm Ø x ~15 mm              |
| 12X 32550A        | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | -38 mm Ø x ~15 mm              |
| BS 6418           | .         | .             | .        | .        | .        | 0.0012   | .        | .        | .            | 0.003    | .        | .            | .        | 57 mm Ø x ~7 or 19+ mm         |
| IARM 380B         | .         | .             | .        | .        | (0.0016) | .        | .        | .        | .            | 0.0011   | (0.003)  | .            | .        | 31 mm Ø x 2 or 18 mm           |
| HRT FE2018-N      | (0.0003)  | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 36 mm Ø x 20 mm                |
| IMZ 113           | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 40 mm Ø x 40 mm                |
| 12X 722M24A       | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | 0.0028       | .        | -38 mm Ø x ~15 mm              |
| VS UG6/5          | .         | .             | .        | .        | (0.01)   | .        | .        | .        | .            | (0.01)   | 0.16     | .            | .        | -45 mm Ø x ~28 mm              |
| 12X 356D          | (0.002)   | Ca:0.0063     | .        | Se:0.010 | 0.019    | .        | 0.034    | 0.0203   | .            | 0.016    | 0.086    | 0.011        | .        | -40 mm Ø x ~15 mm              |
| DSZU C043A        | (0.001)   | 0.0004        | .        | .        | 0.006    | .        | .        | .        | .            | 0.041    | 0.092    | .            | .        | 40 mm Ø x 25 mm                |
| IARM 229B         | (0.0006)  | (0.0003)      | .        | .        | (0.0019) | (0.0017) | (0.0005) | (0.0006) | (0.003)      | 0.0019   | (0.003)  | .            | (0.0008) | 31 mm Ø x 2 or 18 mm           |
| ECRM 197-1D       | .         | .             | .        | .        | .        | .        | .        | .        | .            | 0.0005   | .        | .            | .        | 38 mm Ø x 25 mm                |
| BS 3961           | .         | .             | .        | .        | .        | .        | .        | .        | .            | (<0.003) | .        | .            | .        | 44 mm Ø x ~7 or 19+ mm         |
| TL 1668           | (0.00024) | 0.0019        | .        | (0.0003) | (0.0002) | .        | (0.0007) | (0.0003) | .            | 0.0032   | .        | 0.0008       | (0.0003) | 37 mm Ø x 20 mm                |
| <b>BS 8620F</b>   | (0.0003)  | 0.0020        | 97.1     | (0.0002) | 0.0025   | 0.0026   | (0.002)  | (0.002)  | <b>17025</b> | 0.0016   | 0.0016   | .            | (0.0008) | 38 mm Ø x ~7 or 19+ mm         |
| DSZU C048         | .         | (0.0017)      | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 40 mm Ø x 25 mm                |
| TL 1001           | .         | .             | .        | .        | .        | .        | .        | .        | .            | (0.0134) | .        | .            | .        | 40 mm Ø x 20 mm                |
| IPT 502           | .         | .             | .        | .        | .        | .        | .        | .        | .            | 0.0016   | .        | .            | .        | 36 mm Ø x 20 mm                |
| VS UG4/11         | .         | .             | .        | .        | 0.071    | .        | .        | .        | .            | 0.034    | 0.0092   | .            | .        | -45 mm Ø x ~28 mm              |
| IARM 33D          | 0.0002    | (0.0003)      | .        | .        | 0.002    | 0.0013   | <0.001   | (0.002)  | .            | 0.003    | <0.005   | .            | <0.002   | 31 mm Ø x 2 or 18 mm           |
| BS 3952           | .         | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 39 mm Ø x ~7 or 19+ mm         |
| ECRM 187-2D       | 0.00048   | .             | .        | .        | .        | .        | .        | .        | .            | .        | .        | .            | .        | 39 mm Ø x 28 mm                |
| <b>BS 9325A</b>   | (0.0001)  | 0.0039        | 92.8     | (0.0002) | 0.0017   | .        | (0.0003) | .        | (0.010)      | 0.0030   | 0.024    | <b>17025</b> | (0.001)  | -40 mm Ø x ~30 mm              |
| <b>BS 4820A</b>   | 0.0002    | 0.0003        | .        | 0.0003   | (0.002)  | 0.0011   | (0.0002) | 0.0024   | .            | 0.0012   | (0.002)  | <b>17025</b> | .        | 38 mm Ø x ~7 or 19+ mm         |
| VS RG29/1         | .         | .             | .        | .        | 0.044    | .        | .        | .        | .            | 0.020    | 0.62     | .            | .        | -45 mm Ø x ~28 mm              |
| 12X 12747V        | .         | .             | .        | .        | .        | .        | .        | .        | .            | 0.099    | 0.0276   | .            | .        | -40 mm Ø x ~15 mm              |

| Number       | B        | Ca       | Fe | Mg       | Nb       | O       | Pb        | Sb       | Ta | Ti       | W        | Zn       | Zr       | Units                  |
|--------------|----------|----------|----|----------|----------|---------|-----------|----------|----|----------|----------|----------|----------|------------------------|
| VS RG31/1    | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.21     | 0.39     | .        | .        | -45 mm Ø x ~28 mm      |
| KUT B3       | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | 1.19     | .        | .        | 30-35mm Ø x 39 mm      |
| VS UG5/5     | .        | .        | .  | .        | (0.01)   | .       | .         | .        | .  | (0.003)  | 0.38     | .        | .        | -45 mm Ø x ~28 mm      |
| IARM 155F    | .        | .        | .  | .        | 0.0016   | (0.003) | .         | .        | .  | 0.0020   | (0.004)  | .        | .        | 31 mm Ø x 2 or 18 mm   |
| 12X 86200A   | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | -38 mm Ø x ~15 mm      |
| 12X LA2E     | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | -40 mm Ø x ~15 mm      |
| IMZ 112B     | .        | .        | .  | .        | 0.013    | .       | .         | .        | .  | 0.010    | .        | .        | .        | 40 mm Ø x 40 mm        |
| VS UG8/10    | .        | .        | .  | .        | (0.003)  | .       | .         | .        | .  | 0.0034   | .        | .        | .        | -45 mm Ø x ~28 mm      |
| VS UG114     | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.006    | .        | .        | 0.065    | -45 mm Ø x ~25 mm      |
| BS 51F       | (0.0001) | (0.0005) | .  | (0.0001) | (0.0005) | 0.0020  | (0.00007) | (0.0011) | .  | (0.0012) | (0.0030) | (0.0002) | .        | 38 mm Ø x ~7 or 19+ mm |
| IMZ 162      | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.12     | .        | .        | .        | 40 mm Ø x 40 mm        |
| VS UG113     | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.006    | 0.007    | .        | 0.169    | -45 mm Ø x ~25 mm      |
| BS 4620      | 0.00006  | 0.0001   | .  | 0.0001   | 0.0001   | 0.0009  | 0.0002    | 0.0024   | .  | 0.0026   | 0.0009   | 0.0002   | .        | 38 mm Ø x ~7 or 19+ mm |
| ECRM 192-1D  | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | -35 mm Ø x ~30 mm      |
| VS UG112     | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.0028   | 0.005    | .        | 0.0047   | -45 mm Ø x ~25 mm      |
| BS LF3       | 0.0001   | (0.0001) | .  | .        | .        | 0.004   | .         | .        | .  | .        | .        | .        | .        | 38 mm Ø x ~7 or 19+ mm |
| HRT FE2012-N | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | 40 mm Ø x 20 mm        |
| IMZ 74A      | (0.002)  | (0.0004) | .  | .        | 0.041    | .       | .         | .        | .  | 0.022    | .        | .        | .        | 43 mm Ø x 20 mm        |
| 12X 19MNV56A | .        | .        | .  | .        | .        | .       | .         | 0.0046   | .  | .        | .        | .        | .        | -40 mm Ø x ~15 mm      |
| ECRM 087-1D  | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | 38 mm Ø x 25 or 30 mm  |
| 12X 15180A   | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | 0.0016   | .        | -40 mm Ø x ~20 mm      |
| ECRM 194-2D  | 0.00155  | .        | .  | .        | 0.0290   | .       | .         | .        | .  | 0.00322  | .        | .        | .        | 39 mm Ø x 28 mm        |
| BS 3962      | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | .        | .        | .        | 37 mm Ø x ~7 or 19+ mm |
| VS UG7/11    | .        | .        | .  | .        | .        | .       | .         | .        | .  | 0.20     | 0.385    | .        | .        | -45 mm Ø x ~28 mm      |
| CZ CM-8A     | 0.004    | .        | .  | .        | 0.034    | .       | .         | .        | .  | (0.001)  | 0.01     | .        | .        | -39 mm Ø x 25 mm       |
| HRT FE1999-N | 0.0002   | .        | .  | .        | 0.002    | .       | .         | .        | .  | 0.001    | .        | .        | .        | 40 mm Ø x 20 mm        |
| BS XCCT      | .        | .        | .  | .        | (0.001)  | (0.005) | (<0.001)  | (0.0004) | .  | (0.002)  | .        | .        | (<0.002) | 36 mm Ø x ~7 or 19+ mm |
| IMZ 176A     | .        | .        | .  | .        | .        | .       | .         | .        | .  | .        | (0.015)  | .        | .        | 40 mm Ø x 40 mm        |
| BS 15A       | (0.0002) | (0.0005) | .  | .        | 0.041    | .       | (0.0003)  | (0.003)  | .  | 0.008    | (0.004)  | .        | 0.022    | 32 mm Ø x 17 mm last   |
| ECRM 193-1D  | .        | .        | .  | .        | 0.0232   | .       | .         | .        | .  | (0.0013) | .        | .        | .        | 36-41 mm Ø x 28-35 mm  |
| BS 47A       | .        | .        | .  | .        | 0.002    | (0.003) | .         | .        | .  | 0.003    | .        | .        | .        | 38 mm Ø x ~7 or 19+ mm |

| Number | B | Ca | Fe | Mg | Nb | O | Pb | Sb | Ta | Ti | W | Zn | Zr | Units |
|--------|---|----|----|----|----|---|----|----|----|----|---|----|----|-------|
|--------|---|----|----|----|----|---|----|----|----|----|---|----|----|-------|

LOW ALLOY STEEL WITH C < 0.13 %

# = Class, where 1 = CRM and 2 = RM

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, Co, Mo, N, Sn, V. Lists various steel grades and their chemical compositions.

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Als, Co, Mo, N, Sn, V. Lists various steel grades and their chemical compositions, including additional elements like As, B, Ca, Ce, Fe, Nb, O, Pb, Sb, Ti, W, Zr, and Units.







TOOL STEEL CONTINUED FROM THE PREVIOUS PAGE

Table with columns: Number, Als, As, B, Ca, Nb, O, Pb, Sb, Sn, Ta, Zr, Units. Contains multiple rows of tool steel specifications such as BS PM15, BS A-11, BS M-47, BS H-13A, etc., with various chemical composition values and unit dimensions.

## ALUMINUM IN STAINLESS AND HIGH ALLOY STEEL

# = Class, where 1 = CRM and 2 = RM

| # | Number         | Al    | Ni    | Cr    | C      | Mn     | P      | S        | Si    | Cu     | Co     | Mo     | N      | Nb      | Ti     | V      |
|---|----------------|-------|-------|-------|--------|--------|--------|----------|-------|--------|--------|--------|--------|---------|--------|--------|
| 1 | ECRM 299-1D    | 5.33  | 0.172 | 22.32 | 0.0154 | 0.2678 | 0.0152 | 0.00022  | 0.299 | 0.0382 | 0.0187 | 0.0186 | 0.0198 | .       | 0.1289 | 0.0329 |
| 1 | IMZ 158        | 1.56  | 0.24  | 25.51 | 0.091  | 1.34   | 0.015  | 0.007    | 2.23  | 0.097  | .      | 0.025  | .      | .       | 0.12   | 0.078  |
| 1 | 13X PH17700A   | 1.172 | 6.98  | 16.88 | 0.0732 | 0.496  | 0.0181 | 0.0008   | 0.551 | 0.146  | 0.0464 | 0.340  | 0.0192 | 0.0201  | 0.051  | 0.0390 |
| 1 | <b>BS 192</b>  | 1.17  | 7.11  | 16.44 | 0.074  | 0.835  | 0.025  | 0.0005   | 0.387 | 0.412  | 0.104  | 0.430  | 0.0290 | 0.168   | 0.076  | 0.124  |
| 2 | CT X92834      | 1.14  | 8.32  | 12.57 | 0.035  | 0.044  | 0.003  | 0.003    | 0.019 | 0.030  | 0.030  | 2.20   | .      | 0.001   | 0.019  | <0.004 |
| 1 | IARMFel77PH-18 | 1.09  | 7.11  | 17.08 | 0.080  | 0.730  | 0.020  | (0.0005) | 0.51  | 0.36   | 0.048  | 0.350  | 0.0153 | 0.009   | 0.083  | 0.062  |
| 1 | 13X PH13800A   | 1.075 | 8.04  | 12.53 | 0.0386 | 0.0332 | 0.0064 | 0.0030   | 0.081 | 0.0449 | 0.0220 | 2.10   | 0.0041 | .       | 0.0122 | 0.0188 |
| 1 | IARM 21D       | 1.03  | 8.29  | 12.69 | 0.032  | 0.052  | 0.008  | (0.0014) | 0.039 | 0.017  | 0.078  | 2.23   | 0.0037 | (0.005) | 0.016  | 0.017  |
| 2 | BS 184A        | 1.00  | 8.34  | 12.66 | 0.035  | 0.06   | 0.007  | (0.001)  | 0.080 | 0.041  | 0.036  | 2.20   | 0.0045 | (0.006) | 0.051  | 0.014  |
| 1 | <b>BS 192A</b> | 0.98  | 7.01  | 16.44 | 0.066  | 0.768  | 0.021  | <0.002   | 0.300 | 0.334  | 0.114  | 0.28   | 0.029  | 0.208   | 0.083  | 0.077  |
| 1 | IARM 152C      | 0.94  | 7.30  | 16.99 | 0.072  | 0.74   | 0.024  | 0.0006   | 0.263 | 0.316  | 0.113  | 0.36   | 0.0172 | 0.012   | 0.098  | 0.072  |

| Number          | As       | B        | Ca       | O        | Sn      | Ta      | W       | Zr     | Units                  |
|-----------------|----------|----------|----------|----------|---------|---------|---------|--------|------------------------|
| ECRM 299-1D     | 0.0054   | 0.0002   | .        | .        | .       | .       | .       | 0.1775 | 40 mm Ø x 25 mm        |
| IMZ 158         | .        | .        | .        | .        | .       | .       | .       | .      | 40 mm Ø x 40 mm        |
| 13X PH17700A    | .        | 0.0033   | .        | .        | 0.0055  | .       | 0.009   | .      | ~38 mm Ø x ~15 mm      |
| <b>BS 192</b>   | (0.005)  | (0.0003) | 0.0007   | 0.0014   | 0.008   | (0.001) | 0.05    | .      | 38 mm Ø x ~7 or 19+ mm |
| CT X92834       | .        | 0.0009   | .        | .        | 0.002   | .       | .       | <0.001 | 30-35 mm Ø x x ~19 mm  |
| IARM Fe177PH-18 | .        | (0.0017) | .        | .        | (0.006) | .       | (0.011) | .      | 31 mm Ø x 2 or 18 mm   |
| 13X PH13800A    | .        | .        | .        | .        | 0.0051  | .       | .       | .      | ~38 mm Ø x ~15 mm      |
| IARM 21D        | .        | .        | .        | .        | .       | .       | (0.012) | .      | 31 mm Ø x 2 or 18 mm   |
| BS 184A         | .        | (0.0004) | (0.0003) | (0.0003) | (0.002) | .       | 0.032   | .      | 38 mm Ø x ~7 or 19+ mm |
| <b>BS 192A</b>  | (0.0035) | (0.0003) | (0.0006) | (0.0006) | 0.008   | .       | 0.048   | .      | 38 mm Ø x ~7 or 19+ mm |
| IARM 152C       | (0.004)  | 0.0029   | (0.0005) | (0.001)  | 0.007   | (0.005) | 0.026   | .      | 31 mm Ø x 2 mm         |

## CRM BORON IN STAINLESS STEEL

35 mm x 45 mm x 16 mm

| Number   | B    | C       | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Al     | Mo     | Ti     | V      | W      |
|----------|------|---------|--------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| DSZU C61 | 2.14 | (0.073) | (0.38) | (0.003) | (0.005) | (0.41) | (0.09) | (0.95) | (17.8) | (0.04) | (0.24) | (0.75) | (0.19) | (0.22) |
| DSZU C60 | 1.42 | (0.058) | (0.50) | (0.002) | (0.006) | (0.35) | (0.01) | (0.51) | (11.9) | (0.11) | (0.37) | (2.70) | (0.41) | (0.20) |
| DSZU C62 | 1.15 | (0.065) | (0.31) | (0.010) | (0.024) | (0.32) | (0.24) | (0.84) | (14.4) | (0.59) | (0.16) | (3.36) | (0.18) | (0.14) |
| DSZU C63 | 1.05 | (0.070) | (0.27) | (0.014) | (0.006) | (0.30) | (0.39) | (0.48) | (11.3) | (0.25) | (0.09) | (0.70) | (0.08) | (0.10) |

## CALCIUM IN STAINLESS AND HIGH ALLOY STEEL

# = Class, where 1 = CRM and 2 = RM

| # | Number            | Ca      | Ni     | Cr     | C      | Mn    | P      | S      | Si    | Cu     | Co      | Mo     | N      | Nb       | V      | W        |
|---|-------------------|---------|--------|--------|--------|-------|--------|--------|-------|--------|---------|--------|--------|----------|--------|----------|
| 1 | <b>BS Ca304-4</b> | 0.0075  | 8.77   | 18.26  | 0.096  | 0.783 | 0.0205 | 0.0070 | 0.887 | 0.143  | (0.007) | 0.0041 | 0.061  | 0.063    | 0.0686 | 0.0056   |
| 2 | BS CA304-1        | 0.0045  | 8.57   | 18.30  | 0.045  | 1.06  | 0.026  | 0.016  | 0.71  | 0.34   | 0.20    | 0.34   | 0.083  | 0.026    | 0.09   | 0.04     |
| 1 | 13X 14923A        | 0.0044  | 0.452  | 11.26  | 0.205  | 0.501 | 0.0197 | 0.0031 | 0.330 | 0.0563 | 0.0207  | 0.819  | 0.0321 | 0.005    | 0.295  | .        |
| 1 | ECRM 379-1D       | 0.0033  | 30.83  | 26.79  | 0.0121 | 1.804 | 0.0166 | 0.0006 | 0.393 | 0.984  | 0.0390  | 3.290  | 0.0550 | (0.0028) | 0.0663 | (0.0091) |
| 1 | 13X 31603D        | 0.0029  | 10.04  | 17.58  | 0.0203 | 1.475 | 0.0363 | 0.0265 | 0.395 | 0.356  | 0.188   | 2.019  | 0.062  | 0.010    | 0.0722 | 0.040    |
| 2 | BS 193            | 0.0020  | 1.82   | 18.48  | 0.104  | 12.11 | 0.018  | 0.002  | 0.66  | 0.088  | 0.028   | 0.21   | 0.37   | 0.014    | 0.107  | (0.007)  |
| 2 | BS SS4952         | 0.0019  | 0.23   | 13.15  | 0.347  | 0.41  | 0.016  | 0.003  | 0.66  | 0.045  | 0.030   | 0.049  | 0.027  | 0.004    | 0.089  | (0.007)  |
| 2 | BS 82E            | 0.0014  | 12.49  | 22.38  | 0.062  | 1.61  | 0.027  | 0.001  | 0.58  | 0.26   | 0.12    | 0.31   | 0.072  | 0.062    | 0.064  | 0.041    |
| 1 | <b>BS 9942</b>    | 0.0014  | 13.55  | 18.21  | 0.021  | 1.84  | 0.025  | 0.006  | 0.49  | 0.305  | 0.086   | 3.30   | 0.071  | 0.005    | 0.072  | 0.032    |
| 1 | <b>BS 9842</b>    | 0.0010  | 20.02  | 24.19  | 0.059  | 1.50  | 0.025  | 0.0016 | 0.99  | 0.147  | 0.237   | 0.111  | 0.037  | 0.026    | 0.075  | 0.011    |
| 1 | ECRM 272-1D       | 0.00090 | 0.2445 | 11.927 | 0.2815 | 0.600 | 0.0156 | 0.0196 | 0.420 | 0.0192 | 0.0145  | 0.0030 | 0.0508 | 0.0028   | 0.0167 | .        |
| 2 | BS 94C            | 0.0008  | 0.43   | 25.90  | 0.057  | 0.45  | 0.024  | 0.002  | 0.62  | 0.056  | 0.042   | 0.20   | 0.065  | 0.032    | 0.12   | (0.03)   |
| 2 | BS 87F            | 0.0007  | 10.12  | 17.30  | 0.055  | 1.64  | 0.024  | 0.025  | 0.67  | 0.28   | 0.17    | 0.29   | 0.037  | 0.57     | 0.13   | 0.050    |
| 2 | BS SS3951         | 0.0005  | 9.18   | 18.17  | 0.014  | 1.56  | 0.023  | 0.031  | 0.61  | 0.22   | 0.16    | 0.303  | 0.077  | 0.085    | 0.067  | 0.040    |

| Number            | Al        | As       | B        | O        | Pb         | Sb       | Sn     | Ti       | Zn        | Units                                    |
|-------------------|-----------|----------|----------|----------|------------|----------|--------|----------|-----------|--|
| <b>BS Ca304-4</b> | 0.017     | 0.0063   | 0.0031   | 0.013    | 0.0008     | (0.0002) | 0.0024 | 0.0046   | Zr:0.0036 | ~38 mm Ø x ~38mm Fe: 70.7 <b>17025</b>   |
| BS CA304-1        | 0.003     | (0.003)  | 0.0006   | 0.0041   | .          | (0.0020) | 0.010  | 0.028    | .         | 38 mm Ø x ~5 mm last, sides not parallel |
| 13X 14923A        | 0.003     | .        | .        | .        | .          | .        | 0.004  | .        | .         | ~40 mm Ø x ~15 mm                        |
| ECRM 379-1D       | (0.00246) | (0.0018) | 0.00190  | (0.0027) | (0.000038) | 0.00057  | 0.0021 | (0.0014) | .         | 38 or 45 mm Ø x 25 mm                    |
| 13X 31603D        | 0.006     | .        | .        | .        | .          | .        | 0.0084 | (0.0014) | .         | ~30 mm Ø x ~20 mm                        |
| BS 193            | (0.003)   | .        | 0.0007   | (0.004)  | .          | .        | 0.004  | 0.003    | .         | 32 mm Ø x ~7 or 19+ mm                   |
| BS SS4952         | 0.003     | 0.002    | (0.0004) | 0.005    | .          | .        | 0.004  | 0.002    | .         | 38 mm Ø x ~7 or 19+ mm                   |
| BS 82E            | 0.006     | .        | 0.0024   | .        | .          | .        | 0.006  | 0.003    | .         | 38 mm Ø x ~7 or 19+ mm                   |
| <b>BS 9942</b>    | 0.004     | (0.004)  | 0.0014   | (0.0023) | .          | .        | 0.006  | (0.002)  | .         | 44 mm Ø x ~7 or 19+ mm                   |
| <b>BS 9842</b>    | 0.014     | (0.002)  | 0.0025   | (0.0044) | .          | .        | 0.005  | 0.003    | .         | 38 mm Ø x ~7 or 19+ mm                   |
| ECRM 272-1D       | 0.0046    | 0.0116   | 0.0018   | .        | .          | 0.0007   | .      | 0.00096  | 0.0031    | 38 mm Ø x 25 or 30 mm                    |
| BS 94C            | 0.004     | .        | (0.0005) | 0.0061   | .          | .        | 0.006  | .        | .         | 44 mm Ø x ~7 or 19+ mm                   |
| BS 87F            | 0.004     | 0.005    | (0.0006) | 0.005    | .          | .        | 0.004  | 0.004    | .         | 41 mm Ø x ~7 or 19+ mm                   |
| BS SS3951         | 0.002     | .        | (0.0006) | 0.0075   | .          | .        | 0.007  | (0.002)  | .         | 41 mm Ø x ~7 or 19+ mm                   |





MANGANESE STAINLESS STEEL

# = Class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties \* Provisional Analysis

Table with columns: # Number, Mn, Ni, Cr, C, P, S, Si, Cu, Mo, Al, Co, N, Nb, V, W. Rows include various stainless steel grades like IARM 294A, ECRM 294-1D, VS RG20/1, etc.

Table with columns: Number, As, B, Ca, O, Pb, Sb, Sn, Ta, Te, Ti, Zr, Units. Rows include grades like IARM 294A, VS RG20/1, BS 193, etc., with associated units.

CRM NICKEL BINARIES analysis listed in mass % -40 mm Ø x -15 mm

Table with columns: Number, Ni, C, Mn, P, S, Si, Cu, Cr, Al, Co, N, Mg, Mo, Nb, Ti, W. Rows include grades like 14X FeNi50C, 14X FeNi45C, 14X 94100A, etc.

## SULFUR AND PHOSPHORUS IN STAINLESS AND HIGH ALLOY STEEL

# = Class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties

| # | Number        | S      | P      | Ni    | Cr    | C      | Mn    | Si    | Cu     | Al       | Co      | Mo    | N      | Nb      | Ti      | V      |
|---|---------------|--------|--------|-------|-------|--------|-------|-------|--------|----------|---------|-------|--------|---------|---------|--------|
| 2 | CT 416        | 0.36   | 0.018  | 0.24  | 13.15 | 0.088  | 0.52  | 0.63  | 0.004  | .        | 0.019   | 0.065 | 0.020  | .       | .       | 0.025  |
| 1 | IARM 10D      | 0.334  | 0.0178 | 0.291 | 12.42 | 0.110  | 1.11  | 0.475 | 0.192  | (0.0027) | 0.0187  | 0.148 | 0.0241 | 0.0027  | 0.0015  | 0.051  |
| 2 | BS 150        | 0.33   | 0.020  | 0.19  | 18.61 | 0.048  | 1.71  | 0.43  | 0.042  | 0.002    | 0.024   | 1.97  | 0.029  | 0.003   | .       | 0.054  |
| 1 | SRM 1223      | 0.329  | 0.018  | 0.232 | 12.64 | 0.127  | 1.08  | 0.327 | 0.081  | .        | .       | 0.053 | .      | .       | .       | 0.068  |
| 2 | BS 90F        | 0.328  | 0.023  | 0.30  | 13.01 | 0.085  | 0.53  | 0.58  | 0.12   | (0.006)  | 0.021   | 0.14  | 0.037  | 0.011   | .       | 0.076  |
| 1 | <b>BS 303</b> | 0.326  | 0.028  | 8.17  | 17.23 | 0.044  | 1.80  | 0.415 | 0.627  | 0.0019   | 0.071   | 0.410 | 0.023  | 0.008   | 0.017   | 0.056  |
| 1 | 13X 30300A    | 0.312  | 0.0205 | 8.60  | 17.62 | 0.041  | 1.83  | 0.422 | 0.025  | .        | 0.0255  | 0.334 | 0.034  | .       | .       | 0.091  |
| 2 | CT 303        | 0.31   | 0.029  | 9.08  | 17.78 | 0.070  | 1.64  | 0.58  | 0.49   | .        | 0.16    | 0.41  | .      | .       | .       | 0.044  |
| 1 | IARM 355A     | 0.31   | 0.0186 | 0.427 | 17.81 | 0.0274 | 0.47  | 0.435 | 0.083  | 0.0016   | 0.047   | 0.337 | 0.0439 | 0.0095  | 0.0020  | 0.038  |
| 2 | BS 154        | 0.302  | 0.027  | 0.25  | 17.58 | 0.030  | 0.40  | 1.26  | 0.063  | (0.002)  | 0.019   | 0.31  | 0.039  | 0.005   | .       | 0.046  |
| 2 | 13X 12549K    | 0.29   | 0.092  | 1.26  | 11.70 | 0.16   | 0.34  | 0.43  | 0.10   | .        | 0.52    | 1.49  | .      | 0.23    | .       | .      |
| 2 | BS 153        | 0.280  | 0.018  | 0.140 | 17.38 | 0.026  | 0.41  | 0.53  | 0.052  | 0.002    | 0.017   | 0.30  | 0.021  | 0.002   | (0.004) | 0.045  |
| 2 | BS 152        | 0.275  | 0.022  | 0.14  | 13.41 | 0.320  | 0.36  | 0.44  | 0.050  | (0.002)  | 0.015   | 0.061 | 0.020  | 0.006   | .       | 0.051  |
| 3 | CZ SP-1A      | 0.26   | 0.024  | 8.6   | 17.7  | 0.047  | 1.87  | 0.33  | 0.52   | 0.004    | 0.095   | 0.42  | .      | 0.012   | 0.02    | 0.058  |
| 1 | 13X 12548M    | 0.219  | 0.027  | 1.075 | 12.96 | 0.188  | 0.577 | 0.425 | 0.230  | .        | 0.353   | 1.318 | 0.0500 | 0.586   | .       | .      |
| 1 | IARM 352A     | 0.21   | 0.0182 | 0.269 | 13.11 | 0.341  | 1.13  | 0.357 | 0.148  | (0.0025) | (0.016) | 0.38  | 0.029  | (0.012) | 0.0015  | 0.028  |
| 1 | 13X 43020A    | 0.189  | 0.0246 | 0.517 | 16.07 | 0.147  | 1.439 | 0.415 | 0.0687 | 0.0047   | 0.0191  | 0.226 | 0.0212 | 0.0102  | .       | 0.0542 |
| 1 | IMZ 154       | 0.16   | 0.040  | 9.86  | 17.71 | 0.076  | 2.18  | 0.89  | 0.33   | (0.16)   | 0.105   | 2.58  | .      | .       | 1.00    | 0.073  |
| 1 | NCS HS41751A  | 0.16   | 0.035  | 8.07  | 17.41 | 0.075  | 1.70  | 0.71  | 0.26   | .        | 0.13    | 0.33  | 0.077  | .       | .       | 0.068  |
| 2 | BS 155        | 0.145  | 0.014  | 0.13  | 16.64 | 1.00   | 0.35  | 0.40  | 0.035  | (0.001)  | 0.019   | 0.46  | 0.032  | 0.002   | .       | 0.10   |
| 1 | 13X 12536S    | 0.136  | 0.052  | 12.07 | 15.30 | 0.149  | 0.406 | 0.865 | 0.065  | 0.049    | 0.298   | 2.54  | 0.062  | .       | 0.105   | .      |
| 1 | 13X 12536T    | 0.090  | 0.0449 | 12.12 | 16.09 | 0.146  | 0.374 | 0.546 | 0.0793 | 0.108    | 0.280   | 2.48  | 0.0084 | 0.060   | 0.444   | 0.0513 |
| 1 | 13X 12535BE   | 0.0591 | 0.0400 | 14.79 | 16.95 | 0.229  | 0.342 | 1.407 | 0.130  | 0.194    | 0.146   | 4.09  | 0.029  | .       | 0.625   | 0.252  |
| 1 | SRM C1154a    | 0.051  | 0.06   | 13.08 | 19.31 | 0.100  | 1.44  | 0.53  | 0.44   | .        | 0.38    | 0.068 | .      | .       | .       | 0.135  |
| 1 | 13X 19003C    | 0.046  | 0.0382 | 12.46 | 18.99 | 0.047  | 1.138 | 0.497 | 0.171  | .        | 0.105   | 2.50  | 0.077  | 0.120   | .       | 0.0486 |
| 1 | VS LG58       | 0.0280 | 0.0135 | 4.26  | 23.4  | 0.48   | 0.99  | 0.292 | 0.388  | .        | .       | 2.41  | .      | 0.214   | 0.039   | 0.264  |
| 1 | 13X 18004B    | 0.0191 | 0.068  | 12.67 | 21.57 | 0.099  | 1.400 | 1.21  | 0.050  | 0.011    | 0.211   | 0.601 | 0.061  | 0.749   | .       | 0.161  |
| 2 | 13X 19004B    | 0.014  | 0.069  | 17.9  | 22.8  | 0.066  | 1.96  | 0.36  | 0.022  | .        | .       | 3.62  | .      | 0.18    | .       | .      |
| 1 | 13X 19004C    | 0.0135 | 0.074  | 17.90 | 22.77 | 0.075  | 2.01  | 0.35  | 0.0112 | 0.030    | 0.0501  | 3.43  | .      | 0.152   | .       | 0.041  |

| Number        | Ag     | As      | B        | O       | Pb       | Sn       | Ta      | W       | Units                               |
|---------------|--------|---------|----------|---------|----------|----------|---------|---------|-------------------------------------|
| CT 416        | 0.0002 | .       | .        | .       | <0.001   | 0.005    | .       | .       | 30-35 mm Ø x ~16 mm                 |
| IARM 10D      | .      | (0.007) | (0.002)  | (0.005) | .        | 0.010    | .       | (0.005) | 31 mm Ø x 2 or 18 mm                |
| BS 150        | .      | .       | .        | 0.012   | .        | (0.003)  | .       | 0.01    | 35 mm Ø x ~7 or 19+ mm              |
| SRM 1223      | .      | .       | .        | .       | .        | .        | .       | .       | 32 mm Ø x 19 mm                     |
| BS 90F        | .      | .       | .        | 0.011   | .        | 0.005    | .       | 0.032   | 38 mm Ø x ~7 or 19+ mm              |
| <b>BS 303</b> | .      | .       | 0.0013   | 0.0058  | .        | 0.0091   | .       | 0.023   | 44 mm Ø x ~7 or 19+ mm <b>17025</b> |
| 13X 30300A    | .      | .       | 0.0035   | .       | .        | .        | .       | .       | ~40 mm Ø x ~15 mm                   |
| CT 303        | 0.0003 | .       | .        | .       | 0.001    | 0.007    | .       | .       | 30-35 mm Ø x ~16 mm                 |
| IARM 355A     | .      | (0.004) | (0.0011) | (0.010) | (0.0002) | (0.005)  | .       | (0.018) | 31 mm Ø x 2 or 18 mm                |
| BS 154        | .      | .       | .        | 0.008   | .        | (0.005)  | .       | (0.01)  | 38 mm Ø x ~7 or 19+ mm              |
| 13X 12549K    | .      | .       | .        | .       | .        | .        | .       | .       | 40 mm Ø x 15 mm                     |
| BS 153        | .      | (0.004) | .        | .       | (0.001)  | 0.002    | .       | (0.002) | 35 mm Ø x ~7 or 19+ mm              |
| BS 152        | .      | .       | .        | .       | .        | 0.003    | .       | <0.01   | 41 mm Ø x ~7 or 19+ mm              |
| CZ SP-1A      | .      | 0.006   | 0.0007   | .       | .        | 0.01     | .       | 0.03    | ~39 mm Ø x 25 mm                    |
| 13X 12548M    | .      | .       | .        | .       | .        | Sb:0.022 | .       | 0.031   | 40 mm Ø x 15 mm                     |
| IARM 352A     | .      | (0.005) | (0.0007) | (0.005) | .        | 0.0046   | .       | (0.005) | 31 mm Ø x 2 or 18 mm                |
| 13X 43020A    | .      | .       | (0.0032) | .       | .        | .        | .       | 0.0108  | ~40 mm Ø x ~15 mm                   |
| IMZ 154       | .      | .       | .        | .       | .        | .        | .       | .       | 40 mm Ø x 40 mm                     |
| NCS HS41751A  | .      | .       | .        | .       | .        | .        | .       | .       | 38 mm Ø x 38 mm                     |
| BS 155        | .      | .       | .        | 0.0048  | .        | (0.003)  | .       | .       | 36 mm Ø x ~7 or 19+ mm              |
| 13X 12536S    | .      | .       | 0.0274   | .       | .        | 0.018    | 0.091   | .       | ~40 mm Ø x ~15 mm last              |
| 13X 12536T    | .      | .       | 0.0214   | .       | .        | 0.0068   | 0.104   | .       | ~40 mm Ø x ~15 mm                   |
| 13X 12535BE   | .      | .       | 0.0051   | .       | .        | 0.0194   | (0.020) | .       | ~40 mm Ø x ~15 mm                   |
| SRM C1154a    | .      | .       | .        | .       | 0.017    | .        | .       | .       | 32 mm Ø x 19 mm                     |
| 13X 19003C    | .      | .       | .        | .       | .        | .        | (0.005) | .       | ~40 mm Ø x ~15 mm                   |
| VS LG58       | .      | .       | .        | .       | .        | .        | .       | 0.21    | ~47 mm Ø x ~30 mm                   |
| 13X 19004B    | .      | .       | .        | .       | .        | .        | .       | .       | 40 mm Ø x 15 mm last                |
| 13X 18004B    | .      | .       | .        | .       | .        | .        | .       | .       | ~40 mm Ø x ~15 mm                   |
| 13X 19004C    | .      | .       | (0.001)  | .       | .        | (0.001)  | 0.011   | .       | ~40 mm Ø x ~15 mm                   |

## SELENIUM IN STAINLESS AND HIGH ALLOY STEEL

# = Class, where 1 = CRM and 2 = RM

| # | Number     | Se    | Ni    | Cr    | C     | Mn   | P     | S      | Si   | Cu    | Al       | Co    | Mo     | N      | Nb       | Ti       |
|---|------------|-------|-------|-------|-------|------|-------|--------|------|-------|----------|-------|--------|--------|----------|----------|
| 2 | BS 151     | 0.328 | 0.24  | 13.19 | 0.090 | 0.41 | 0.021 | 0.018  | 0.65 | 0.11  | (0.002)  | 0.018 | 0.088  | 0.022  | 0.005    | (<0.003) |
| 2 | BS 186A    | 0.229 | 35.86 | 0.16  | 0.040 | 0.72 | 0.008 | 0.0053 | 0.19 | 0.016 | (0.001)  | 0.028 | 0.0032 | 0.0026 | (<0.002) | (<0.003) |
| 1 | IARM 253A  | 0.21  | 9.17  | 17.90 | 0.041 | 1.50 | 0.140 | 0.0089 | 0.50 | 0.223 | 0.003    | 0.088 | 0.348  | 0.0373 | 0.016    | 0.002    |
| 1 | IARM 24B   | 0.19  | 35.86 | 0.121 | 0.053 | 0.82 | 0.009 | 0.0010 | 0.28 | 0.052 | 0.002    | 0.036 | 0.011  | 0.0017 | <0.01    | 0.002    |
| 1 | IARM 353A  | 0.17  | 0.265 | 17.01 | 0.98  | 0.95 | 0.019 | 0.025  | 0.49 | 0.13  | 0.0018   | 0.032 | 0.50   | 0.027  | (0.011)  | 0.0015   |
| 2 | CT ISO124A | 0.167 | 48.07 | 0.079 | 0.011 | 0.73 | 0.007 | 0.006  | 0.40 | 0.015 | .        | 0.012 | 0.009  | .      | .        | .        |
| 2 | BS 156     | 0.142 | 0.35  | 16.87 | 1.06  | 1.15 | 0.022 | 0.007  | 0.47 | 0.09  | (<0.002) | 0.047 | 0.50   | 0.041  | 0.005    | 0.001    |
| 1 | IARM 253B  | 0.13  | 9.11  | 17.64 | 0.051 | 1.61 | 0.13  | 0.011  | 0.46 | 0.44  | (0.004)  | 0.145 | 0.59   | 0.031  | 0.021    | 0.0027   |

| Number     | B        | Fe    | O       | Sn      | Ta      | V      | W      | Zr      | Units                      |
|------------|----------|-------|---------|---------|---------|--------|--------|---------|----------------------------|
| BS 151     | .        | .     | 0.009   | 0.005   | .       | 0.046  | 0.010  | .       | 50 mm Ø x ~7 or 19+ mm     |
| BS 186A    | .        | .     | .       | (0.002) | .       | 0.0012 | (0.01) | .       | 38 mm Ø x ~7 or 19+ mm     |
| IARM 253A  | 0.0003   | .     | 0.009   | 0.01    | .       | 0.106  | 0.10   | .       | 31 mm Ø x 2 or 18 mm       |
| IARM 24B   | (0.001)  | 62.6  | 0.003   | 0.0018  | <0.005  | <0.005 | <0.04  | <0.005  | 31 mm Ø x 2 or 18 mm       |
| IARM 353A  | (0.0006) | .     | (0.005) | 0.0056  | (0.004) | 0.116  | 0.041  | (0.002) | 31 mm Ø x 2 or 18 mm       |
| CT ISO124A | .        | 50.65 | .       | .       | .       | .      | .      | .       | 30-35 mm Ø x ~11 or ~19 mm |
| BS 156     | .        | .     | 0.0045  | (0.004) | .       | 0.13   | 0.11   | .       | 41 mm Ø x ~7 or 19+ mm     |
| IARM 253B  | 0.0007   | .     | 0.007   | (0.012) | (0.003) | 0.092  | (0.05) | .       | 31 mm Ø x 2 or 18 mm       |

STAINLESS STEEL WITH NI < 5.0 %

CONTINUED ON THE NEXT PAGE

# = Class, 1=CRM, 2=RM, and 3=RM with no uncertainties

\*\* Provisional Analysis

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Co, Mo, N, Nb, Ti, V, W. It lists chemical compositions for various stainless steel grades and variants.







## STAINLESS STEEL WITH C &gt; 0.05 %

## CONTINUED FROM THE PREVIOUS PAGE

| Number         | Al       | As       | B          | Bi                   | Ca       | Ce      | O        | Pb                   | Sb       | Sn       | Ta                   | Zr      | Units                         |
|----------------|----------|----------|------------|----------------------|----------|---------|----------|----------------------|----------|----------|----------------------|---------|-------------------------------|
| VS LG76        | 0.034    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| VS LG74        | 0.035    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| KUT S21        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| CZ CM-19A      | 0.0788   | .        | (0.091)    | .                    | (0.0036) | .       | .        | .                    | .        | 0.0283   | .                    | .       | ~37 mm Ø x ~25 mm             |
| VS LG79        | 0.059    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| CZ SP-3C       | 0.095    | (0.03)   | 1.67       | .                    | .        | .       | .        | .                    | .        | (0.02)   | .                    | .       | ~39 mm Ø x 25 mm              |
| DSZU C016      | 0.007    | .        | .          | .                    | 0.0004   | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 25 mm               |
| CZ SP-3B       | 0.08     | .        | 0.88       | .                    | .        | .       | .        | .                    | .        | 0.01     | .                    | .       | ~39 mm Ø x 25 mm              |
| KUT S19        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| SRM C1153a     | .        | .        | .          | .                    | .        | .       | .        | 0.006                | .        | .        | .                    | .       | 32 mm Ø x 19 mm               |
| 13X 18001B     | 0.0157   | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~40 mm Ø x ~15 mm             |
| KUT H6/1       | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| CZ SP-3D       | 0.037    | (0.03)   | 2.45       | .                    | .        | .       | .        | .                    | .        | (0.04)   | .                    | .       | ~39 mm Ø x 25 mm              |
| 13X NSB1D      | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 15 mm               |
| IARM 339A      | 0.004    | (0.001)  | 0.0006     | .                    | 0.0014   | .       | 0.016    | .                    | .        | (0.002)  | (0.005)              | (0.003) | 31 mm Ø x 2 or 18 mm          |
| 13X 18002D     | 0.0617   | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~40 mm Ø x ~15 mm             |
| 13X 12540L     | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 15 mm               |
| CZ CM-18A      | 0.0344   | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~37 mm Ø x ~25 mm             |
| SS 468/1       | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 38 mm Ø x 19 mm               |
| SRM C1152a     | .        | .        | .          | .                    | .        | .       | .        | 0.0047               | .        | .        | .                    | .       | 32 mm Ø x 19 mm               |
| VS LG32/5      | 0.156    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~38 mm Ø x ~25 mm             |
| 13X NSA2J      | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~40 mm Ø x ~15 mm             |
| IARM 289A      | 0.01     | .        | 0.0003     | .                    | .        | .       | 0.0104   | .                    | .        | (0.002)  | <0.005               | .       | 31 mm Ø x 2 mm                |
| IARM 241D      | 0.022    | (0.001)  | 0.0016     | .                    | (0.0012) | .       | (0.005)  | (0.0003)             | .        | (0.0022) | (0.007)              | (0.005) | 31 mm Ø x 2 or 18 mm          |
| DSZU C018      | 0.086    | .        | .          | .                    | 0.0003   | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 25 mm               |
| 13X NSB3G      | .        | .        | .          | .                    | .        | .       | .        | 0.006                | .        | .        | .                    | .       | 42 mm Ø x 15 mm               |
| KUT H5         | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| 13X 18003C     | 0.0292   | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~40 mm Ø x ~15 mm             |
| IRSID 1819     | .        | .        | (0.0004)   | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 47 mm x 47 mm x 30 mm         |
| 13X 17002E     | (0.030)  | .        | 0.0012     | .                    | .        | .       | .        | .                    | .        | .        | (0.012)              | .       | ~40 mm Ø x ~15 mm             |
| NCS HS28743    | 0.0056   | 0.0042   | .          | .                    | .        | .       | .        | 0.0004               | .        | 0.0025   | .                    | .       | 38 mm Ø x 35 mm               |
| IMZ 166A       | 0.036    | (0.0026) | .          | .                    | .        | .       | .        | .                    | .        | (0.0035) | .                    | .       | 40 mm Ø x 40 mm               |
| 13X 12855N     | 0.048    | .        | 0.0098     | .                    | .        | .       | .        | .                    | 0.093    | 0.122    | .                    | .       | ~40 mm Ø x ~15 mm             |
| 13X 14828A     | 0.008    | .        | .          | .                    | .        | .       | .        | .                    | .        | 0.0128   | .                    | .       | ~40 mm Ø x ~15 mm             |
| VS LG81        | 0.409    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| VS LG77        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| IMZ 164        | 0.040    | (0.005)  | .          | .                    | .        | .       | .        | (0.002)              | .        | (0.003)  | .                    | .       | 40 mm Ø x 40 mm               |
| 13X 17003A     | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 15 mm               |
| VS LG73        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| KUT S20        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| VS LG80        | 0.025    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| <b>BS 253</b>  | 0.016    | 0.005    | .          | .                    | .        | 0.044   | .        | .                    | .        | 0.006    | <u>25(pre-17025)</u> | .       | 38 mm Ø x ~7 or 19+ mm        |
| IARM 234C      | 0.035    | (0.001)  | 0.0023     | .                    | (0.0017) | .       | (0.005)  | (0.001)              | .        | 0.0017   | (0.003)              | (0.006) | 31 mm Ø x 2 or 18 mm          |
| SS 462         | .        | 0.007    | .          | .                    | .        | .       | .        | 0.0005               | .        | .        | .                    | .       | 38 mm Ø x 19 mm               |
| 13X 12537T     | (0.062)  | .        | 0.0029     | .                    | .        | .       | .        | .                    | .        | 0.0401   | 0.0194               | .       | ~40 mm Ø x ~15 mm             |
| DSZU C015      | (0.008)  | .        | .          | .                    | 0.0017   | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 25 mm               |
| SS 464/1       | .        | (0.003)  | .          | .                    | .        | .       | .        | 0.0004               | .        | .        | .                    | .       | 38 mm Ø x 19 mm               |
| 13X 17004B     | 0.043    | .        | 0.0066     | .                    | .        | .       | .        | .                    | .        | .        | 0.057                | .       | ~40 mm Ø x ~15 mm             |
| IMZ 165        | 0.038    | (0.003)  | .          | .                    | .        | .       | .        | (0.001)              | .        | 0.003    | .                    | .       | 40 mm Ø x 40 mm               |
| SS 467/1       | .        | 0.004    | .          | .                    | .        | .       | .        | 0.004                | .        | .        | 0.0017               | .       | 38 mm Ø x 19 mm               |
| 13X 12854M     | .        | .        | 0.0101     | 0.0052               | .        | .       | .        | .                    | 0.068    | .        | 0.020                | 0.0146  | ~40 mm Ø x ~15 mm             |
| VS LG35/5      | 0.087    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~38 mm Ø x ~25 mm             |
| 13X 17001C     | 0.0312   | .        | 0.0085     | .                    | .        | .       | .        | .                    | .        | .        | 0.0124               | .       | ~40 mm Ø x ~15 mm             |
| KUT S26        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| NCS HS41750    | 0.009    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 38 mm Ø x 35 mm               |
| Number         | Al       | As       | B          | Bi                   | Ca       | Ce      | O        | Pb                   | Sb       | Sn       | Ta                   | Zr      | Units                         |
| ECRM 270-1D    | (0.0023) | (0.0034) | Ce: 0.0487 | La: 0.0154           | .        | .       | .        | .                    | (0.0007) | (0.0035) | .                    | (0.002) | 38 mm Ø x 25 mm               |
| VS LG78        | 0.15     | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| <b>BS 192</b>  | 1.17     | (0.005)  | (0.0003)   | .                    | 0.0007   | .       | 0.0014   | <u>25(pre-17025)</u> | .        | 0.008    | (0.001)              | .       | 38 mm Ø x ~7 or 19+ mm        |
| BS 83G         | (0.004)  | .        | (0.001)    | .                    | .        | .       | 0.0064   | .                    | .        | 0.003    | .                    | .       | 38 mm Ø x ~7 or 19+ mm        |
| NM 301         | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 35 mm Ø x 20 mm               |
| VS LG72        | 0.089    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| NM 302         | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 35 mm Ø x 20 mm               |
| 13X 12534X     | 0.0485   | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | 0.031                | .       | ~40 mm Ø x ~15 mm             |
| IARM 316A      | 0.006    | 0.007    | (0.0003)   | .                    | 0.0017   | 0.064   | 0.0052   | (0.0001)             | .        | 0.006    | (0.003)              | .       | 31 mm Ø x 2 or 18 mm          |
| IARM 18D       | (0.006)  | .        | (0.0011)   | .                    | .        | .       | .        | .                    | .        | (0.007)  | .                    | .       | 31 mm Ø x 18 mm               |
| 13X 12853L     | 0.18     | .        | 0.0018     | .                    | .        | .       | .        | .                    | .        | .        | 0.034                | .       | ~40 mm Ø x ~15 mm             |
| VS LG63        | 0.45     | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~47 mm Ø x ~30 mm             |
| KUT S25        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| SRM 1171       | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 31 mm Ø x 19 mm               |
| <b>BS 9841</b> | (<0.006) | (0.003)  | 0.0026     | <u>25(pre-17025)</u> | .        | (0.011) | (0.001)  | (0.006)              | 0.006    | .        | .                    | (0.002) | 44 mm Ø x ~7 or 19+ mm        |
| SS 465/1       | 0.026    | .        | 0.0006     | .                    | .        | .       | .        | (<0.001)             | .        | .        | .                    | .       | 38 mm Ø x 19 mm               |
| <b>BS 192A</b> | 0.98     | (0.0035) | (0.0003)   | .                    | (0.0006) | .       | (0.0006) | .                    | .        | 0.008    | <u>25(pre-17025)</u> | .       | 38 mm Ø x ~7 or 19+ mm        |
| IMZ 152        | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 40 mm               |
| IMZ 152A       | (0.004)  | (0.002)  | 0.0022     | .                    | .        | .       | .        | .                    | .        | (0.001)  | .                    | .       | 38 mm Ø x 20 mm               |
| VS LG71        | 0.072    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| IARM 7C        | 0.017    | .        | 0.0027     | .                    | .        | .       | 0.0021   | (0.0001)             | last     | 0.0020   | (0.002)              | (0.001) | 31 mm Ø x 2 mm Mg:15ppm       |
| CT 304         | .        | .        | .          | .                    | .        | .       | .        | <0.001               | .        | 0.017    | .                    | .       | 30-35 mm Ø x ~16 mm Ag: 7ppm  |
| BS 82E         | 0.006    | .        | 0.0024     | .                    | 0.0014   | .       | .        | .                    | .        | 0.006    | .                    | .       | 38 mm Ø x ~7 or 19+ mm        |
| 13X 31008A     | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~38 mm Ø x ~15 mm             |
| KUT H7/1       | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 30-35 mm Ø x 18 or 40 mm      |
| CT 316         | .        | .        | .          | .                    | .        | .       | .        | 0.001                | .        | 0.006    | .                    | .       | 30-35 mm Ø x ~19 mm Ag: 5ppm  |
| VS LG36/5      | 0.080    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~38 mm Ø x ~25 mm             |
| <b>BS 321D</b> | 0.103    | 0.0040   | 0.0012     | .                    | (0.0003) | .       | 0.0009   | (0.0003)             | (0.001)  | 0.0091   | <u>17025</u>         | (0.001) | 44 mm Ø x ~7 or 19+ mm Fe,Mg  |
| 13X NSB2D      | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 15 mm               |
| <b>BS 9842</b> | 0.014    | (0.002)  | 0.0025     | .                    | 0.0010   | .       | (0.0044) | .                    | .        | 0.005    | <u>25(pre-17025)</u> | .       | 38 mm Ø x ~7 or 19+ mm        |
| BS 82D         | (0.002)  | .        | 0.0040     | .                    | 0.0007   | .       | 0.007    | .                    | .        | 0.004    | .                    | last    | 38 mm Ø x ~7 mm               |
| 13X 30908A     | 0.0035   | .        | 0.0027     | .                    | (0.0005) | .       | .        | .                    | .        | .        | .                    | .       | ~38 mm Ø x ~15 mm             |
| SRM 1172       | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | <0.001               | .       | 32 mm Ø x 19 mm               |
| VS LG82        | 0.076    | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | ~45 mm Ø x ~28 mm             |
| IARM 3E        | 0.0045   | (0.005)  | (0.0005)   | .                    | 0.0015   | .       | 0.0048   | (0.0003)             | (0.0013) | 0.007    | (0.005)              | 0.0018  | 31 mm Ø x 2 or 18 mm          |
| BS 87F         | 0.004    | 0.005    | (0.0006)   | .                    | 0.0007   | .       | 0.005    | .                    | .        | 0.004    | .                    | .       | 41 mm Ø x ~7 or 19+ mm        |
| 13X 19001B     | .        | .        | .          | .                    | .        | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 15 mm               |
| BS 86F         | (0.007)  | (0.003)  | 0.0026     | .                    | (0.001)  | .       | .        | (0.001)              | .        | 0.004    | (0.019)              | .       | 44 mm Ø x ~7 or 19+ mm        |
| DSZU C017      | 0.28     | .        | .          | .                    | 0.0031   | .       | .        | .                    | .        | .        | .                    | .       | 40 mm Ø x 25 mm               |
| IARM Fe304H-18 | (0.005)  | 0.0076   | .          | .                    | .        | .       | (0.008)  | .                    | .        | (0.014)  | .                    | .       | 31 mm Ø x 2 or 18 mm          |
| BS 347B        | 0.002    | (0.003)  | 0.0036     | .                    | (0.0005) | .       | 0.005    | .                    | .        | 0.006    | (<0.004)             | .       | 38 mm Ø x ~7 or 19+ mm        |
| BS 347A        | (0.002)  | (0.003)  | (0.0004)   | .                    | (0.0002) | .       | 0.0047   | .                    | .        | 0.007    | (<0.004)             | .       | 38 mm Ø x 19+ mm              |
| BS 188A        | 0.19     | .        | 0.0065     | .                    | .        | .       | 0.0012   | <0.001               | .        | 0.002    | .                    | .       | 38 mm Ø x ~7 mm last of stock |
| Number         | Al       | As       | B          | Bi                   | Ca       | Ce      | O        | Pb                   | Sb       | Sn       | Ta                   | Zr      | Units                         |



## STAINLESS STEEL WITH C &lt; 0.05 %

## CONTINUED FROM THE PREVIOUS PAGE

analysis listed in mass %

| Number          | Al       | As      | B        | Ca        | O         | Pb        | Sb       | Sn       | Ta           | Units   |
|-----------------|----------|---------|----------|-----------|-----------|-----------|----------|----------|--------------|---|
| ECRM 269-1D     |          | 0.0061  |          |           |           |           |          | 0.0099   |              | 35 mm Ø x 25 mm                                   |
| IARM 8H         | (0.005)  |         | (0.0002) |           |           |           |          | (0.008)  | (0.01)       | 31 mm Ø x 2 or 18 mm                              |
| IARM 61         | 0.084    | (0.005) | 0.0034   | (0.0004)  | 0.0012    |           |          | (0.0060) |              | 31 mm Ø x 2 or 18 mm                              |
| ECRM 289-1D     | 0.199    |         | 0.0044   |           |           |           |          | 0.111    |              | 38 mm Ø x 30 mm                                   |
| IMZ 150A        | 0.022    |         |          |           |           |           |          |          |              | 40 mm Ø x 40 mm                                   |
| IARM 4F         | 0.015    | (0.003) | (0.0012) | (0.002)   | (0.004)   |           | (0.001)  | (0.005)  | (0.007)      | 31 mm Ø x 2 or 18 mm                              |
| 13X 14211R      | 0.089    |         |          |           |           |           |          |          | 0.0152       | ~40 mm Ø x ~15 mm                                 |
| 13X 32100A      | 0.0247   |         | 0.0025   |           |           |           |          | 0.0115   |              | ~38 mm Ø x ~15 mm                                 |
| IARM Fe303-18   |          | 0.007   | (0.0012) |           | (0.006)   |           |          | (0.015)  |              | 31 mm Ø x 2 or 18 mm                              |
| <b>BS 188B</b>  | 0.168    | 0.0045  | 0.0047   | (0.00003) | 0.0006    | (0.0001)  | (0.0006) | 0.0051   |              | 38 mm Ø x ~7 or 19+ mm Fe: 55.8 <b>17025</b>      |
| IARM 4G         | 0.008    | (0.005) | 0.0032   | (0.001)   | (0.003)   | (0.0005)  | (0.001)  | 0.008    | (0.008)      | 31 mm Ø x 2 or 18 mm                              |
| IARM 6J         | 0.0195   |         | 0.0024   |           | (0.001)   |           |          | (0.009)  | (0.01)       | 31 mm Ø x 2 or 18 mm                              |
| <b>BS 303</b>   | 0.0019   |         | 0.0013   | (0.0015)  | 0.0058    |           |          | 0.0091   |              | 44 mm Ø x ~7 or 19+ mm <b>17025</b> Fe:[70.7]     |
| IARM 4E         | 0.004    | (0.005) | 0.0011   |           | 0.0021    |           |          | 0.0060   | 0.005        | 31 mm Ø x 2 or 18 mm                              |
| CZ SL-3A        | 0.007    |         | 0.002    |           |           |           |          | 0.006    |              | ~39 mm Ø x 25 mm                                  |
| KUT S15         |          |         |          |           |           |           |          |          |              | 30-35 mm Ø x 18 or 40 mm                          |
| IARM 81         | (0.0030) |         | (0.0005) |           | (0.004)   |           |          | (0.012)  |              | 31 mm Ø x 2 or 18 mm                              |
| 13X 14216P      |          |         |          |           |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| IARM 8G         | 0.0030   | (0.007) | (0.0005) | (0.0005)  | (0.003)   |           |          | 0.0107   | (0.004)      | 31 mm Ø x 2 or 18 mm                              |
| VS 1G70         | 0.029    |         |          |           |           |           |          |          |              | ~45 mm Ø x ~28 mm                                 |
| NILAB 500HA D   |          |         |          |           |           |           |          |          |              | 38 mm Ø x 20 mm                                   |
| 13X 12538J      |          |         |          |           |           |           |          |          |              | 40 mm Ø x 15 mm                                   |
| NCS HS28741     |          | 0.0035  |          |           |           | 0.0001    |          | 0.0051   |              | 38 mm Ø x 35 mm                                   |
| 13X 14207L      | 0.0226   |         |          |           |           |           |          |          | 0.082        | ~40 mm Ø x ~15 mm                                 |
| IRSD 1821       |          |         |          |           |           |           |          |          |              | 47 mm x 47 mm x 30 mm                             |
| IMZ 153A        | 0.036    |         |          |           |           |           |          |          |              | 38 mm Ø x 20 mm                                   |
| ECRM 292-1D     | (0.002)  | (0.008) |          | (0.0006)  |           |           |          |          | (0.001)      | 38 mm Ø x 25 or 30 mm                             |
| 13X 66286A      | 0.193    |         | 0.0044   |           |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| BS 184A         | 1.00     |         | (0.0004) | (0.0003)  | (0.0003)  |           |          | (0.002)  | (0.002)      | 38 mm Ø x ~7 or 19+ mm                            |
| SS 462/1        |          |         |          |           |           |           |          |          |              | 38 mm Ø x 19 mm                                   |
| SRM C1151a      |          |         |          |           |           | 0.0039    |          |          |              | 32 mm Ø x 19 mm                                   |
| 13X 31400A      | 0.022    |         |          | 0.0024    |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| <b>BS 9812</b>  | (0.002)  | (0.005) | (0.0003) | 0.0012    | (0.007)   |           |          | 0.004    |              | 50 mm Ø x ~7 or 19+ mm <b>25(pre-17025)</b>       |
| 13X NSA9B       |          |         | 0.0018   |           |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| 13X 30403B      | 0.0056   |         |          | 0.0027    |           |           |          | 0.0139   |              | ~40 mm Ø x ~15 mm                                 |
| HRT FE2014-H    |          |         |          |           |           |           |          |          |              | 35mm Ø x 20 mm                                    |
| BS 317L         | (0.005)  | (0.003) | 0.0013   | (0.001)   | 0.007     |           |          | 0.005    |              | 37 mm Ø x ~7 or 19+ mm                            |
| VS 1G75         | 0.113    |         |          |           |           |           |          |          |              | ~45 mm Ø x ~28 mm                                 |
| <b>BS 9811</b>  | (0.003)  | (0.003) | (0.0003) | 0.0014    | (0.0060)  |           |          | 0.004    |              | 38 mm Ø x ~7 or 19+ mm <b>25(pre-17025)</b>       |
| SRM 1155a       | <0.01    | (0.007) | (0.002)  |           | (0.003)   | <0.005    |          | (0.0069) |              | 32 mm Ø x 19 mm                                   |
| Number          | Al       | As      | B        | Ca        | O         | Pb        | Sb       | Sn       | Ta           | Units   |
| HRT FE2013-H    |          |         |          |           |           |           |          |          |              | 40 mm Ø x 20 mm last of stock                     |
| 13X 32900A      | 0.007    |         | 0.0028   | 0.0033    |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| IARM 162D       | (0.0026) | 0.0072  | 0.0027   | (0.003)   | 0.005     |           | (0.0019) | 0.0102   | (0.005)      | 31 mm Ø x 2 or 18 mm                              |
| IARM Fe304L-18  | (0.003)  | 0.007   | (0.0012) |           | (0.006)   |           |          | (0.013)  |              | 31 mm Ø x 2 or 18 mm                              |
| IARM 153C       | (0.003)  | 0.0061  | 0.0009   | (0.0026)  | 0.006     | (0.001)   | (0.002)  | 0.010    | (0.006)      | 31 mm Ø x 2 or 18 mm                              |
| ECRM 297-1D     | 0.0195   | 0.0040  | 1.146    | (0.0002)  |           |           |          |          |              | 40 mm Ø x 30 mm                                   |
| NCS HS28746     | 0.086    | 0.0032  |          |           |           | 0.0002    |          | 0.0065   |              | 38 mm Ø x 35 mm                                   |
| <b>BS 9942</b>  | 0.004    | (0.004) | 0.0014   | 0.0014    | (0.0023)  |           |          | 0.006    |              | 44 mm Ø x ~7 or 19+ mm <b>25(pre-17025)</b>       |
| <b>BS 9941</b>  | 0.004    | (0.010) | 0.0025   | (0.0003)  | (0.0058)  |           |          | 0.007    |              | 38 mm Ø x ~7 or 19+ mm <b>25(pre-17025)</b>       |
| IARM Fe316L-18  | (0.006)  |         |          |           | (0.005)   |           |          | (0.013)  |              | 31 mm Ø x 18 mm                                   |
| IRSD 1820       |          |         | (0.0013) |           |           |           |          |          |              | 47 mm x 47 mm x 30 mm                             |
| <b>BS 2205A</b> | (0.004)  | 0.0072  | 0.0022   | 0.0007    | 0.0046    |           |          | 0.0058   |              | 38 mm Ø x ~7 or 19+ mm <b>17025</b> Fe: 66.2      |
| NCS HS28742     |          | 0.0025  |          |           |           | 0.0001    |          | (0.0001) |              | 38 mm Ø x 35 mm                                   |
| IARM 301B       | 0.005    | (0.004) | 0.0024   | (0.0009)  | 0.0069    | (0.0003)  | (0.0006) | 0.0051   | (0.003)      | 31 mm Ø x 2 mm                                    |
| 13X NSA8B       |          |         | 0.0017   | 0.0011    |           |           |          |          |              | ~38 mm Ø x ~15 mm                                 |
| 13X NSA13A      | (0.007)  |         | 0.0030   |           |           | (0.0008)  |          | 0.0046   |              | ~40 mm Ø x ~15 mm                                 |
| SS 463/1        |          |         | 0.0022   |           |           |           |          |          |              | 38 mm Ø x 19 mm                                   |
| <b>BS 2205</b>  | 0.0080   | 0.0059  | 0.0016   | 0.0014    | 0.0034    | (0.0001)  | 0.0010   | 0.0050   | <b>17025</b> | 38 mm Ø x ~7 or ~15 mm Fe:[67.0] Mg:(0.0004) last |
| 13X NSA12A      | 0.0169   |         | 0.0020   |           |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| IARM 212D       | (0.005)  | (0.01)  | 0.001    | (0.001)   | 0.0034    | (0.001)   |          | (0.003)  | (0.003)      | 31 mm Ø x 2 mm last of stock                      |
| IARM 162C       | 0.004    | (0.006) | (0.001)  | (0.001)   | 0.005     | (0.001)   |          | 0.011    | last         | 31 mm Ø x 18 mm                                   |
| 13X FV520BA     |          |         |          |           |           |           |          |          |              | ~40 mm Ø x ~15 mm                                 |
| HRT FE2000-H    |          |         | 0.0013   |           |           |           |          |          |              | 40 mm Ø x 20 mm                                   |
| IARM Fe2205-18  | (0.007)  |         |          |           | (0.004)   |           |          | (0.006)  |              | 31 mm Ø x 2 or 18 mm                              |
| NCS HS28745     |          | 0.0055  |          |           |           | 0.0001    |          | 0.0073   |              | 38 mm Ø x 35 mm                                   |
| SS 476          |          | 0.0053  |          | 0.0028    |           |           |          | 0.0059   |              | 38 mm Ø x 19 mm                                   |
| <b>BS 304B</b>  | 0.0036   | 0.0051  | (0.0004) | 0.0009    | 0.0038    | (0.0008)  |          | 0.0057   |              | 38 mm Ø x ~7 or 19+ mm <b>17025</b> Fe: 69.6      |
| IARM 239C       | 0.007    | (0.004) | 0.0014   |           |           |           |          | (0.003)  | (0.004)      | 31 mm Ø x 2 or 18 mm                              |
| IARM FeZ100-18  | (0.017)  |         | 0.002    |           | (0.003)   |           |          | (0.006)  |              | 31 mm Ø x 2 or 18 mm                              |
| <b>BS 179C</b>  | 0.0078   | 0.0034  | 0.0015   | (0.0003)  | 0.0038    | (0.00002) | 0.0005   | 0.0018   | (0.0006)     | 38 mm Ø x ~7 or 19+ mm <b>17025</b> Fe:[61.6]     |
| <b>BS 179B</b>  | 0.0070   | 0.0036  | 0.0015   | (0.0004)  | 0.0037    | (0.00002) | 0.0005   | 0.0019   | (0.0006)     | 38 mm Ø x 19+ mm <b>17025</b> Fe:[61.5]           |
| ECRM 287-1D     |          |         | 0.924    |           |           |           |          |          |              | 38 mm Ø x 25 or 30 mm                             |
| 13X 34700A      | 0.023    |         | 0.0008   |           |           |           |          |          |              | ~38 mm Ø x ~15 mm                                 |
| 13X NSA11A      | (0.021)  |         |          |           |           |           |          |          |              | ~38 mm Ø x ~15 mm                                 |
| CZ SL-2A        | 0.005    | 0.008   | 0.002    |           |           |           |          | 0.01     |              | ~39 mm Ø x 25 mm                                  |
| <b>BS 316F</b>  | (0.002)  | 0.0067  | 0.0019   | 0.0018    | 0.0055    | (0.0002)  |          | 0.0092   | Fe:68.1      | 38 mm Ø x ~7 or 19+ mm <b>17025</b>               |
| IARM 319A       | (0.010)  | (0.004) | 0.0020   |           | 0.0025    |           |          | 0.0055   | (0.002)      | 31 mm Ø x 2 mm                                    |
| ECRM 298-1D     | 0.0285   |         | 0.0021   |           |           | 0.00008   |          |          |              | 38 mm Ø x 25 mm Fe: 63.38                         |
| SS 466/2        | 0.0018   | 0.0020  | 0.0039   |           |           |           |          |          |              | 38 mm Ø x 19 mm                                   |
| SS SS3951       | 0.002    |         | (0.0006) | 0.0005    | 0.0075    |           |          | 0.007    |              | 41 mm Ø x ~7 or 19+ mm                            |
| IARM 163E *     | 0.0039   | (0.008) | 0.0019   | (0.002)   | 0.007     |           | (0.002)  | 0.012    |              | 31 mm Ø x 2 mm * Provisional Analysis, last       |
| HRT FE2016-H    |          |         |          |           |           |           |          |          |              | 30 mm Ø x 20 mm                                   |
| SS 461/1        | 0.069    |         |          |           |           |           |          |          |              | 38 mm Ø x 19 mm                                   |
| 13X 30600A      | 0.020    |         |          |           | Mg:0.0016 |           |          |          |              | ~32 mm Ø x ~20 mm                                 |
| BS SS1961       | 0.067    | 0.004   | 0.0022   |           | (0.002)   |           |          | 0.004    |              | 38 mm Ø x 12 mm last                              |
| JK 27B          |          |         | 0.00072  | 0.0022    |           |           |          | 0.0068   |              | ~37 mm Ø x 25 mm                                  |
| BS SS1962       | 0.062    | 0.002   | 0.0018   |           | (0.001)   |           |          | 0.004    |              | 38 mm Ø x ~7 or 19+ mm                            |
| IARM 354A       | (0.05)   | (0.002) | 0.0023   | (0.0003)  | (0.0012)  | (0.004)   | (0.0002) | (0.002)  |              | 31 mm Ø x 2 or 18 mm                              |
| CT ISO123A      | 0.027    |         | 0.0021   |           |           |           |          |          |              | 30-35 mm Ø x ~16 mm Fe: 74.72                     |
| 13X 46500A      | 0.069    |         | 0.0016   |           |           |           |          | 0.0030   |              | ~32 mm Ø x ~20 mm                                 |
| ECRM 284-3D     |          | 0.00131 | 0.00020  |           |           |           |          | 0.00074  |              | 39 mm Ø x 28 mm                                   |
| Number          | Al       | As      | B        | Ca        | O         | Pb        | Sb       | Sn       | Ta           | Units   |

RM TRACE ELEMENTS IN STAINLESS STEEL

Table with 2 main sections: certified analysis and informational analysis. Columns include Number, As, Pb, Sb, Sn, Zn, C, Mn, P, Si, Cu, Ni, Cr, Mo, N, B, Ca, Ti, V. Rows list various grades like DSZU C25, DSZU C35, etc.

STAINLESS STEEL XRF SETS

AVAILABLE IN SETS OR INDIVIDUALLY

~7 mm discs

Main table for stainless steel XRF sets. Columns: Grade, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Co, Mo, N, Nb, V, W. Rows include SET BS SS-17 (15-5PH, 17-4PH, etc.), SET BS 400-SS-16 (182PM, 410, 416, etc.), and SET BS 96A.

Header for trace element analysis: Number, Al, B, Ca, Se, Sn, Ti

Detailed trace element data for various stainless steel grades. Rows include BS 185A, BS 17-4PHA, BS 192, BS 253, BS 179C, BS 2205, BS 303, BS 81P, BS 82E, BS 83G, BS 316F, BS 317L, BS 85D, BS 86F, BS 347B, BS 355, BS 184A, and SET BS 400-SS-16 (BS 150, BS 410C, etc.).

HIGH ALLOY STEEL

# = Class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties

Table with columns: #, Number, C, Mn, P, S, Si, Cu, Ni, Cr, Al, Co, Mo, N, Nb, Ti, V. Rows include various steel grades like CZ SP-8B, SRM 1246, NCS HS41747, etc. Includes a second table at the bottom for trace elements (As, B, Ca, Ce, Mg, O, Se, Sn, Ta, W, Zr) and units.

## HIGH ALLOY STEEL XRF SET

| Part Number:                | BS HAS-12 | RM except CRM as noted, available as set or individually |       |         |      |       |       |       |        |         |          |       | * Provisional Analysis |          |         |          | ~7 mm Ø discs |         |        |
|-----------------------------|-----------|--|-------|---------|------|-------|-------|-------|--------|---------|----------|-------|------------------------|----------|---------|----------|---------------|---------|--------|
| Number Grade                | C         | Mn   | P     | S       | Si   | Cu    | Ni    | Cr    | Mo     | Al      | B        | Co    | N                      | Nb       | Sn      | Ti       | V             | W       | O      |
| BS 189A<br>AL6XN<br>CRM     | 0.0147    | 0.639  | 0.019 | (0.001) | 0.30 | 0.184 | 23.8  | 20.4  | 6.04   | 0.0129  | (0.0002) | 0.100 | 0.198                  | (0.13)   | 0.0035  | 0.0065   | 0.054         | 0.037   | 0.0024 |
| BS 179A<br>Alloy 255        | 0.017     | 1.04   | 0.021 | 0.001   | 0.44 | 1.94  | 5.84  | 25.45 | 3.24   | (0.009) | (0.001)  | 0.58  | 0.184                  | 0.030    | 0.005   | 0.006    | 0.070         | (0.2)   | .      |
| BS 183B *<br>Greek Ascology | 0.18      | 0.35   | 0.018 | 0.005   | 0.41 | 0.075 | 1.97  | 12.43 | 0.33   | 0.0008  | 0.001    | 0.030 | 0.044                  | 0.009    | 0.004   | 0.002    | 0.17          | 3.42    | <0.05  |
| BS 186A<br>Invar 36         | 0.040     | 0.72   | 0.008 | 0.0053  | 0.19 | 0.016 | 35.86 | 0.16  | 0.0032 | (0.001) | .        | 0.028 | 0.0026                 | (<0.002) | (0.002) | (<0.003) | 0.0012        | (0.01)  | .      |
| BS 187A<br>Carp. 20Cb3      | 0.022     | 0.52   | 0.017 | 0.0025  | 0.26 | 3.10  | 33.06 | 19.75 | 2.06   | (0.009) | 0.0022   | 0.32  | 0.0157                 | 0.57     | 0.003   | (0.002)  | 0.10          | (0.02)  | .      |
| BS 188A<br>A-286            | 0.050     | 0.139  | 0.015 | 0.0049  | 0.15 | 0.099 | 24.61 | 14.04 | 1.10   | 0.19    | 0.0065   | 0.18  | 0.0029                 | 0.050    | 0.002   | 2.21     | 0.24          | 0.055   | .      |
| BS 190<br>Nitronic® 40      | 0.022     | 9.72   | 0.015 | 0.001   | 0.46 | 0.072 | 6.74  | 19.57 | 0.15   | (0.004) | 0.0005   | 0.044 | 0.255                  | (0.004)  | 0.003   | 0.002    | 0.11          | 0.015   | 0.0045 |
| BS 180A<br>Nitronic® 50     | 0.018     | 5.05   | 0.012 | 0.001   | 0.32 | 0.067 | 13.19 | 21.09 | 2.04   | 0.012   | (0.0024) | 0.039 | 0.334                  | 0.20     | (0.002) | (0.002)  | 0.20          | 0.02    | 0.003  |
| BS 181A<br>Nitronic® 60     | 0.071     | 8.16   | 0.019 | 0.001   | 4.03 | 0.18  | 8.15  | 16.52 | 0.21   | 0.022   | 0.0009   | 0.072 | 0.148                  | 0.017    | 0.005   | 0.007    | 0.094         | 0.04    | 0.0010 |
| BS 193<br>18Cr-12Mn         | 0.104     | 12.11  | 0.018 | 0.002   | 0.66 | 0.088 | 1.82  | 18.48 | 0.21   | (0.003) | 0.0007   | 0.028 | 0.37                   | 0.014    | 0.004   | 0.003    | 0.107         | (0.007) | .      |
| BS 182<br>17Cr-15Mn         | 0.037     | 15.09  | 0.022 | (0.003) | 0.46 | 0.56  | 1.11  | 16.67 | 0.99   | .       | .        | 0.032 | (0.40)                 | (0.005)  | (0.003) | (0.003)  | 0.059         | (0.01)  | .      |
| BS 191<br>16Cr-6Mn-4Si      | 0.098     | 5.71   | 0.024 | 0.023   | 3.66 | 0.33  | 5.34  | 16.33 | 0.36   | (0.002) | (0.0006) | 0.11  | 0.117                  | 0.024    | (0.006) | 0.012    | 0.083         | 0.033   | .      |

## CRM

## CAST IRON SETS

AVAILABLE IN SETS ONLY, as grouped

| Number          | C    | Mn    | P     | S      | Si    | Cu    | Ni    | Cr    | Al     | Mo      | Sn     | Ti     | V      | Ce      | La      | Mg     | N      |
|-----------------|------|-------|-------|--------|-------|-------|-------|-------|--------|---------|--------|--------|--------|---------|---------|--------|--------|
| 30 mm Ø x 28 mm |      |       |       |        |       |       |       |       |        |         |        |        |        |         |         |        |        |
| NCS HS11712a-6  | 4.02 | 1.41  | 0.021 | 0.026  | 0.163 | 1.83  | 1.89  | 0.112 | 0.019  | 0.726   | 0.057  | 0.238  | 0.509  | <0.0001 | <0.0001 | 0.104  | 0.013  |
| NCS HS11712a-7  | 3.94 | 1.38  | 0.085 | 0.0048 | 0.918 | 1.10  | 1.37  | 1.05  | 0.214  | 0.168   | 0.134  | 0.114  | 0.390  | <0.0001 | <0.0001 | 0.056  | 0.0063 |
| NCS HS11712a-5  | 3.52 | 0.311 | 0.420 | 0.019  | 1.17  | 0.389 | 1.03  | 0.766 | .      | 0.629   | 0.013  | 0.161  | 0.324  | <0.0001 | <0.0001 | 0.021  | 0.0047 |
| NCS HS11712a-4  | 3.16 | 0.462 | 0.396 | 0.017  | 1.96  | 0.921 | 0.778 | 1.40  | 0.0073 | 0.428   | 0.024  | 0.065  | 0.166  | <0.0001 | <0.0001 | 0.025  | 0.0073 |
| NCS HS11712a-2  | 2.22 | 0.301 | 0.043 | 0.058  | 2.44  | 0.458 | 0.341 | 2.13  | 0.060  | 0.087   | 0.044  | 0.065  | 0.055  | 0.0010  | 0.010   | 0.0085 | 0.024  |
| NCS HS11712a-3  | 2.55 | 0.878 | 0.071 | 0.045  | 1.50  | 0.641 | 0.519 | 0.417 | 0.034  | 0.354   | 0.021  | 0.027  | 0.085  | 0.027   | 0.0061  | 0.024  | 0.024  |
| NCS HS11712a-1  | 1.75 | 0.080 | 0.580 | 0.119  | 3.40  | 0.025 | 0.030 | 2.48  | 0.248  | 0.031   | 0.0031 | 0.038  | 0.021  | <0.0001 | <0.0001 | 0.0006 | 0.015  |
| 30 mm Ø x 30 mm |      |       |       |        |       |       |       |       |        |         |        |        |        |         |         |        |        |
| NCS HS19701-7   | 4.13 | 2.06  | 0.306 | 0.111  | 1.85  | .     | 0.026 | 0.157 | .      | .       | 0.043  | 0.399  | 0.821  | .       | .       | .      | .      |
| NCS HS19701-6   | 3.93 | 1.46  | 0.168 | 0.124  | 0.99  | .     | 0.094 | 0.387 | .      | (0.112) | 0.0018 | 0.105  | 0.506  | .       | .       | .      | .      |
| NCS HS19701-5   | 3.67 | 0.596 | 0.072 | 0.117  | 0.183 | .     | 0.502 | 0.171 | .      | (0.68)  | 0.0022 | 0.066  | 0.335  | .       | .       | .      | .      |
| NCS HS19701-4   | 3.70 | 0.857 | 0.087 | 0.076  | 0.451 | .     | 0.032 | 0.117 | .      | (0.031) | 0.0017 | 0.030  | 0.158  | .       | .       | .      | .      |
| NCS HS19701-3   | 3.29 | 1.22  | 0.045 | 0.056  | 0.689 | .     | 0.046 | 0.030 | .      | .       | 0.009  | 0.043  | 0.071  | .       | .       | .      | .      |
| NCS HS19701-2   | 2.99 | 0.329 | 0.033 | 0.038  | 0.937 | .     | 0.194 | 0.080 | .      | .       | 0.024  | 0.216  | 0.044  | .       | .       | .      | .      |
| NCS HS19701-1   | 2.46 | 0.072 | 0.011 | 0.019  | 0.099 | .     | 0.183 | 0.511 | .      | .       | 0.005  | 0.0059 | 0.0090 | .       | .       | .      | .      |





## CAST IRON WITH MAGNESIUM - continued on the next page

# = Class, where 1 = CRM and 2 = RM

\* Provisional Analysis

| # | Number           | C     | Mn    | P      | S      | Si    | Cu     | Ni     | Cr     | Mg     | Te      | Al      | Ce      | Co      | Mo      | Ti     | V      |
|---|------------------|-------|-------|--------|--------|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|--------|--------|
| 1 | CZ 20034 17b     | 4.38  | 0.501 | 0.089  | 0.0040 | 0.178 | 0.111  | 2.34   | 0.200  | 0.009  | .       | (0.002) | (0.003) | 0.043   | 0.030   | 0.016  | 0.086  |
| 1 | CZ 20034 17a     | 4.30  | 0.494 | 0.115  | 0.0034 | 0.170 | 0.082  | 2.38   | 0.200  | 0.007  | .       | (0.002) | (0.003) | 0.043   | 0.030   | 0.016  | 0.086  |
| 1 | CZ 20034 17c     | 4.08  | 0.503 | 0.104  | 0.0033 | 0.150 | 0.037  | 2.32   | 0.178  | 0.007  | .       | (0.002) | (0.003) | 0.043   | 0.030   | 0.015  | 0.076  |
| 1 | Y 2863-11        | 4.03  | 0.61  | 0.613  | 0.026  | 0.79  | 0.96   | 0.46   | 1.65   | 0.0075 | .       | .       | .       | .       | 0.94    | 0.29   | 0.079  |
| 2 | CZ SPL17 43A     | 3.98  | 1.322 | 0.190  | 0.008  | 1.63  | 0.385  | 0.411  | 0.032  | (0.04) | .       | 0.024   | 0.017   | 0.045   | 0.152   | 0.065  | 0.152  |
| 2 | CZ SPL17 42A     | 3.94  | 0.764 | 0.294  | 0.0040 | 1.94  | 0.199  | 0.492  | 0.145  | (0.06) | .       | 0.087   | 0.039   | 0.010   | 0.021   | 0.126  | 0.093  |
| 1 | Y 451045         | 3.90  | 0.12  | 0.023  | 0.0027 | 2.29  | 0.022  | 0.45   | 0.028  | 0.033  | .       | .       | .       | .       | 0.0030  | 0.016  | 0.0014 |
| 1 | CZ 02033 2g      | 3.78  | 0.096 | 0.125  | 0.009  | 1.10  | 0.88   | 0.650  | 0.027  | 0.036  | (0.004) | 0.019   | 0.013   | 0.012   | (0.002) | 0.029  | 0.017  |
| 1 | Y 2863-12        | 3.77  | 0.158 | 0.053  | 0.057  | 0.150 | 0.55   | 0.192  | 2.31   | 0.0024 | .       | .       | .       | .       | 0.44    | 0.030  | 0.229  |
| 1 | CZ 02033 2f      | 3.77  | 0.091 | 0.159  | 0.009  | 1.23  | 0.89   | 0.658  | 0.022  | 0.053  | .       | 0.024   | 0.018   | (0.003) | (0.002) | 0.021  | 0.010  |
| 1 | Y 4510251B-16    | 3.75  | 0.39  | 0.034  | 0.012  | 1.69  | 0.423  | 0.60   | 0.52   | 0.053  | .       | 0.061   | 0.034   | .       | 0.203   | 0.036  | 0.198  |
| 1 | Y 451047         | 3.73  | 2.35  | 0.51   | 0.0036 | 2.02  | 1.98   | 3.57   | 1.58   | 0.060  | .       | .       | .       | .       | 0.050   | 0.40   | 0.018  |
| 1 | SCRM 668/13      | 3.724 | 0.712 | .      | .      | 1.400 | 0.751  | 0.097  | 0.962  | 0.0116 | .       | .       | 0.0245  | .       | 0.0193  | 0.091  | 0.193  |
| 1 | SCRM 670/21      | 3.69  | 0.332 | .      | 0.015  | 2.27  | 0.90   | 0.89   | 0.49   | 0.040  | .       | .       | 0.0108  | .       | 0.011   | 0.109  | 0.023  |
| 1 | CZ 02033 3c      | 3.68  | 0.333 | 0.026  | 0.007  | 2.15  | 0.421  | 0.040  | 0.100  | 0.006  | (0.005) | 0.024   | 0.013   | 0.026   | 0.490   | 0.021  | 0.016  |
| 1 | SCRM 666/12      | 3.599 | 0.106 | .      | .      | 1.763 | 0.0581 | 1.709  | 0.102  | 0.0838 | .       | .       | .       | .       | 0.0979  | 0.1069 | 0.0486 |
| 2 | CZ SPL17 31A     | 3.54  | 0.041 | 0.025  | 0.006  | 2.10  | 0.005  | 0.538  | 0.019  | 0.070  | .       | 0.005   | (0.004) | 0.022   | 0.004   | 0.007  | 0.008  |
| 1 | CZ 20034 15b     | 3.52  | 0.048 | 0.054  | 0.0031 | 1.66  | 1.322  | 0.681  | 0.067  | 0.037  | .       | 0.029   | 0.021   | 0.027   | 0.004   | 0.025  | 0.013  |
| 2 | CZ SPL17 34A     | 3.48  | 0.980 | 0.105  | 0.008  | 2.29  | 0.230  | 0.493  | 0.102  | 0.026  | .       | 0.010   | 0.008   | 0.025   | 0.072   | 0.044  | 0.073  |
| 1 | 11X SG2A         | 3.48  | 0.297 | 0.0353 | 0.0075 | 3.03  | 0.0245 | 0.0263 | 0.0304 | 0.055  | .       | 0.0238  | .       | .       | .       | 0.0146 | .      |
| 1 | Y 451042         | 3.47  | 0.71  | 0.043  | 0.012  | 2.11  | 0.35   | 1.39   | 1.02   | 0.023  | .       | .       | .       | .       | 0.22    | 0.029  | 0.15   |
| 1 | CZ 02033 2e      | 3.47  | 0.168 | 0.106  | 0.010  | 1.03  | 0.89   | 0.620  | 0.043  | 0.038  | (0.006) | 0.025   | 0.017   | 0.005   | (0.002) | 0.039  | 0.026  |
| 1 | CZ 20034 15c     | 3.47  | 0.060 | 0.054  | 0.0028 | 1.68  | 1.123  | 0.728  | 0.078  | 0.040  | .       | 0.010   | 0.030   | 0.026   | (0.002) | 0.036  | 0.019  |
| 2 | CZ SPL17 32A     | 3.39  | 0.288 | 0.037  | 0.007  | 2.74  | 0.306  | 0.015  | 0.060  | 0.024  | .       | 0.029   | (0.004) | (0.002) | 0.116   | 0.044  | 0.005  |
| 1 | CZ 02033 3b      | 3.38  | 0.260 | 0.012  | 0.012  | 1.74  | 0.400  | 0.049  | 0.235  | 0.012  | .       | 0.026   | 0.006   | 0.012   | 0.456   | 0.023  | 0.009  |
| 2 | CZ SPL17 40A     | 3.38  | 0.042 | 0.021  | 0.0035 | 1.98  | 0.010  | 0.045  | 0.031  | 0.007  | .       | 0.096   | 0.012   | 0.027   | 0.005   | 0.015  | 0.014  |
| 1 | VS ChG 28        | 3.29  | 0.414 | 0.025  | 0.015  | 2.22  | 1.29   | 0.166  | 0.127  | 0.010  | .       | 0.015   | .       | .       | 0.0024  | 0.0041 | 0.0020 |
| 1 | CZ 20034 14b     | 3.26  | 0.240 | 0.0115 | 0.0096 | 2.34  | 0.640  | 0.020  | 0.042  | 0.015  | .       | 0.012   | 0.012   | 0.005   | 0.635   | 0.021  | 0.012  |
| 1 | CZ 02033 3d      | 3.24  | 0.317 | 0.008  | 0.006  | 2.12  | 0.396  | 0.025  | 0.236  | 0.016  | .       | 0.055   | 0.006   | 0.014   | 0.453   | 0.016  | 0.072  |
| 1 | CZ 02033 1f      | 3.23  | 0.693 | 0.043  | 0.005  | 2.68  | 0.018  | 0.373  | 0.035  | 0.070  | (0.007) | 0.073   | 0.036   | 0.024   | 0.182   | 0.041  | 0.014  |
| # | Number           | C     | Mn    | P      | S      | Si    | Cu     | Ni     | Cr     | Mg     | Te      | Al      | Ce      | Co      | Mo      | Ti     | V      |
| 1 | CZ 02033 1g      | 3.22  | 0.701 | 0.036  | 0.007  | 2.53  | 0.027  | 0.357  | 0.044  | 0.050  | .       | 0.062   | 0.023   | 0.010   | 0.185   | 0.054  | 0.019  |
| 1 | CZ 20034 13c     | 3.15  | 0.704 | 0.0261 | 0.0044 | 2.23  | 0.089  | 1.299  | 0.124  | 0.064  | .       | 0.022   | 0.011   | 0.024   | 0.360   | 0.015  | 0.043  |
| 1 | CZ 02033 1e      | 3.15  | 0.718 | 0.037  | 0.006  | 2.72  | 0.012  | 0.367  | 0.037  | 0.044  | .       | 0.058   | 0.027   | 0.022   | 0.185   | 0.046  | 0.015  |
| 1 | CZ 20034 14c     | 3.14  | 0.275 | 0.0162 | 0.0081 | 2.49  | 0.585  | 0.030  | 0.045  | 0.017  | .       | 0.007   | 0.019   | 0.009   | 0.646   | 0.018  | 0.013  |
| 1 | CZ 20034 13a     | 3.13  | 0.691 | 0.0244 | 0.0046 | 2.19  | 0.021  | 1.266  | 0.122  | 0.053  | .       | 0.017   | 0.011   | 0.024   | 0.364   | 0.014  | 0.048  |
| 1 | CZ 20034 13b     | 3.12  | 0.692 | 0.0243 | 0.0041 | 2.12  | 0.021  | 1.313  | 0.125  | 0.054  | .       | 0.019   | 0.011   | 0.024   | 0.364   | 0.012  | 0.048  |
| 1 | VS ChG 24        | 3.05  | 0.245 | 0.260  | 0.0048 | 2.50  | 0.100  | 0.87   | 0.031  | 0.015  | .       | 0.007   | .       | .       | 0.031   | 0.060  | 0.0067 |
| 1 | Y 2863-9         | 3.04  | 1.43  | 0.049  | 0.015  | 1.53  | 0.269  | 1.59   | 0.72   | 0.043  | .       | .       | .       | .       | 1.38    | 0.212  | 0.41   |
| 1 | VS ChM5/1        | 3.04  | 0.311 | 0.056  | 0.016  | 1.37  | .      | .      | .      | 0.045  | .       | 0.013   | .       | .       | .       | .      | .      |
| 1 | SCRM 667/13      | 3.04  | 0.222 | .      | .      | 2.866 | 0.497  | 1.303  | 0.294  | 0.070  | .       | .       | 0.110   | .       | .       | .      | 0.103  |
| 1 | <b>BS CC-11A</b> | 3.07  | 1.23  | 0.020  | 0.011  | 1.90  | 0.007  | 0.046  | 0.048  | 0.014  | 0.026   | 0.0055  | 0.018   | (0.007) | 0.0063  | 0.0091 | 0.0066 |
| 1 | <b>BS CC-11B</b> | 2.97  | 1.17  | 0.020  | 0.008  | 1.94  | 0.0210 | 0.173  | 0.189  | 0.025  | 0.019   | 0.028   | 0.045   | (0.022) | 0.018   | 0.031  | 0.0179 |
| 1 | VS ChM6/1        | 3.03  | 0.54  | 0.055  | 0.0074 | 2.75  | .      | .      | .      | 0.072  | .       | 0.022   | .       | .       | .       | .      | .      |
| 1 | VS ChM8/1        | 3.02  | 0.83  | 0.055  | 0.0034 | 3.39  | .      | .      | .      | 0.105  | .       | 0.041   | .       | .       | .       | .      | .      |
| 2 | CZ SPL17 36A     | 3.02  | 0.057 | 0.026  | 0.010  | 2.13  | 0.007  | 0.011  | 0.014  | 0.012  | .       | (0.003) | 0.0007  | (0.004) | 0.004   | 0.021  | 0.021  |
| 1 | VS ChM13         | 2.96  | 1.05  | 0.043  | 0.009  | 2.98  | 0.062  | 1.65   | 0.273  | 0.09   | .       | 0.065   | .       | .       | .       | 0.018  | 0.0096 |
| 1 | SCRM 669/14      | 2.955 | 0.526 | .      | .      | 2.201 | 0.194  | 0.473  | 0.214  | 0.0224 | .       | .       | 0.0415  | .       | 0.0550  | 0.0499 | 0.532  |
| 1 | VS ChG 26        | (2.9) | 0.126 | 0.123  | 0.0041 | 2.98  | 0.014  | 1.52   | 0.050  | 0.044  | .       | 0.038   | .       | .       | 0.075   | 0.0026 | 0.040  |
| 1 | VS ChM10         | 2.89  | 0.43  | 0.067  | 0.017  | 1.13  | 0.082  | 0.85   | 0.067  | 0.024  | .       | 0.005   | .       | .       | .       | 0.028  | 0.079  |
| 1 | SRM C1137a       | 2.86  | 0.52  | 0.087  | 0.017  | 1.15  | 0.192  | 2.17   | 0.643  | 0.032  | .       | (0.007) | 0.016   | .       | 0.86    | (0.04) | 0.019  |
| 2 | CZ SPL17 33A     | 2.75  | 0.710 | 0.060  | 0.007  | 3.10  | 0.730  | 0.389  | 0.239  | 0.021  | .       | 0.054   | 0.026   | 0.015   | 0.220   | 0.130  | 0.356  |
| 1 | SRM C2424        | 2.68  | 0.268 | 0.041  | 0.024  | 3.37  | 0.125  | 0.061  | 0.13   | 0.006  | .       | (<0.01) | 0.0046  | (0.05)  | 0.019   | 0.050  | 0.083  |
| 1 | VS ChM9          | 2.61  | 1.28  | 0.075  | 0.021  | 1.59  | 0.095  | 0.38   | 0.083  | 0.011  | .       | 0.016   | .       | .       | .       | 0.027  | 0.068  |
| 1 | VS ChM11         | 2.26  | 0.77  | 0.032  | 0.011  | 2.32  | 0.067  | 1.75   | 0.122  | 0.066  | .       | 0.035   | .       | .       | .       | 0.014  | 0.0044 |
| 1 | Y 2863-7         | 1.98  | 3.42  | 0.067  | 0.0061 | 3.10  | 0.089  | 4.47   | 0.150  | 0.050  | .       | .       | 0.019   | .       | 0.052   | 0.060  | 0.87   |
| # | Number           | C     | Mn    | P      | S      | Si    | Cu     | Ni     | Cr     | Mg     | Te      | Al      | Ce      | Co      | Mo      | Ti     | V      |

BS: 28-34 mm Ø x 17-35 mm

CKD 24x: 37 mm x 37 mm x -15-20 mm  
CZ: 40 mm Ø x 18 mmSCRM: 48 mm x 42 mm x 12 mm  
SRM: 32 mm Ø x 19 mmVS: ~40 mm Ø x ~40 mm  
Y: 30 mm Ø x 30 mm

## CAST IRON WITH MAGNESIUM - continued from the previous page

sizes shown below

| Number                    | As       | B        | Bi      | Ca                          | Fe   | La      | Nb      | Pb                   | Sb      | Se        | Sn       | W                                | Zr         | Other        |  |
|---------------------------|----------|----------|---------|-----------------------------|------|---------|---------|----------------------|---------|-----------|----------|----------------------------------|------------|--------------|--|
| CZ 20034 17b              | 0.008    | (0.0002) | (0.001) | .                           | .    | .       | .       | (0.002)              | .       | .         | (0.002)  | 0.004                            | .          | .            |  |
| CZ 20034 17a              | 0.007    | (0.0002) | (0.001) | .                           | .    | .       | .       | (0.002)              | .       | .         | (0.002)  | 0.004                            | .          | .            |  |
| CZ 20034 17c              | 0.0005   | (0.0006) | (0.002) | .                           | .    | .       | .       | (0.002)              | .       | .         | (0.002)  | 0.004                            | .          | .            |  |
| Y 2863-11                 | (0.022)  | 0.053    | .       | .                           | .    | .       | 0.33    | (0.0057)             | (0.174) | .         | (0.108)  | 0.010                            | .          | .            |  |
| CZ SPL17 43A              | .        | 0.0014   | (0.002) | .                           | .    | .       | 0.008   | 0.014                | (0.004) | .         | 0.067    | 0.038                            | Zn:0.013   | .            |  |
| CZ SPL17 42A              | .        | 0.0036   | (0.002) | .                           | .    | .       | 0.045   | 0.020                | 0.015   | .         | 0.027    | 0.020                            | Zn:0.013   | .            |  |
| Y 451045                  | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ 02033 2g               | .        | 0.0023   | 0.006   | .                           | .    | .       | .       | 0.008                | 0.029   | .         | 0.015    | (0.004)                          | .          | Zn: 0.020    |  |
| Y 2863-12                 | (0.0097) | 0.0078   | .       | .                           | .    | .       | 0.21    | (0.056)              | (0.471) | .         | (0.307)  | 0.13                             | .          | .            |  |
| CZ 02033 2f               | .        | 0.0020   | (0.002) | .                           | .    | .       | .       | 0.005                | 0.028   | .         | 0.014    | (0.003)                          | (0.005)    | Zn: 0.018    |  |
| Y 4510251B-16             | .        | 0.0044   | .       | .                           | .    | 0.016   | .       | .                    | .       | .         | 0.030    | .                                | .          | .            |  |
| Y 451047                  | .        | 0.31     | .       | .                           | .    | .       | 0.012   | .                    | .       | .         | .        | .                                | .          | .            |  |
| SCRM 668/13               | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| SCRM 670/21               | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ 02033 3c               | (0.007)  | 0.0044   | (0.002) | .                           | .    | .       | .       | 0.005                | .       | .         | 0.009    | (0.003)                          | .          | .            |  |
| SCRM 666/12               | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ SPL17 31A              | .        | (0.0004) | .       | .                           | .    | .       | .       | .                    | .       | .         | (0.003)  | (0.005)                          | .          | .            |  |
| CZ 20034 15b              | (0.003)  | 0.0033   | 0.010   | .                           | .    | .       | .       | .                    | 0.058   | .         | 0.005    | 0.007                            | .          | .            |  |
| CZ SPL17 34A              | .        | 0.0076   | (0.005) | .                           | .    | .       | 0.014   | (0.006)              | 0.007   | .         | 0.051    | 0.016                            | Zn:0.007   | .            |  |
| 11X SG2A                  | 0.0022   | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | Zn:0.040   | -50Ø x -15mm |  |
| Y 451042                  | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ 02033 2e               | .        | 0.0024   | 0.005   | .                           | .    | .       | .       | (0.004)              | 0.028   | .         | 0.015    | 0.008                            | .          | Zn: 0.025    |  |
| CZ 20034 15c              | (0.003)  | 0.0057   | 0.008   | .                           | .    | .       | .       | .                    | 0.056   | .         | 0.006    | 0.004                            | .          | .            |  |
| CZ SPL17 32A              | .        | (0.0005) | (0.007) | .                           | .    | .       | .       | 0.022                | 0.023   | .         | (0.012)  | (0.008)                          | Zn:0.011   | .            |  |
| CZ 02033 3b               | .        | 0.0042   | 0.001   | .                           | .    | .       | .       | 0.009                | .       | .         | 0.019    | .                                | .          | .            |  |
| CZ SPL17 40A              | .        | 0.0008   | .       | .                           | .    | .       | .       | .                    | .       | .         | (0.004)  | .                                | Zn:(0.002) | .            |  |
| VS ChG 28                 | .        | .        | .       | .                           | .    | .       | .       | .                    | 0.015   | .         | 0.0017   | .                                | .          | .            |  |
| CZ 20034 14b              | 0.034    | 0.0100   | 0.007   | .                           | .    | .       | .       | (0.005)              | 0.016   | .         | 0.028    | (0.005)                          | 0.014      | Zn: 0.009    |  |
| CZ 02033 3d               | (0.018)  | 0.0071   | (0.002) | .                           | .    | .       | .       | 0.005                | 0.007   | .         | 0.009    | .                                | .          | .            |  |
| CZ 02033 1f               | .        | 0.0043   | (0.001) | .                           | .    | .       | .       | 0.009                | .       | .         | 0.030    | 0.022                            | (0.008)    | .            |  |
| Number                    | As       | B        | Bi      | Ca                          | Fe   | La      | Nb      | Pb                   | Sb      | Se        | Sn       | W                                | Zr         | Other        |  |
| CZ 02033 1g               | .        | 0.0034   | 0.005   | .                           | .    | .       | .       | 0.016                | .       | .         | 0.028    | 0.015                            | (0.004)    | .            |  |
| CZ 20034 13c              | (0.002)  | .        | .       | .                           | .    | .       | .       | .                    | (0.002) | .         | 0.014    | (0.003)                          | (0.02)     | .            |  |
| CZ 02033 1e               | .        | 0.0036   | (0.002) | .                           | .    | .       | .       | 0.007                | .       | .         | 0.032    | 0.021                            | (0.007)    | Zn: 0.009    |  |
| CZ 20034 14c              | 0.035    | 0.0123   | .       | .                           | .    | .       | .       | .                    | 0.020   | .         | 0.025    | (0.003)                          | 0.013      | Zn: 0.010    |  |
| CZ 20034 13a              | (0.002)  | .        | .       | .                           | .    | .       | .       | .                    | (0.002) | .         | 0.014    | (0.003)                          | 0.029      | .            |  |
| CZ 20034 13b              | (0.002)  | .        | .       | .                           | .    | .       | .       | .                    | (0.002) | .         | 0.014    | (0.003)                          | 0.023      | .            |  |
| VS ChG 24                 | .        | .        | .       | .                           | .    | .       | .       | .                    | 0.009   | .         | 0.077    | .                                | .          | .            |  |
| Y 2863-9                  | (0.041)  | 0.153    | .       | .                           | .    | .       | 0.11    | (0.093)              | (0.116) | .         | (0.124)  | .                                | .          | .            |  |
| VS ChM5/1                 | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| SCRM 667/13               | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| <b>BS CC-11A</b>          | 0.0018   | 0.0008   | (0.005) | (0.0009)                    | 93.6 | (0.004) | (0.007) | (0.002)              | (0.01)  | Zn:0.0032 | (0.004)  | (0.017)                          | (0.0025)   | <b>17025</b> |  |
| <b>BS CC-11B</b>          | 0.0074   | 0.0033   | (0.016) | (0.002)                     | 93.2 | (0.008) | 0.043   | 0.014                | 0.026   | Zn:0.008  | 0.021    | 0.028                            | 0.0165     | <b>17025</b> |  |
| VS ChM6/1                 | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| VS ChM8/1                 | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ SPL17 36A              | .        | 0.022    | (0.007) | .                           | .    | .       | .       | 0.016                | .       | .         | (0.002)  | .                                | Zn:(0.002) | .            |  |
| VS ChM13                  | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| SCRM 669/14               | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| VS ChG 26                 | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | 0.031    | .                                | .          | .            |  |
| VS ChM10                  | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| SRM C1137a                | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| CZ SPL17 33A              | .        | 0.0064   | (0.002) | .                           | .    | .       | 0.032   | 0.010                | 0.019   | .         | 0.039    | 0.079                            | Zn:0.009   | .            |  |
| SRM C2424                 | .        | (0.002)  | .       | .                           | .    | 0.0011  | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| VS ChM9                   | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| VS ChM11                  | .        | .        | .       | .                           | .    | .       | .       | .                    | .       | .         | .        | .                                | .          | .            |  |
| Y 2863-7                  | (0.021)  | 0.100    | .       | .                           | .    | .       | 0.041   | (0.0025)             | (0.010) | .         | (0.0073) | .                                | .          | .            |  |
| Number                    | As       | B        | Bi      | Ca                          | Fe   | La      | Nb      | Pb                   | Sb      | Se        | Sn       | W                                | Zr         | Other        |  |
| BS: 28-35 mm Ø x 17-35 mm |          |          |         | CZ: 40 mm Ø x 18 mm         |      |         |         | SRM: 32 mm Ø x 19 mm |         |           |          | VS ChM: ~39 mm Ø x ~39 mm        |            |              |  |
|                           |          |          |         | SCRM: 48 mm x 42 mm x 12 mm |      |         |         | Y: 30 mm Ø x 30 mm   |         |           |          | VS ChG: ~34 mm x ~35 mm X ~22 mm |            |              |  |

**RM CAST IRON WITH YOUR CHOICE OF MAGNESIUM LEVELS** each unit: 2 pcs mushroom 43 mm Ø x 5 mm

| Number     | C    | Mn    | P      | S        | Si   | Cu     | Ni    | Cr    | Mg | Al      | Ce      | Co      | Sn     | Ti     | V       | Zn    | Other       |
|------------|------|-------|--------|----------|------|--------|-------|-------|----|---------|---------|---------|--------|--------|---------|-------|-------------|
| CTIF 6134  | 3.70 | 0.25  | 0.030  | <0.01    | 1.60 | 0.020  | 2.00  | 0.040 | *  | .       | <0.03   | .       | .      | .      | .       | .     | .           |
| CTIF 8532  | 3.7  | 0.288 | 0.05   | .        | 2.6  | 0.0443 | 0.888 | 0.04  | *  | .       | <0.025  | .       | 0.0303 | 0.02   | 0.07    | .     | .           |
| CTIF 6135  | 3.6  | 0.38  | 0.0130 | (0.003)  | 0.9  | 0.0219 | 1.98  | 0.04  | *  | (0.006) | .       | 0.037   | .      | 0.007  | 0.0155  | .     | .           |
| CTIF 4500  | 3.38 | 0.60  | 0.059  | (0.002)  | 1.97 | .      | 1.45  | 0.014 | *  | 0.033   | 0.023   | 0.065   | .      | .      | .       | .     | .           |
| CTIF 5781  | 3.35 | 0.26  | 0.030  | (0.0025) | 2.50 | 0.0061 | 0.83  | 0.040 | *  | .       | .       | (0.004) | .      | 0.0208 | 0.0150  | .     | .           |
| CTIF 4497  | 3.12 | 0.605 | 0.043  | (-0.002) | 2.66 | 0.048  | 1.90  | 0.040 | *  | .       | .       | .       | 0.094  | 0.031  | 0.44    | .     | .           |
| CTIF 7160  | 3.1  | 0.57  | 0.05   | (0.001)  | 2.4  | 0.08   | 1.0   | (0.1) | *  | (0.02)  | 0.02    | 0.09    | .      | 0.013  | 0.018   | .     | As: 0.009   |
| CTIF 5037  | 3.04 | 0.76  | 0.043  | (0.0025) | 3.40 | .      | 0.64  | 0.014 | *  | .       | .       | .       | .      | 0.029  | .       | .     | .           |
| CTIF 3601B | 3.0  | 0.35  | 0.037  | (0.005)  | 2.1  | 0.019  | 1.08  | 0.029 | *  | .       | <0.01   | .       | .      | 0.016  | (0.005) | <0.05 | Pb:(<0.002) |
| CTIF 8018  | 3.0  | 0.7   | 0.07   | (0.0015) | 3.0  | 0.08   | 0.127 | 0.09  | *  | 0.02    | (<0.02) | .       | 0.07   | 0.06   | 0.39    | .     | Sb:(0.01)   |
| CTIF 6736  | 2.8  | 0.65  | 0.012  | (0.002)  | 1.6  | 0.0258 | 1.7   | 0.03  | *  | .       | .       | .       | .      | 0.008  | (0.03)  | .     | .           |
| CTIF 5783  | 2.55 | 0.2   | 0.0266 | (0.003)  | 2.3  | 0.110  | 1.23  | 0.05  | *  | .       | .       | 0.0074  | .      | 0.015  | 0.0127  | .     | As: 0.0016  |

Magnesium level available in the below samples. X = available

| For Mg Range  | Order Suffix | 3601B | 4497 | 4500 | 5037 | 5781 | 5783 | 6134 | 6135 | 6736 | 7160 | 8018 | 8532 |
|---------------|--------------|-------|------|------|------|------|------|------|------|------|------|------|------|
| <0.005        | <0.005       | X     | .    | .    | .    | X    | X    | .    | .    | .    | .    | X    | X    |
| 0.005 - 0.009 | 0.005        | X     | .    | .    | X    | X    | X    | .    | .    | X    | .    | X    | X    |
| 0.010 - 0.014 | 0.01         | .     | .    | .    | X    | X    | X    | .    | .    | X    | X    | X    | X    |
| 0.015 - 0.024 | 0.02         | X     | .    | .    | X    | X    | X    | .    | X    | X    | X    | X    | X    |
| 0.025 - 0.034 | 0.03         | .     | .    | .    | X    | .    | X    | .    | X    | X    | X    | X    | X    |
| 0.035 - 0.044 | 0.04         | .     | .    | .    | X    | .    | X    | .    | X    | X    | X    | X    | X    |
| 0.045 - 0.054 | 0.05         | .     | .    | .    | X    | .    | X    | .    | X    | X    | X    | X    | X    |
| 0.055 - 0.064 | 0.06         | .     | X    | X    | .    | .    | X    | .    | X    | X    | X    | X    | X    |
| 0.065 - 0.074 | 0.07         | .     | X    | X    | .    | .    | X    | .    | X    | X    | X    | X    | X    |
| 0.075 - 0.084 | 0.08         | .     | X    | X    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.085 - 0.094 | 0.09         | .     | X    | X    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.095 - 0.104 | 0.10         | .     | .    | .    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.105 - 0.114 | 0.11         | .     | .    | .    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.115 - 0.124 | 0.12         | .     | .    | .    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.125 - 0.134 | 0.13         | .     | .    | .    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.135 - 0.144 | 0.14         | .     | .    | .    | .    | .    | X    | X    | X    | X    | X    | X    | X    |
| 0.145 - 0.154 | 0.15         | .     | .    | .    | .    | .    | .    | .    | .    | .    | X    | .    | .    |
| 0.155 - 0.164 | 0.16         | .     | .    | .    | .    | .    | .    | .    | .    | .    | X    | .    | .    |
| 0.165 - 0.174 | 0.17         | .     | .    | .    | .    | .    | .    | .    | .    | .    | X    | .    | .    |
| 0.175 - 0.184 | 0.18         | .     | .    | .    | .    | .    | .    | .    | .    | .    | X    | .    | .    |

The above cast iron samples can be ordered with your choice of Magnesium. Examples:  
 to order CTIF 6736 with Mg 0.035 - 0.044 then order as part number CTIF 6736 0.04  
 to order CTIF 8018 with 0.08 % Mg, order as part number CTIF 8018 0.08

**CRM WHITE IRON** analysis listed in mass %

| Number         | C     | Mn    | P     | S      | Si    | Cu     | Ni    | Cr    | Co     | Mo     | Nb    | Ti    | V     |
|----------------|-------|-------|-------|--------|-------|--------|-------|-------|--------|--------|-------|-------|-------|
| <b>BS WI-2</b> | 3.61  | 0.80  | 0.22  | 0.056  | 0.52  | 0.0124 | 0.254 | 0.229 | 0.0118 | 0.219  | 0.128 | 0.089 | 0.215 |
| SRM CII45      | 2.92  | 0.187 | 0.215 | 0.191  | 0.271 | 0.46   | 0.62  | 0.63  | 0.058  | 0.48   | .     | 0.012 | 0.112 |
| VS ChG 8/6     | (2.7) | 1.51  | 0.040 | 0.013  | 3.93  | .      | .     | (0.2) | .      | .      | .     | .     | (0.3) |
| VS ChG 10/6    | (2.7) | 0.86  | 0.103 | 0.0072 | 2.86  | .      | .     | (0.2) | .      | .      | .     | .     | (0.3) |
| VS ChG 11/6    | (2.7) | 0.312 | 0.23  | 0.039  | 1.79  | .      | .     | (0.2) | .      | .      | .     | .     | (0.3) |
| VS ChG 9/6     | (2.7) | 0.155 | 0.38  | 0.071  | 0.80  | .      | .     | (0.2) | .      | .      | .     | .     | (0.3) |
| <b>BS WI-1</b> | 1.75  | 0.24  | 0.051 | 0.114  | 1.90  | 0.027  | 0.053 | 0.048 | 0.0074 | 0.0103 | 0.027 | 0.020 | 0.008 |

**17025**

**17025**

| Number         | Al     | As            | B      | Bi      | Ca        | Fe     | Mg       | Pb     | Sb     | Sn     | W     | Zr      | Units             |
|----------------|--------|---------------|--------|---------|-----------|--------|----------|--------|--------|--------|-------|---------|-------------------|
| <b>BS WI-2</b> | 0.0192 | 0.0016        | 0.0008 | .       | (0.00013) | [93.6] | (0.0002) | 0.013  | 0.023  | 0.0042 | 0.023 | 0.0045  | ~35 mm Ø x ~30 mm |
| SRM CII45      | (0.04) | (0.03)        | (0.02) | (<0.01) | .         | .      | .        | 0.0012 | (0.04) | (0.10) | .     | (0.002) | 32 mm Ø x 19 mm   |
| VS ChG 8/6     | .      | (0.003-0.006) | .      | .       | .         | .      | .        | .      | .      | .      | .     | .       | ~38 mm Ø x ~40 mm |
| VS ChG 10/6    | .      | (0.003-0.006) | .      | .       | .         | .      | .        | .      | .      | .      | .     | .       | ~38 mm Ø x ~40 mm |
| VS ChG 11/6    | .      | (0.003-0.006) | .      | .       | .         | .      | .        | .      | .      | .      | .     | .       | ~38 mm Ø x ~40 mm |
| VS ChG 9/6     | .      | (0.003-0.006) | .      | .       | .         | .      | .        | .      | .      | .      | .     | .       | ~38 mm Ø x ~40 mm |
| <b>BS WI-1</b> | 0.075  | 0.0067        | 0.0032 | .       | 0.0005    | [95.5] | 0.0009   | 0.115  | .      | 0.0081 | 0.185 | 0.0034  | ~35 mm Ø x ~30 mm |





CAST IRON WITH C < 2.75%

# = Class, 1 = CRM and 2 = RM

analysis in mass % except \* = mg/kg

| # | Number       | C     | Mn    | P      | S      | Si    | Cu    | Ni     | Cr     | Al     | Co     | Mo     | Nb      | Sn      | Ti     | V      | Zn     |
|---|--------------|-------|-------|--------|--------|-------|-------|--------|--------|--------|--------|--------|---------|---------|--------|--------|--------|
| 1 | VS ChL4/1    | 2.69  | 1.37  | 0.054  | 0.027  | 1.99  | 0.161 | 0.725  | 0.92   | .      | 0.017  | 0.116  | .       | .       | 0.11   | 0.258  | .      |
| 1 | SRM C1291    | 2.67  | 1.14  | 0.028  | 0.032  | 1.34  | 0.26  | 4.34   | 2.78   | .      | .      | 0.32   | .       | .       | .      | 0.031  | .      |
| 1 | VS ChG 6/9   | 2.65  | 0.83  | 0.54   | 0.027  | 0.53  | 0.34  | .      | 0.241  | .      | .      | .      | .       | .       | 0.028  | 0.130  | .      |
| 1 | DSZU CH01    | 2.61  | 0.258 | 0.012  | 0.0045 | 1.95  | 0.097 | 0.072  | 0.88   | 0.079  | (0.06) | 0.070  | (0.010) | (0.05)  | 0.132  | 0.134  | .      |
| 1 | Y 2863-2     | 2.59  | 1.56  | 0.059  | 0.019  | 1.60  | 0.98  | 1.61   | 1.47   | .      | .      | 0.229  | .       | .       | 0.18   | 0.325  | .      |
| 1 | 11X C8V      | 2.60  | 0.394 | 1.00   | 0.204  | 1.643 | 0.310 | 0.275  | 0.148  | 0.086  | 0.126  | 0.148  | 0.0217  | 0.1063  | 0.235  | 0.064  | 0.0068 |
| 1 | SCRM 661/4   | 2.56  | 0.30  | 0.84   | 0.068  | 2.96  | .     | .      | (1)    | .      | .      | .      | .       | .       | .      | .      | .      |
| 1 | SCRM 656/9   | 2.537 | 0.820 | 0.060  | 0.108  | 2.504 | .     | .      | .      | .      | .      | .      | .       | .       | .      | .      | .      |
| 1 | 11X C7N      | 2.51  | 1.942 | 0.0266 | 0.0101 | 0.829 | 0.075 | 0.0303 | 0.507  | 0.0127 | 0.0335 | 0.071  | 0.051   | 0.0114  | 0.022  | 0.036  | 0.0226 |
| 1 | Y 2863-2     | 2.50  | 1.83  | 0.069  | 0.026  | 3.14  | 0.020 | 3.73   | 0.136  | .      | .      | 0.096  | .       | .       | 0.066  | 0.61   | .      |
| 1 | VS ChG 37    | 2.49  | 0.92  | 0.038  | 0.046  | 2.03  | 0.512 | 0.90   | 0.82   | .      | .      | 0.55   | .       | .       | 0.092  | 0.227  | .      |
| 1 | SCRM 673/1   | 2.455 | 0.123 | 0.317  | 0.0112 | 1.702 | .     | 0.103  | 0.0423 | 0.0287 | 0.053  | 0.0092 | .       | 0.0206  | 0.0718 | 0.052  | .      |
| 1 | CZ 20034 11b | 2.44  | 0.382 | 0.271  | 0.140  | 3.67  | 0.130 | 0.082  | 1.178  | 0.067  | 0.005  | 1.144  | .       | 0.074   | 0.041  | 0.182  | .      |
| 1 | VS ChG 38    | 2.43  | 0.302 | 0.386  | 0.084  | 2.30  | 1.20  | 0.162  | 1.98   | .      | .      | 0.046  | .       | .       | 0.105  | 0.119  | .      |
| 1 | CZ 02033 5b  | 2.42  | 0.812 | 0.033  | 0.073  | 1.32  | 0.031 | 0.188  | 0.061  | 0.062  | .      | 0.089  | .       | .       | 0.007  | 0.005  | .      |
| 1 | VS ChL2/1    | 2.38  | 1.03  | 0.054  | 0.023  | 0.55  | 0.97  | 0.114  | 0.077  | .      | 0.013  | 0.012  | .       | .       | 0.009  | 0.050  | .      |
| 1 | CZ 20034 11a | 2.37  | 0.343 | 0.271  | 0.163  | 3.31  | 0.086 | 0.084  | 1.219  | 0.046  | 0.005  | 1.130  | .       | 0.070   | 0.028  | 0.184  | .      |
| 1 | SCRM 652/4   | 2.34  | 1.19  | 0.071  | 0.129  | 0.878 | .     | .      | (1)    | .      | .      | .      | .       | .       | .      | .      | .      |
| 1 | DSZU CH07    | 2.33  | 1.36  | 0.090  | 0.064  | 3.01  | 0.35  | 0.403  | 0.34   | 0.036  | .      | 0.66   | (0.08)  | (0.07)  | 0.150  | 0.52   | .      |
| 1 | CZ 02033 5a  | 2.30  | 0.804 | 0.035  | 0.100  | 1.26  | 0.014 | 0.096  | 0.054  | 0.060  | .      | 0.100  | .       | .       | 0.008  | 0.005  | .      |
| 1 | CZ 02033 5c  | 2.30  | 0.704 | 0.027  | 0.091  | 1.40  | 0.013 | 0.188  | 0.085  | 0.103  | 0.013  | 0.104  | .       | (0.002) | 0.008  | 0.054  | .      |
| 1 | 11X C4S      | 1.954 | 0.565 | 0.1014 | 0.096  | 2.98  | 0.095 | 3.21   | 1.382  | 0.006  | 0.0210 | 0.177  | 0.0233  | 0.0140  | 0.080  | 0.0165 | 0.0037 |
| 1 | SCRM 675     | 1.92  | 1.81  | 0.045  | 0.072  | 1.29  | 0.012 | 0.210  | 0.080  | 0.007  | 0.023  | 0.034  | .       | 0.0062  | 0.007  | 0.178  | 0.0006 |
| 1 | SCRM 655/4   | 1.90  | 0.44  | 0.180  | 0.076  | 2.110 | .     | .      | (1)    | .      | .      | .      | .       | .       | .      | .      | .      |
| 1 | Y 2863-1     | 1.78  | 2.41  | 0.021  | 0.009  | 3.62  | 0.022 | 4.77   | 0.031  | .      | .      | 0.038  | 0.0052  | .       | 0.068  | 1.13   | .      |

| # | Number | C | Mn | P | S | Si | Cu | Ni | Cr | Al | Co | Mo | Nb | Sn | Ti | V | Zn |
|---|--------|---|----|---|---|----|----|----|----|----|----|----|----|----|----|---|----|
|---|--------|---|----|---|---|----|----|----|----|----|----|----|----|----|----|---|----|

| Number       | As      | B      | Bi     | Ca*  | Ce | Mg       | N      | Pb     | Sb     | Se      | Te      | W       | Zr      | Units                   |
|--------------|---------|--------|--------|------|----|----------|--------|--------|--------|---------|---------|---------|---------|-------------------------|
| VS ChL4/1    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~38 mm Ø x ~38 mm       |
| SRM C1291    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 32 mm Ø x 19 mm         |
| VS ChG 6/9   | (0.003) | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~38 mm Ø x ~40 mm       |
| DSZU CH01    | .       | (0.03) | .      | (10) | .  | (0.0005) | .      | .      | .      | .       | .       | (0.02)  | .       | ~30 mm x ~35 mm         |
| VS ChG 40    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~34 mm Ø x ~37 mm       |
| 11X C8V      | 0.0812  | 0.0366 | 0.014  | .    | .  | .        | 0.0065 | 0.0052 | 0.069  | 0.0210  | 0.0049  | 0.0258  | 0.0064  | ~40 mm Ø x ~15 mm       |
| SCRM 661/4   | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 48 mm x 42 mm x 12 mm   |
| SCRM 656/9   | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 48 mm x 42 mm x 12 mm   |
| 11X C7N      | 0.0159  | 0.0097 | 0.0137 | .    | .  | .        | 0.025  | 0.0106 | 0.025  | .       | .       | 0.066   | (0.003) | 40 mm Ø x 15 mm         |
| Y 2863-2     | .       | 0.0025 | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 30 mm Ø x 30 mm         |
| VS ChG 37    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~34 mm Ø x ~37 mm       |
| SCRM 673/1   | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 40 mm x 37 mm x 10 mm   |
| CZ 20034 11b | 0.005   | 0.0032 | 0.007  | .    | .  | .        | .      | 0.007  | 0.011  | .       | .       | (0.005) | 0.007   | 40 mm Ø x 18 mm         |
| VS ChG 38    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~34 mm Ø x ~37 mm       |
| CZ 02033 5b  | .       | 0.014  | 0.020  | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 40 mm Ø x 18 mm         |
| VS ChL2/1    | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | ~38 mm Ø x ~38 mm       |
| CZ 20034 11a | 0.005   | 0.0018 | 0.011  | .    | .  | .        | .      | 0.017  | 0.013  | .       | .       | (0.005) | 0.007   | 40 mm Ø x 18 mm         |
| SCRM 652/4   | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 48 mm x 42 mm x 12 mm   |
| DSZU CH07    | .       | (0.13) | .      | (10) | .  | (0.01)   | .      | .      | .      | .       | .       | .       | .       | ~35 mm x ~35 mm x ~19mm |
| CZ 02033 5a  | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 40 mm Ø x 18 mm         |
| CZ 02033 5c  | .       | 0.0078 | 0.007  | .    | .  | .        | .      | .      | .      | (0.002) | (0.010) | .       | (0.009) | 40 mm Ø x 18 mm         |
| 11X C4S      | 0.0235  | 0.0351 | 0.0070 | .    | .  | .        | 0.0126 | 0.034  | 0.0055 | 0.009   | .       | 0.099   | .       | ~40 mm Ø x ~15 mm       |
| SCRM 675     | 0.035   | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 40 mm x 37 mm x 10 mm   |
| SCRM 655/4   | .       | .      | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 48 mm x 42 mm x 12 mm   |
| Y 2863-1     | .       | 0.0024 | .      | .    | .  | .        | .      | .      | .      | .       | .       | .       | .       | 30 mm Ø x 30 mm         |

| Number | As | B | Bi | Ca* | Ce | Mg | N | Pb | Sb | Se | Te | W | Zr | Units |
|--------|----|---|----|-----|----|----|---|----|----|----|----|---|----|-------|
|--------|----|---|----|-----|----|----|---|----|----|----|----|---|----|-------|

## ALLOYED CAST IRON, CHART 1 of 2

# = Class, where 1 = CRM and 2 = RM

| # | Number         | C     | Mn    | P      | S      | Si    | Cu    | Ni    | Cr    | Al       | Mo      | Pb        | Sn     | Ti     | V      | Mg       | N     |
|---|----------------|-------|-------|--------|--------|-------|-------|-------|-------|----------|---------|-----------|--------|--------|--------|----------|-------|
| 2 | DSZU CH021     | 3.93  | 3.66  | 0.064  | 0.009  | 0.52  | 0.369 | 5.86  | 9.07  | 0.168    | 4.42    | .         | .      | 0.093  | 0.61   | .        | .     |
| 2 | BAS NCRM5      | 3.70  | 0.27  | 0.025  | 0.015  | 1.15  | 0.204 | 6.74  | 10.44 | .        | 0.10    | .         | .      | .      | 0.06   | .        | .     |
| 1 | SRM C1292      | 3.47  | 0.55  | 0.049  | 0.016  | 0.59  | 0.36  | 5.04  | 11.4  | .        | 0.25    | .         | .      | .      | 0.041  | .        | .     |
| 2 | BAS CRRM5/2    | 3.43  | 0.30  | 0.029  | 0.018  | 0.20  | 0.22  | 0.36  | 30.35 | 0.15     | 0.63    | .         | .      | 0.009  | 0.11   | .        | .     |
| 1 | Y 451052-1     | 3.31  | 1.54  | 0.369  | 0.0047 | 0.098 | 0.449 | 2.57  | 1.17  | .        | 1.47    | .         | .      | .      | 0.952  | .        | .     |
| 1 | <b>BS PM15</b> | 3.54  | 0.416 | 0.0198 | 0.0127 | 0.912 | 0.142 | 0.203 | 5.33  | 0.0025   | 1.22    | (0.00001) | 0.0034 | 0.0029 | 14.79  | (0.0002) | 0.111 |
| 1 | Y 451052-7     | 3.13  | 0.201 | 0.024  | 0.116  | 2.48  | 0.154 | 0.129 | 31.26 | .        | 0.086   | .         | .      | 0.033  | 0.087  | .        | .     |
| 1 | 58A SC01141    | 3.08  | 0.62  | 0.045  | 0.036  | 0.56  | 0.77  | 1.21  | 15.32 | .        | 2.70    | .         | .      | 0.020  | 0.28   | .        | .     |
| 1 | SRM C1290      | 3.04  | 0.66  | 0.030  | 0.013  | 0.971 | 0.065 | 0.917 | 30.5  | .        | (0.041) | .         | .      | .      | 0.442  | .        | .     |
| 1 | Y TSK205       | 3.03  | 0.16  | 0.041  | 0.088  | 1.65  | 0.35  | 0.37  | 30.35 | .        | 0.22    | .         | .      | .      | 0.077  | .        | 0.108 |
| 1 | Y 451054-2     | 3.00  | 1.42  | 0.133  | 0.016  | 0.56  | 0.324 | 1.43  | 7.23  | .        | 2.48    | .         | .      | 0.015  | 0.88   | .        | .     |
| 1 | NCS HS11788    | 2.97  | 1.62  | 0.191  | 0.010  | 3.29  | 0.51  | 17.77 | 2.56  | (0.0023) | 0.0013  | .         | 0.0003 | 0.043  | 0.017  | .        | .     |
| 1 | Y 451052-2     | 2.96  | 1.24  | 0.211  | 0.0077 | 0.491 | 1.57  | 1.99  | 9.75  | .        | 2.17    | .         | .      | 0.300  | 0.669  | .        | .     |
| 2 | BAS NIRM5/1    | 2.95  | 1.01  | 0.103  | 0.005  | 1.50  | 0.21  | 21.7  | 0.51  | .        | .       | .         | .      | .      | .      | 0.055    | .     |
| 2 | 58A ZS01036    | 2.95  | 0.719 | 0.077  | 0.024  | 0.970 | 0.448 | 0.806 | 13.89 | .        | 0.683   | .         | 0.048  | 0.035  | 0.135  | .        | .     |
| 2 | BAS CRRM4/2    | 2.93  | 0.58  | 0.049  | 0.042  | 0.45  | 0.53  | 0.58  | 21.93 | <0.005   | 1.15    | .         | .      | 0.008  | 0.11   | .        | .     |
| 2 | 11X 20003K     | 2.91  | 1.53  | 0.174  | 0.007  | 3.03  | 0.52  | 17.8  | 2.53  | .        | .       | .         | .      | .      | .      | .        | .     |
| 1 | 11X S/1 Cr3J   | 2.91  | 0.861 | 0.072  | 0.023  | 1.07  | 9.01  | 14.53 | 1.61  | .        | .       | .         | .      | .      | .      | .        | .     |
| 2 | DSZU CH022     | 2.90  | 1.76  | 0.033  | 0.018  | 0.43  | 2.53  | 2.19  | 14.85 | 0.053    | 2.65    | .         | .      | 0.078  | 0.45   | .        | .     |
| 2 | 11X 20001J     | 2.90  | 0.58  | 0.005  | 0.143  | 1.01  | 0.01  | 21.4  | 1.50  | .        | .       | .         | .      | .      | .      | .        | .     |
| 2 | 11X S/2 Cr1E   | 2.83  | 1.68  | 0.31   | 0.011  | 2.85  | 0.02  | 16.5  | 2.48  | .        | .       | .         | .      | .      | .      | .        | .     |
| 1 | 11X 0331-1J    | 2.82  | 1.646 | 0.069  | 0.13   | 2.50  | 7.59  | 12.43 | 0.607 | 0.122    | 0.120   | 0.0327    | 0.0439 | 0.1099 | .      | .        | .     |
| 2 | BAS NIRM2/1    | 2.81  | 2.08  | 0.129  | 0.010  | 1.50  | 5.98  | 13.95 | 1.48  | .        | .       | .         | .      | .      | .      | 0.050    | .     |
| 1 | Y 451054-3     | 2.73  | 1.09  | 0.105  | 0.036  | 0.99  | 0.451 | 1.20  | 12.97 | .        | 2.08    | .         | .      | 0.045  | 0.66   | .        | .     |
| 1 | VS ChG45       | (2.7) | 1.01  | 0.096  | 0.047  | 2.96  | 0.040 | 0.60  | 32.65 | .        | 0.198   | .         | .      | 0.011  | 0.111  | .        | .     |
| 2 | 11X 20002J     | 2.67  | 1.06  | 0.060  | 0.045  | 2.04  | 0.30  | 20.0  | 2.03  | .        | .       | .         | .      | .      | .      | .        | .     |
| 2 | BAS NCRM4      | 2.66  | 0.40  | 0.203  | 0.012  | 2.13  | 0.68  | 5.34  | 7.94  | .        | 0.57    | .         | .      | .      | 0.11   | .        | .     |
| 1 | NCS HS11787    | 2.65  | 1.08  | 0.067  | 0.037  | 2.07  | 0.306 | 19.84 | 1.98  | (0.085)  | 0.0014  | .         | 0.0054 | 0.022  | 0.0096 | .        | .     |
| 1 | Y TSK201       | 2.56  | 1.07  | 0.253  | 0.023  | 0.66  | 1.53  | 2.44  | 10.14 | .        | 2.56    | .         | .      | .      | 0.42   | .        | 0.029 |
| 2 | BAS NIRM6/1    | 2.53  | 4.07  | 0.225  | 0.049  | 2.68  | 0.11  | 26.9  | 1.02  | .        | 0.51    | .         | .      | .      | .      | .        | .     |
| 2 | BAS NIRM3      | 2.51  | 0.51  | 0.208  | 0.096  | 2.21  | 1.00  | 17.8  | 2.43  | .        | .       | .         | .      | .      | .      | .        | .     |

| # | Number         | C      | Mn    | P        | S     | Si       | Cu       | Ni | Cr                         | Al          | Mo        | Pb        | Sn      | Ti       | V | Mg | N     |
|---|----------------|--------|-------|----------|-------|----------|----------|----|----------------------------|-------------|-----------|-----------|---------|----------|---|----|-------|
|   | Number         | B      | Ce    | Co       | Nb    | W        | Zr       |    | Units                      |             |           |           |         |          |   |    | Other |
|   | DSZU CH021     | .      | .     | .        | .     | .        | .        | .  | 35 mm x 35 mm x 16 mm      |             |           |           |         |          |   |    |       |
|   | BAS NCRM5      | .      | .     | .        | .     | .        | .        | .  | 40 mm x 37 mm x 10 mm      |             |           |           |         |          |   |    |       |
|   | SRM C1292      | .      | .     | .        | .     | .        | .        | .  | 32 mm Ø x 19 mm            |             |           |           |         |          |   |    |       |
|   | BAS CRRM5/2    | .      | .     | .        | .     | .        | .        | .  | 48 mm x 42 mm x 12 mm      |             |           |           |         |          |   |    |       |
|   | Y 451052-1     | 0.177  | .     | .        | 0.018 | 0.015    | .        | .  | 30 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | <b>BS PM15</b> | .      | .     | 0.0330   | 0.014 | 0.109    | (0.0005) | .  | 38 mm Ø x 19+ mm           | 17025       | Fe:[73.0] | As:0.0040 | N:0.111 | O:0.0129 |   |    |       |
|   | Y 451052-7     | 0.015  | .     | .        | 0.010 | 0.175    | .        | .  | 30 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | 58A SC01141    | .      | .     | .        | .     | .        | .        | .  | -35 mm Ø x -30 mm          |             |           |           |         |          |   |    |       |
|   | SRM C1290      | .      | .     | .        | .     | .        | .        | .  | 32 mm Ø x 19 mm            |             |           |           |         |          |   |    |       |
|   | Y TSK205       | .      | .     | .        | .     | .        | .        | .  | 35 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | Y 451054-2     | .      | .     | .        | .     | .        | .        | .  | 30 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | NCS HS11788    | 0.0008 | .     | (0.0063) | .     | (0.0002) | .        | .  | 31 mm Ø x 28 mm            | As: 0.014   |           |           |         |          |   |    |       |
|   | Y 451052-2     | 0.142  | .     | .        | 0.182 | 1.99     | .        | .  | 30 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | BAS NIRM5/1    | .      | 0.016 | .        | 0.15  | .        | .        | .  | 48 mm x 42 mm x 12 mm      |             |           |           |         |          |   |    |       |
|   | 58A ZS01036    | .      | .     | 0.024    | 0.025 | 0.172    | .        | .  | -32 mm Ø x -30 mm          | As: (0.003) |           |           |         |          |   |    |       |
|   | BAS CRRM4/2    | .      | .     | .        | .     | .        | .        | .  | 48 mm x 42 mm x 12 mm      |             |           |           |         |          |   |    |       |
|   | 11X 20003K     | .      | .     | .        | .     | .        | .        | .  | 40 mm Ø x 15 mm            |             |           |           |         |          |   |    |       |
|   | 11X S/1 Cr3J   | .      | .     | .        | .     | .        | .        | .  | -40 mm Ø x -15 mm          |             |           |           |         |          |   |    |       |
|   | 11X 20001K     | .      | .     | .        | .     | .        | .        | .  | 40 mm Ø x 15 mm            |             |           |           |         |          |   |    |       |
|   | 11X S/2 Cr1E   | .      | .     | .        | .     | .        | .        | .  | 40 mm Ø x 15 mm            |             |           |           |         |          |   |    |       |
|   | 11X 0331-1J    | .      | .     | 0.1117   | 0.149 | .        | .        | .  | -40 mm Ø x -15 mm          |             |           |           |         |          |   |    |       |
|   | BAS NIRM2/1    | .      | 0.015 | .        | .     | .        | .        | .  | 48 mm x 42 mm x 12 mm      |             |           |           |         |          |   |    |       |
|   | Y 451054-3     | .      | .     | .        | .     | .        | .        | .  | 30 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | VS ChG45       | .      | .     | .        | .     | .        | .        | .  | -36 mm x -36 mm Ø x -18 mm | last        |           |           |         |          |   |    |       |
|   | DSZU CH022     | .      | .     | .        | .     | .        | .        | .  | 35 mm x 35 mm x 16 mm      |             |           |           |         |          |   |    |       |
|   | 11X 20002J     | .      | .     | .        | .     | .        | .        | .  | 40 mm Ø x 15 mm            |             |           |           |         |          |   |    |       |
|   | BAS NCRM4      | .      | .     | .        | .     | .        | .        | .  | 40 mm x 37 mm x 10 mm      |             |           |           |         |          |   |    |       |
|   | NCS HS11787    | 0.0007 | .     | (0.0054) | .     | (0.0002) | .        | .  | 31 mm Ø x 28 mm            | As: 0.0075  |           |           |         |          |   |    |       |
|   | Y TSK201       | .      | .     | .        | .     | .        | .        | .  | 35 mm Ø x 30 mm            |             |           |           |         |          |   |    |       |
|   | BAS NIRM6/1    | .      | 0.006 | .        | .     | .        | .        | .  | 48 mm x 42 mm x 12 mm      |             |           |           |         |          |   |    |       |
|   | BAS NIRM3      | .      | 0.007 | .        | 0.09  | .        | .        | .  | 40 mm x 37 mm x 10 mm      |             |           |           |         |          |   |    |       |

| Number | B | Ce | Co | Nb | W | Zr | Units | Other |
|--------|---|----|----|----|---|----|-------|-------|
|--------|---|----|----|----|---|----|-------|-------|



## ALLOYED CAST IRON, CHART 2 of 2

# = Class, where 1 = CRM and 2 = RM

| # | Number      | C    | Mn    | P     | S     | Si    | Cu    | Ni    | Cr    | Al    | Mo    | Pb    | Sn    | Ti    | V      | Mg    | N     |
|---|-------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|
| 1 | Y 451052-3  | 2.40 | 1.06  | 0.115 | 0.015 | 0.821 | 0.953 | 1.55  | 13.30 | .     | 0.869 | .     | .     | 0.171 | 0.482  | .     | .     |
| 2 | BAS CRRM3/2 | 2.37 | 0.92  | 0.073 | 0.087 | 1.21  | 1.09  | 1.35  | 18.78 | 0.102 | 1.58  | .     | .     | 0.015 | 0.042  | .     | .     |
| 2 | DSZU CH023  | 2.33 | 0.43  | 0.023 | 0.073 | 0.98  | 0.054 | 0.715 | 23.45 | 0.255 | 1.46  | .     | .     | 0.38  | 0.288  | .     | .     |
| 1 | Y 451054-4  | 2.31 | 0.725 | 0.071 | 0.046 | 1.40  | 0.739 | 0.914 | 17.60 | .     | 1.44  | .     | .     | 0.084 | 0.46   | .     | .     |
| 1 | Y TSK200    | 2.11 | 0.82  | 0.319 | 0.022 | 0.17  | 1.86  | 3.22  | 4.97  | .     | 3.50  | .     | .     | .     | 0.60   | .     | 0.021 |
| 2 | BAS NIRM1   | 2.05 | 6.72  | 0.055 | 0.005 | 3.15  | 0.20  | 11.80 | 0.246 | .     | .     | .     | .     | .     | .      | 0.021 | .     |
| 2 | BAS NIRM7   | 2.05 | 0.71  | 0.058 | 0.020 | 3.05  | 0.52  | 32.9  | 3.53  | .     | 0.99  | .     | .     | .     | .      | 0.019 | .     |
| 2 | DSZU CH024  | 2.01 | 1.22  | 0.102 | 0.037 | 2.18  | 0.88  | 0.222 | 27.84 | 0.096 | 3.86  | .     | .     | 0.099 | 0.164  | .     | .     |
| 1 | Y 451052-4  | 2.00 | 0.803 | 0.090 | 0.025 | 1.16  | 0.738 | 1.07  | 18.28 | .     | 0.598 | .     | .     | 0.087 | 0.380  | .     | .     |
| 2 | BAS NIRM4   | 1.97 | 2.37  | 0.051 | 0.008 | 3.03  | 0.52  | 20.2  | 3.56  | .     | .     | .     | .     | .     | .      | 0.014 | .     |
| 1 | NCS HS11789 | 1.97 | 1.08  | 0.048 | 0.076 | 2.58  | 6.39  | 17.80 | 2.51  | 0.061 | 0.062 | 0.015 | 0.014 | 0.011 | 0.0093 | .     | .     |
| 2 | BAS CRRM2/1 | 1.92 | 1.11  | 0.097 | 0.079 | 1.18  | 1.59  | 1.61  | 14.13 | 0.054 | 2.44  | .     | .     | 0.070 | 0.063  | .     | .     |
| 2 | BAS CRRM1/1 | 1.83 | 1.45  | 0.132 | 0.099 | 1.53  | 2.01  | 2.03  | 11.18 | 0.117 | 3.05  | .     | .     | 0.096 | 0.040  | .     | .     |
| 1 | Y 451054-5  | 1.83 | 0.466 | 0.043 | 0.091 | 1.80  | 0.904 | 0.517 | 23.40 | .     | 0.739 | .     | .     | 0.068 | 0.26   | .     | .     |
| 1 | Y TSK202    | 1.81 | 1.16  | 0.201 | 0.057 | 2.00  | 1.10  | 1.91  | 15.42 | .     | 2.20  | .     | .     | .     | 0.33   | .     | 0.075 |
| 2 | DSZU CH025  | 1.80 | 0.387 | 0.030 | 0.026 | 2.70  | 1.23  | 1.77  | 35.14 | 0.351 | 0.302 | .     | .     | 0.117 | 0.044  | .     | .     |
| 2 | DSZU CH026  | 1.62 | 0.305 | 0.050 | 0.032 | 1.14  | 0.288 | 3.63  | 35.87 | 0.059 | 0.96  | .     | .     | 0.013 | 0.067  | .     | .     |
| 1 | Y 451052-5  | 1.48 | 0.579 | 0.041 | 0.058 | 1.37  | 0.583 | 0.708 | 22.55 | .     | 0.359 | .     | .     | 0.056 | 0.314  | .     | .     |
| 2 | BAS NIRM8/2 | 1.45 | 1.58  | 0.105 | 0.014 | 5.61  | 0.23  | 35.3  | 2.47  | .     | 0.77  | .     | .     | .     | .      | 0.033 | .     |
| 1 | Y 451054-6  | 1.45 | 0.254 | 0.024 | 0.123 | 2.38  | 1.15  | 0.216 | 28.96 | .     | 0.213 | .     | .     | 0.084 | 0.13   | .     | .     |
| 2 | BAS NIRM8/1 | 1.34 | 1.60  | 0.109 | 0.010 | 5.42  | 0.23  | 35.2  | 2.34  | .     | 0.75  | .     | .     | .     | .      | 0.043 | .     |
| 1 | VS ChG44    | 1.24 | 0.87  | (1.2) | 0.076 | 1.50  | 2.27  | 0.175 | 25.44 | .     | 0.035 | .     | .     | 0.104 | 0.079  | .     | .     |
| 1 | Y TSK203    | 1.23 | 0.68  | 0.117 | 0.044 | 0.46  | 0.75  | 1.55  | 19.93 | .     | 1.58  | .     | .     | .     | 0.22   | .     | 0.094 |
| 1 | Y 451052-6  | 1.16 | 0.302 | 0.033 | 0.086 | 1.44  | 0.845 | 0.289 | 25.76 | .     | 0.150 | .     | .     | 0.019 | 0.146  | .     | .     |
| 1 | Y TSK204    | 0.91 | 0.34  | 0.078 | 0.063 | 1.00  | 0.53  | 0.97  | 25.37 | .     | 0.95  | .     | .     | .     | 0.14   | .     | 0.114 |

| # | Number      | C      | Mn    | P        | S     | Si       | Cu                         | Ni | Cr         | Al | Mo        | Pb | Sn | Ti | V | Mg | N |
|---|-------------|--------|-------|----------|-------|----------|----------------------------|----|------------|----|-----------|----|----|----|---|----|---|
|   | Number      | B      | Ce    | Co       | Nb    | W        | Units                      |    | Other      |    |           |    |    |    |   |    |   |
|   | Y 451052-3  | 0.102  | .     | .        | 0.149 | 1.57     | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | BAS CRRM3/2 | .      | .     | .        | .     | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | DSZU CH023  | .      | .     | .        | .     | .        | 35 mm x 35 mm x 16 mm      |    |            |    |           |    |    |    |   |    |   |
|   | Y 451054-4  | .      | .     | .        | .     | .        | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | Y TSK200    | .      | .     | .        | .     | .        | 35 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | BAS NIRM1   | .      | 0.018 | .        | .     | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | BAS NIRM7   | .      | 0.005 | .        | .     | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | DSZU CH024  | .      | .     | .        | .     | .        | 35 mm x 35 mm x 16 mm      |    |            |    |           |    |    |    |   |    |   |
|   | Y 451052-4  | 0.086  | .     | .        | 0.071 | 1.05     | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | BAS NIRM4   | .      | 0.011 | .        | 0.37  | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | NCS HS11789 | 0.0008 | .     | (0.0075) | .     | (0.0002) | 31 mm Ø x 28 mm            |    | As: 0.0076 |    | Bi: 0.067 |    |    |    |   |    |   |
|   | BAS CRRM2/1 | .      | .     | .        | .     | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | BAS CRRM1/1 | .      | .     | .        | .     | .        | 40 mm x 37 mm x 10 mm      |    |            |    |           |    |    |    |   |    |   |
|   | Y 451054-5  | .      | .     | .        | .     | .        | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | Y TSK202    | .      | .     | .        | .     | .        | 35 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | DSZU CH025  | .      | .     | .        | .     | .        | 35 mm x 35 mm x 16 mm      |    |            |    |           |    |    |    |   |    |   |
|   | DSZU CH026  | .      | .     | .        | .     | .        | 35 mm x 35 mm x 16 mm      |    |            |    |           |    |    |    |   |    |   |
|   | Y 451052-5  | 0.076  | .     | .        | 0.022 | 0.694    | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | BAS NIRM8/2 | .      | 0.013 | .        | .     | .        | 48 mm x 42 mm x 12 mm      |    |            |    |           |    |    |    |   |    |   |
|   | Y 451054-6  | .      | .     | .        | .     | .        | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | BAS NIRM8/1 | .      | 0.013 | .        | .     | .        | 48 mm x 42 mm x 12 mm      |    | last       |    |           |    |    |    |   |    |   |
|   | VS ChG44    | .      | .     | .        | .     | .        | ~36 mm x ~36 mm Ø x ~18 mm |    | last       |    |           |    |    |    |   |    |   |
|   | Y TSK203    | .      | .     | .        | .     | .        | 35 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | Y 451052-6  | 0.055  | .     | .        | 0.014 | 0.370    | 30 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | Y TSK204    | .      | .     | .        | .     | .        | 35 mm Ø x 30 mm            |    |            |    |           |    |    |    |   |    |   |
|   | Number      | B      | Ce    | Co       | Nb    | W        | Units                      |    | Other      |    |           |    |    |    |   |    |   |

## RM CAST IRON MUSHROOMS

## CONTINUED ON THE NEXT PAGE

typical analysis

each unit is one pair of 43 mm Ø x 5 mm mushroom discs

| Number       | C     | Si     | Mn     | P      | S        | Cu      | Ni     | Cr      | Al      | Co      | Mo      | Sn     | Ti     | V      | W      |
|--------------|-------|--------|--------|--------|----------|---------|--------|---------|---------|---------|---------|--------|--------|--------|--------|
| CTIF FO19    | 4.04  | 1.05   | 1.05   | 0.032  | 0.057    | .       | .      | .       | .       | .       | .       | .      | .      | .      | .      |
| CTIF FO12    | 3.71  | 1.86   | 0.44   | 0.038  | 0.004    | 0.77    | .      | .       | 0.008   | .       | .       | 0.011  | .      | .      | .      |
| CTIF FO8     | 3.6   | 1.04   | 0.37   | 0.107  | 0.021    | 0.215   | 0.30   | 0.30    | .       | .       | 0.005   | 0.05   | 0.055  | 0.014  | .      |
| CTIF FCR7    | 3.59  | 1.07   | 0.365  | 0.099  | 0.0427   | 0.704   | 0.947  | 33.65   | .       | .       | 2.62    | .      | .      | .      | .      |
| CTIF FO6     | 3.49  | 0.55   | 0.715  | 0.87   | 0.106    | 0.120   | 0.128  | 0.45    | .       | .       | 0.202   | 0.039  | 0.080  | 0.110  | .      |
| CTIF FO10    | 3.5   | 0.67   | 1.05   | 0.20   | 0.101    | 0.114   | 0.118  | 0.38    | .       | .       | 0.20    | .      | 0.1    | 0.08   | .      |
| CTIF NH3     | 3.47  | 0.85   | 0.175  | 0.36   | 0.024    | 0.031   | 2.53   | 1.76    | .       | .       | 0.73    | .      | .      | .      | .      |
| CTIF FO11    | 3.45  | 1.57   | 0.685  | 0.052  | 0.103    | 0.211   | 0.235  | 0.34    | .       | (0.013) | 0.225   | 0.066  | 0.078  | 0.113  | .      |
| CTIF FO18    | 3.43  | 1.24   | 0.590  | 1.34   | 0.136    | 0.049   | 0.140  | 0.170   | .       | .       | 0.179   | 0.046  | 0.057  | 0.102  | .      |
| CTIF NH7-1   | 3.43  | 0.95   | 0.63   | 0.035  | 0.022    | 0.105   | 5.53   | 9.02    | .       | .       | .       | .      | .      | .      | .      |
| CTIF FCR5    | 3.43  | 0.35   | 0.62   | 0.052  | 0.0175   | 1.02    | 2.69   | 28.5    | .       | .       | 3.27    | .      | .      | .      | .      |
| CTIF FT2-1   | 3.39  | 1.415  | 0.78   | 0.045  | 0.095    | 0.01    | 0.070  | 0.030   | .       | .       | .       | .      | 0.100  | 0.405  | .      |
| CTIF NiMo1   | 3.22  | 2.585  | 0.200  | 0.0590 | (0.0030) | 0.376   | 2.165  | 0.0353  | .       | 0.0205  | 0.457   | 0.0020 | 0.0190 | 0.0169 | .      |
| CTIF FL7     | 3.22  | 2.550  | 0.100  | 1.34   | 0.048    | 0.351   | 0.232  | 0.043   | .       | .       | 0.335   | 0.0291 | 0.0525 | 0.0796 | .      |
| CTIF FT3     | 3.2   | 1.55   | 0.345  | 0.063  | 0.051    | 0.015   | 0.092  | 0.685   | .       | .       | .       | .      | 0.2    | 0.016  | .      |
| CTIF NH7-2   | 3.2   | 1.20   | 0.91   | 0.034  | 0.0120   | 0.108   | 5.53   | 8.87    | .       | .       | .       | .      | .      | .      | .      |
| CTIF FO5     | 3.2   | 0.7    | 0.2    | 1.30   | 0.027    | 0.12    | 0.172  | 0.3     | .       | .       | 0.41    | 0.109  | 0.04   | 0.14   | .      |
| CTIF NH9     | 3.13  | 1.24   | 0.65   | 0.087  | 0.029    | 0.203   | 4.11   | 11.70   | .       | .       | 0.059   | .      | .      | .      | .      |
| CTIF NR Cu1  | 3.12  | 1.465  | 0.172  | 0.090  | 0.99     | 4.95    | 18.02  | 0.994   | (0.095) | .       | .       | .      | .      | .      | .      |
| CTIF FL6     | 3.1   | 1.4    | 0.6    | 0.012  | 0.18     | 0.079   | 1.03   | 0.167   | .       | 0.028   | 0.50    | 0.005  | 0.15   | 0.033  | .      |
| CTIF FL10    | 3.1   | 1.3    | 0.85   | 0.323  | 0.066    | 0.104   | 0.10   | (0.07)  | (0.03)  | .       | 0.0335  | 0.028  | 0.045  | 0.048  | (0.02) |
| CTIF FFA 1   | 3.090 | 0.0300 | 0.100  | 0.0022 | 0.0009   | 0.0622  | 0.0450 | 0.0710  | .       | 0.0097  | 0.0109  | .      | 0.0010 | 0.0010 | .      |
| CTIF NR 8S   | 3.05  | 1.41   | 4.39   | 0.124  | .        | 0.071   | 14.20  | 0.191   | .       | .       | .       | .      | .      | .      | .      |
| CTIF FO17    | 3.01  | 2.48   | 0.475  | 0.470  | 0.168    | (0.006) | 0.021  | (0.016) | .       | 0.032   | .       | 0.024  | 0.032  | 0.018  | .      |
| CTIF FAL 1   | 3.0   | 1.0    | 0.2    | 0.04   | <0.001   | 0.2     | 0.06   | 0.04    | 2.1     | .       | 0.015   | .      | 0.01   | .      | .      |
| CTIF NR 3L   | 2.99  | 3.05   | 0.72   | 0.088  | 0.052    | 0.26    | 21.58  | 2.97    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NH1     | 2.98  | 1.35   | 0.90   | 0.060  | 0.105    | 1.99    | 1.38   | 0.83    | .       | .       | 1.45    | .      | .      | .      | .      |
| CTIF NH8     | 2.98  | 0.80   | 0.57   | 0.052  | 0.076    | 0.065   | 8.16   | 5.03    | .       | .       | 0.125   | .      | .      | .      | .      |
| CTIF NR 3S   | 2.92  | 2.91   | 0.77   | 0.024  | .        | 0.33    | 24.63  | 3.05    | .       | .       | .       | .      | .      | .      | .      |
| CTIF FT1     | 2.9   | 2.12   | 0.71   | 0.12   | 0.025    | 0.012   | 0.11   | 0.057   | .       | .       | .       | 0.067  | 0.19   | 0.525  | .      |
| CTIF NR 8L   | 2.89  | 1.70   | 5.19   | 0.054  | 0.030    | 0.075   | 13.33  | 0.165   | .       | .       | .       | .      | .      | .      | .      |
| CTIF NH4     | 2.84  | 0.49   | 0.28   | 0.12   | 0.022    | 0.09    | 3.60   | 2.46    | .       | .       | 0.30    | .      | .      | .      | .      |
| CTIF FO4     | 2.81  | 1.51   | 0.64   | 0.58   | 0.009    | 0.31    | 0.32   | 0.17    | .       | .       | 0.095   | 0.013  | 0.075  | 0.049  | .      |
| CTIF FCR2    | 2.86  | 1.07   | 0.740  | 0.137  | 0.055    | 0.135   | 1.87   | 11.8    | .       | .       | 3.88    | .      | .      | .      | .      |
| CTIF FL5     | 2.8   | 2.3    | 0.4    | 0.02   | (0.005)  | 0.5     | 0.05   | 0.35    | .       | 0.010   | 0.01    | 0.07   | 0.01   | 0.01   | .      |
| CTIF FCR Ni3 | 2.74  | 0.69   | 0.47   | 0.036  | 0.011    | .       | 11.05  | 31.65   | .       | .       | .       | .      | .      | .      | .      |
| CTIF NH6     | 2.70  | 2.28   | 0.355  | 0.066  | 0.036    | 0.115   | 7.06   | 6.60    | .       | .       | 0.11    | .      | .      | .      | .      |
| CTIF FO9     | 2.7   | 1.5    | 0.7    | 0.02   | 0.015    | 0.31    | 0.355  | 0.18    | .       | .       | 0.13    | 0.144  | 0.017  | 0.022  | .      |
| CTIF FL4     | 2.6   | 2.91   | 0.5    | 0.288  | 0.137    | 0.0168  | 0.061  | 0.45    | .       | .       | 0.090   | 0.011  | 0.0296 | 0.116  | .      |
| CTIF NR 1S   | 2.58  | 3.02   | 1.54   | 0.19   | 0.0015   | 0.11    | 20.60  | 2.00    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 1L   | 2.50  | 3.00   | 1.34   | 0.125  | 0.10     | 0.49    | 25.87  | 1.74    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NH2     | 2.50  | 1.81   | 1.04   | 0.047  | 0.058    | 1.02    | 1.78   | 1.26    | .       | .       | 1.01    | .      | .      | .      | .      |
| CTIF NR Cu2  | 2.48  | 2.07   | 1.078  | 0.113  | 0.049    | 6.50    | 15.85  | 2.05    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 4S   | 2.47  | 4.87   | 1.71   | 0.145  | .        | 0.63    | 18.30  | 1.50    | .       | .       | .       | .      | .      | .      | .      |
| CTIF FCR4    | 2.47  | 1.40   | 2.05   | 0.097  | 0.066    | 1.32    | 0.571  | 24.2    | .       | .       | 2.16    | .      | .      | .      | .      |
| CTIF FCR1    | 2.46  | 0.48   | 0.63   | 0.019  | 0.007    | 0.031   | 1.30   | 18.71   | .       | .       | 1.41    | .      | .      | .      | .      |
| CTIF FO7     | 2.45  | 0.675  | 0.70   | 0.84   | 0.085    | 0.125   | 0.15   | 0.455   | .       | .       | 0.26    | .      | 0.065  | 0.13   | .      |
| CTIF NR 4L   | 2.41  | 5.89   | 1.495  | 0.155  | 0.010    | 0.758   | 15.90  | 1.403   | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 2S   | 2.32  | 1.43   | 0.530  | 0.062  | .        | 0.210   | 36.3   | 0.51    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NH5     | 2.31  | 0.31   | 0.24   | 0.115  | 0.04     | 0.035   | 4.90   | 2.85    | .       | .       | 0.017   | .      | .      | .      | .      |
| CTIF FL3     | 2.3   | 2.1    | 0.27   | 0.729  | (0.013)  | 0.102   | 0.553  | 0.107   | .       | .       | 0.106   | 0.111  | 0.05   | 0.049  | .      |
| CTIF NR 4G   | 2.24  | 5.60   | 1.72   | 0.11   | (0.002)  | 0.64    | 21.30  | 1.40    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 2G   | 2.25  | 1.47   | 0.380  | 0.0476 | (0.003)  | 0.232   | 36.34  | 0.395   | .       | .       | .       | .      | .      | .      | .      |
| CTIF FL2     | 2.18  | 3.61   | 0.0400 | 0.049  | 0.082    | 0.0497  | 0.0238 | 0.440   | (0.006) | 0.0263  | (0.004) | 0.140  | 0.0750 | 0.201  | .      |
| CTIF FL1     | 2.1   | 3.2    | 0.80   | 0.118  | 0.0765   | 0.0195  | 0.245  | 0.06    | .       | (0.022) | 0.038   | 0.305  | 0.020  | 0.015  | .      |
| CTIF FCR Ni2 | 2.02  | 1.50   | 0.61   | 0.185  | 0.024    | .       | 13.05  | 29.00   | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR Cu3  | 1.94  | 3.12   | 0.60   | 0.046  | 0.016    | 8.05    | 13.3   | 3.50    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 6S   | 1.82  | 2.44   | 0.99   | 0.019  | .        | 0.03    | 30.75  | 1.06    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 5L   | 1.77  | 2.99   | 1.207  | 0.037  | 0.083    | 0.48    | 33.89  | 0.27    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 6L   | 1.76  | 2.07   | 0.70   | 0.031  | 0.063    | 0.020   | 30.37  | 3.49    | .       | .       | .       | .      | .      | .      | .      |
| CTIF NR 5S   | 1.67  | 1.97   | 1.23   | 0.035  | .        | 0.50    | 27.05  | 0.24    | .       | .       | .       | .      | .      | .      | .      |
| CTIF FCR6    | 1.44  | 0.76   | 1.47   | 0.201  | 0.086    | 0.480   | 0.188  | 30.84   | .       | .       | 0.455   | .      | .      | .      | .      |
| CTIF FCR Ni1 | 1.27  | 1.63   | 0.71   | 0.41   | 0.06     | 0.02    | 16.50  | 26.20   | .       | .       | .       | .      | .      | .      | .      |

| Number | C | Si | Mn | P | S | Cu | Ni | Cr | Al | Co | Mo | Sn | Ti | V | W |
|--------|---|----|----|---|---|----|----|----|----|----|----|----|----|---|---|
|--------|---|----|----|---|---|----|----|----|----|----|----|----|----|---|---|

## CAST IRON MUSHROOMS

## CONTINUED FROM THE PREVIOUS PAGE

| Number      | As       | B       | Bs      | Bi      | Ce | N      | Nb      | Pb      | Sb      | Te      | Zn      |
|-------------|----------|---------|---------|---------|----|--------|---------|---------|---------|---------|---------|
| CTIF F019   | .        | .       | .       | .       | .  | .      | .       | .       | .       | 0.0005  | .       |
| CTIF F012   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F08    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FCR7   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F06    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F010   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NH3    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F011   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F018   | .        | .       | .       | .       | .  | 0.0040 | .       | .       | .       | .       | .       |
| CTIF NH7-1  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FCR5   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FT2-1  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NiMo1  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FL7    | (0.0266) | (0.010) | .       | (0.010) | .  | 0.0035 | .       | .       | .       | .       | .       |
| CTIF FT3    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NH7-2  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F05    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NH9    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NR Cu1 | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FL6    | .        | 0.008   | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FL10   | (0.022)  | .       | (0.012) | (0.004) | .  | .      | (0.018) | (0.002) | (0.032) | (0.001) | (0.029) |
| CTIF FFA 1  | 0.0109   | .       | .       | .       | .  | 0.0125 | .       | .       | .       | .       | .       |
| CTIF NR 8S  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF F017   | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FAL 1  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NR 3L  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NH1    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NH8    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF NR 3S  | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |
| CTIF FT1    | .        | .       | .       | .       | .  | .      | .       | .       | .       | .       | .       |

| Number       | As     | B       | Bs | Bi       | Ce | N        | Nb   | Pb | Sb | Te | Zn            |
|--------------|--------|---------|----|----------|----|----------|------|----|----|----|---------------|
| CTIF NR 8L   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NH4     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF F04     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | last of stock |
| CTIF FCR2    | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FL5     | .      | (0.002) | .  | (0.0005) | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR Ni3 | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NH6     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF F09     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FL4     | (0.05) | .       | .  | (0.003)  | .  | 0.007    | .    | .  | .  | .  | .             |
| CTIF NR 1S   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 1L   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NH2     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR Cu2  | .      | .       | .  | .        | .  | (0.0079) | .    | .  | .  | .  | .             |
| CTIF NR 4S   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR4    | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR1    | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF F07     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 4L   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 2S   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NH5     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FL3     | .      | .       | .  | .        | .  | 0.008    | .    | .  | .  | .  | .             |
| CTIF NR 4G   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 2G   | .      | .       | .  | .        | .  | .        | 0.27 | .  | .  | .  | .             |
| CTIF FL2     | .      | .       | .  | (0.0135) | .  | .        | .    | .  | .  | .  | .             |
| CTIF FL1     | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR Ni2 | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR Cu3  | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 6S   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 5L   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 6L   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF NR 5S   | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR6    | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |
| CTIF FCR Nil | .      | .       | .  | .        | .  | .        | .    | .  | .  | .  | .             |

| Number | As | B | Bs | Bi | Ce | N | Nb | Pb | Sb | Te | Zn |
|--------|----|---|----|----|----|---|----|----|----|----|----|
|--------|----|---|----|----|----|---|----|----|----|----|----|

**CARBON STEEL**

# = Class, where 1 = CRM and 2 = RM

\* Provisional Analysis

| Number           | C     | Mn    | P      | S      | Si    | Cu     | Ni    | Cr    | Al      | Co     | Mo     | N      | V      | W     |
|------------------|-------|-------|--------|--------|-------|--------|-------|-------|---------|--------|--------|--------|--------|-------|
| 1 VS UG128       | 0.816 | 0.405 | 0.014  | 0.0139 | 0.324 | 0.0235 | 0.032 | 0.038 | 0.0078  | .      | .      | 0.0088 | 0.0046 | .     |
| 1 VS UG129       | 0.728 | .     | .      | 0.013  | .     | .      | .     | .     | 0.0014  | .      | .      | .      | .      | .     |
| 1 IARM Fe1050-18 | 0.499 | 0.79  | 0.0045 | 0.027  | 0.223 | 0.179  | 0.068 | 0.100 | (0.003) | 0.0056 | 0.018  | 0.0097 | 0.0270 | .     |
| 1 VS UG131       | 0.39  | 0.56  | 0.0100 | 0.0031 | 0.207 | 0.030  | 0.026 | 0.853 | .       | .      | .      | 0.0070 | .      | .     |
| 1 IARM Fe1020-18 | 0.226 | 0.547 | 0.006  | 0.024  | 0.235 | 0.198  | 0.078 | 0.125 | (0.003) | 0.0065 | 0.0252 | 0.0098 | 0.036  | .     |
| 1 VS UG132       | 0.180 | 0.466 | 0.0075 | 0.0030 | 0.201 | 0.039  | 0.024 | 0.035 | .       | .      | .      | 0.0054 | .      | .     |
| 1 BS XCAS *      | 0.029 | 0.47  | 0.008  | 0.006  | 0.34  | 0.022  | 0.032 | 0.038 | 0.029   | 0.009  | 0.007  | 0.006  | 0.021  | 0.009 |

| Number         | As       | B        | Fe     | Nb       | O       | Sb     | Sn     | Ti     | Alloy | Units                | Others |
|----------------|----------|----------|--------|----------|---------|--------|--------|--------|-------|----------------------|--------|
| VS UG128       | .        | .        | .      | .        | .       | .      | .      | .      | .     | ~38 mm Ø x ~20 mm    | .      |
| VS UG129       | .        | .        | .      | .        | .       | .      | .      | .      | .     | ~38 mm Ø x ~20 mm    | .      |
| IARM Fe1050-18 | (0.0030) | (0.0005) | 98.0   | (0.0013) | 0.0026  | 0.0015 | 0.0103 | 0.0008 | 1050  | 31 mm Ø x 2 or 18 mm | .      |
| VS UG131       | .        | .        | .      | .        | .       | .      | .      | .      | .     | ~39 mm Ø x ~25 mm    | .      |
| IARM Fe1020-18 | 0.0044   | .        | 98.5   | (0.0012) | (0.007) | 0.0018 | 0.0080 | .      | 1020  | 31 mm Ø x 2 or 18 mm | .      |
| VS UG132       | .        | .        | .      | .        | .       | .      | .      | .      | .     | ~39 mm Ø x ~25 mm    | .      |
| BS XCAS *      | 0.002    | <0.005   | [98.9] | 0.002    | <0.05   | <0.05  | 0.002  | 0.001  | 1008  | 38 mm Ø x 30 mm      | .      |

**RESULFURIZED STEEL**

# = Class, where 1 = CRM and 2 = RM

| Number      | C     | Mn    | P       | S     | Si     | Cu    | Ni    | Cr    | Al      | Co     | Mo    | N       | V       | W    |
|-------------|-------|-------|---------|-------|--------|-------|-------|-------|---------|--------|-------|---------|---------|------|
| 1 IARM 307B | 0.162 | 1.45  | (0.012) | 0.094 | (0.30) | 0.191 | 0.195 | 0.105 | 0.034   | 0.0101 | 0.045 | (0.011) | (0.003) | .    |
| 2 CZ CM-22A | 0.154 | 1.443 | 0.086   | 0.084 | 0.248  | 0.419 | 3.10  | 0.167 | (0.004) | 0.130  | 0.132 | 0.0065  | 0.653   | 0.59 |

| Number    | As    | Nb       | Sn    | Ti      | Alloy | Units                |
|-----------|-------|----------|-------|---------|-------|----------------------|
| IARM 307B | .     | (0.0013) | 0.010 | (0.003) | 1118  | 31 mm Ø X 2 or 18 mm |
| CZ CM-22A | 0.057 | 0.019    | 0.069 | 0.0038  | .     | ~39 mm Ø x ~25 mm    |

**SILICON STEEL**

# = Class, where 1 = CRM and 2 = RM

| Number      | C     | Mn    | P      | S       | Si   | Cu    | Ni    | Cr    | Al    | Co     | Mo      | N      | V     | W       |
|-------------|-------|-------|--------|---------|------|-------|-------|-------|-------|--------|---------|--------|-------|---------|
| 2 CZ CM-20A | 0.63  | 0.594 | 0.0383 | 0.020   | 1.74 | 0.237 | 1.007 | 0.97  | 0.076 | 0.124  | 0.365   | 0.0086 | 0.225 | 0.104   |
| 2 CZ LA-3G  | 0.626 | 0.68  | 0.047  | 0.035   | 1.29 | 0.236 | 1.01  | 1.377 | 0.047 | 0.127  | 0.326   | 0.011  | 0.232 | 0.105   |
| 1 IMZ 52/1  | 0.41  | 0.25  | 0.012  | (0.009) | 1.38 | 0.094 | 2.35  | 0.12  | .     | .      | (0.041) | .      | .     | .       |
| 2 CZ CM-12C | 0.038 | 0.275 | 0.0103 | 0.0110  | 3.7  | 0.175 | 0.046 | 0.081 | 0.145 | 0.0044 | 0.012   | 0.0056 | 0.027 | (0.004) |

| Number    | As     | B      | Nb     | Pb     | Sb    | Sn      | Ti     | Units             | Others             |
|-----------|--------|--------|--------|--------|-------|---------|--------|-------------------|--------------------|
| CZ CM-20A | 0.073  | 0.0071 | 0.074  | 0.015  | 0.025 | 0.033   | 0.175  | ~37 mm Ø x ~25 mm | Zn:0.007 Zr:0.083  |
| CZ LA-3G  | 0.051  | 0.0039 | 0.071  | 0.0098 | 0.024 | 0.031   | 0.143  | ~39 mm Ø x ~25 mm | Ca:0.0016 Zr:0.068 |
| IMZ 52/1  | .      | .      | .      | .      | .     | .       | .      | 40 mm Ø x 40 mm   | .                  |
| CZ CM-12C | 0.0030 | 0.0033 | 0.0066 | .      | .     | (0.005) | 0.0128 | ~39 mm Ø x ~25 mm | Ca:0.0010          |



## STAINLESS AND HIGH ALLOY STEEL

# = Class, where 1 = CRM and 2 = RM

\* Provisional Analysis

| Number            | C       | Mn      | P       | S         | Si      | Cu      | Ni    | Cr     | Al      | Co    | Mo    | N        | V       | W       |
|-------------------|---------|---------|---------|-----------|---------|---------|-------|--------|---------|-------|-------|----------|---------|---------|
| 1 IARM FeAl100-18 | 0.222   | (0.013) | (0.004) | (<0.0010) | (0.039) | (0.010) | 11.2  | 2.98   | (0.007) | 13.4  | 1.19  | (0.0010) | (0.007) | (0.006) |
| 2 BS 183B *       | 0.18    | 0.35    | 0.018   | 0.005     | 0.41    | 0.075   | 1.97  | 12.43  | 0.0008  | 0.030 | 0.33  | 0.044    | 0.17    | 3.42    |
| 1 BS 183C *       | 0.17    | 0.37    | 0.014   | 0.004     | 0.43    | 0.063   | 1.87  | 12.71  | 0.002   | 0.028 | 0.19  | 0.04     | 0.11    | 2.77    |
| 1 BS 309 *        | 0.061   | 1.61    | 0.028   | 0.001     | 0.25    | 0.35    | 12.17 | 22.4   | 0.003   | 0.20  | 0.19  | 0.074    | 0.073   | 0.03    |
| 1 BS 347C *       | 0.051   | 1.67    | 0.022   | 0.022     | 0.67    | 0.11    | 10.1  | 17.3   | 0.004   | 0.072 | 0.268 | 0.039    | 0.097   | 0.012   |
| 2 CZ SP-1B        | 0.050   | 1.67    | 0.039   | 0.30      | 0.505   | 0.47    | 8.32  | 17.42  | (0.003) | 0.161 | 0.40  | 0.063    | 0.060   | 0.032   |
| 2 PV 112/1        | 0.047   | 1.577   | 0.018   | 0.023     | 0.515   | 0.102   | 11.14 | 17.56  | .       | .     | 2.03  | .        | .       | .       |
| 1 IARM Fe174PH-18 | 0.041   | 0.47    | 0.024   | (<0.0040) | 0.52    | 3.33    | 4.73  | 15.10  | 0.007   | 0.047 | 0.315 | 0.0436   | 0.051   | 0.015   |
| 1 13X 41008B      | 0.034   | 0.684   | 0.013   | 0.0070    | 0.761   | 0.267   | 0.338 | 12.36  | 0.028   | 0.053 | 0.042 | 0.0088   | 0.061   | .       |
| 1 BS 2507 *       | 0.025   | 0.78    | 0.024   | 0.0005    | 0.32    | 0.22    | 6.9   | 25.3   | 0.005   | 0.041 | 3.78  | 0.28     | 0.064   | 0.076   |
| 2 TL 2001D        | 0.0244  | 0.679   | 0.022   | 0.0006    | 0.27    | 0.612   | 7.5   | 25.58  | .       | 0.046 | 3.49  | 0.279    | 0.079   | 0.57    |
| 1 IARM FeKovar-18 | 0.024   | 0.26    | (0.004) | (0.0055)  | (0.09)  | 0.077   | 29.0  | 0.068  | .       | 17.3  | 0.062 | .        | .       | (0.020) |
| 2 PV 111/1        | 0.0226  | 1.538   | 0.019   | 0.026     | 0.485   | 0.105   | 8.57  | 18.49  | .       | .     | 0.173 | .        | .       | .       |
| 1 BS 186B *       | 0.022   | 0.28    | 0.003   | 0.002     | 0.25    | 0.060   | 36.4  | 0.12   | 0.008   | 0.044 | 0.025 | <0.05    | <0.05   | 0.01    |
| 1 BS 254 *        | 0.019   | 0.95    | 0.025   | 0.002     | 0.31    | 0.61    | 18.4  | 20.3   | 0.008   | 0.093 | 6.07  | 0.22     | 0.063   | 0.03    |
| 1 IARM Fe155PH-18 | 0.015   | 0.616   | 0.021   | (0.0004)  | 0.430   | 3.35    | 4.79  | 15.13  | 0.014   | 0.024 | 0.129 | 0.0494   | 0.055   | 0.019   |
| 2 TL 2002D        | 0.0149  | 1.30    | 0.022   | 0.0206    | 0.53    | 0.438   | 11.0  | 16.7   | .       | 0.087 | 2.05  | 0.0341   | 0.068   | .       |
| 1 IARM 99D        | (0.006) | (0.013) | (0.004) | 0.0011    | (0.03)  | (0.045) | 18.4  | (0.12) | 0.117   | 9.24  | 4.8   | 0.0014   | (0.037) | (0.010) |

| Number          | As       | B        | Fe      | Nb       | O        | Sb     | Sn      | Ti      | Alloy          | Units                      |
|-----------------|----------|----------|---------|----------|----------|--------|---------|---------|----------------|----------------------------|
| IARM FeAl100-18 | .        | .        | .       | 0.070    | (0.0009) | .      | (0.004) | (0.008) | Aermet 100     | 31 mm Ø x 2 or 18 mm       |
| BS 183B *       | 0.005    | 0.001    | [80.60] | 0.009    | <0.05    | 0.001  | 0.004   | 0.002   | Greek Ascology | 38 mm Ø x -7 or 19+ mm     |
| BS 183C *       | 0.004    | 0.001    | [81.18] | 0.006    | <0.05    | 0.001  | 0.003   | 0.002   | Greek Ascology | 38 mm Ø x -7 or 19+ mm     |
| BS 309 *        | <0.05    | <0.005   | [62.6]  | 0.009    | <0.05    | <0.05  | 0.009   | 0.002   | 309, 309H      | 38 mm Ø x -7 or 19+ mm     |
| BS 347C *       | 0.002    | 0.0018   | [69.02] | 0.59     | <0.05    | 0.004  | 0.005   | 0.004   | 347            | 44 mm Ø x -7 or 19+ mm     |
| CZ SP-1B        | (0.003)  | 0.0007   | .       | (0.012)  | .        | .      | 0.013   | (0.002) | .              | -37 mm Ø x -25 mm          |
| PV 112/1        | .        | .        | .       | .        | .        | .      | .       | 0.394   | 316 Ti         | 40 mm Ø x 25 mm            |
| IARM Fe174PH-18 | .        | .        | .       | (0.0015) | 0.0035   | .      | 0.0069  | .       | 17-4 PH        | 31 mm Ø x 2 or 18 mm       |
| 13X 41008B      | .        | .        | .       | 0.019    | .        | .      | 0.0081  | .       | 410            | -40 mm Ø x -15 mm Zr:0.047 |
| BS 2507 *       | <0.05    | 0.002    | [62.4]  | 0.009    | <0.005   | <0.005 | 0.005   | 0.003   | 2507 Duplex    | 38 mm Ø x -7 or 19+ mm     |
| TL 2001D        | .        | .        | 53.3    | 0.024    | .        | .      | .       | .       | Super Duplex   | 40 mm Ø x 20 mm            |
| IARM FeKovar-18 | .        | .        | 53.3    | .        | .        | .      | 0.0021  | .       | Kovar          | 31 mm Ø x 2 or 18 mm       |
| PV 111/1        | .        | .        | .       | .        | .        | .      | .       | .       | 304 L          | 40 mm Ø x 25 mm            |
| BS 186B *       | <0.05    | <0.005   | [62.6]  | 0.003    | <0.005   | <0.005 | <0.005  | 0.003   | Invar 36       | 43 mm Ø x -7 or 19+ mm     |
| BS 254 *        | <0.05    | 0.002    | [53.1]  | 0.03     | <0.05    | <0.05  | 0.006   | 0.002   | 254 SMO        | 38 mm Ø x -7 or 19+ mm     |
| IARM Fe155PH-18 | (0.0026) | (0.0005) | 75.03   | 0.273    | 0.0028   | .      | 0.0021  | .       | 15-5PH         | 31 mm Ø x 2 or 18 mm       |
| TL 2002D        | .        | .        | .       | .        | .        | .      | .       | 0.0098  | 316 MOD        | 40 mm Ø x 20 mm            |
| IARM 99D        | .        | 0.0026   | .       | (0.011)  | .        | .      | .       | 0.67    | Maraging 300   | 31 mm Ø x 2 or 18 mm       |

## CAST IRON

# = Class, where 1 = CRM and 2 = RM

| Number        | C     | Mn    | P     | S      | Si    | Cu    | Ni    | Cr    | Al     | Co      | Mo     | V      | W       |
|---------------|-------|-------|-------|--------|-------|-------|-------|-------|--------|---------|--------|--------|---------|
| 1 VS ChG 56   | (3.8) | (0.2) | (0.8) | (0.01) | (0.5) | (0.4) | (0.1) | (0.1) | (0.01) | (0.005) | (0.01) | (0.02) | (0.004) |
| 1 VS ChG 57   | (3.8) | (0.2) | 1.17  | (0.03) | (0.6) | (0.3) | (0.3) | (0.4) | (0.06) | (0.01)  | (0.01) | (0.04) | (0.01)  |
| 1 SCRM 658/12 | 3.33  | 0.55  | 0.243 | 0.076  | 2.03  | .     | .     | .     | .      | .       | .      | .      | .       |

| Number      | As    | B       | Nb      | Sb      | Sn     | Ti     | Units                       |
|-------------|-------|---------|---------|---------|--------|--------|-----------------------------|
| VS ChG 56   | 0.18  | (0.001) | (0.002) | 0.014   | .      | (0.06) | Disc -37 mm Ø x -17 mm      |
| VS ChG 57   | 0.095 | (0.002) | (0.004) | (0.001) | (0.01) | (0.08) | Disc -37 mm Ø x -17 mm      |
| SCRM 658/12 | .     | .       | .       | .       | .      | .      | Block 48 mm x 42 mm x 12 mm |

| ALLOY          | ISO?                | NUMBER         | ALLOY                      | ISO?          | NUMBER          | ALLOY       | ISO?          | NUMBER         |
|----------------|---------------------|----------------|----------------------------|---------------|-----------------|-------------|---------------|----------------|
| 1.0812         |                     | ECRM 191-2D    | 15-5PH                     |               | IARM Fe155PH-18 | 310         |               | IARM 4F        |
| 1.2344         |                     | ECRM 271-1D    | 15-5PH                     |               | ECRM 273-1D     | 310         |               | IARM 4G        |
| 1.2367         |                     | HRT FE2012-H   | 15-5PH                     |               | IARM 22C        | 310         |               | SS 464/1       |
| 1.4435, 1.4436 |                     | JK 27B         | 16MnCr5                    |               | PV 102/1        | 3115        |               | BS XCCT        |
| 1.4765         |                     | ECRM 299-1D    | 17-4PH                     |               | 13X PH2         | 314         |               | IMZ 165        |
| 1.5415         |                     | HRT FE2012-N   | 17-4PH                     |               | 13X PH17400     | 314         |               | IMZ 166A       |
| 1.6587         |                     | HRT FE2013-N   | 17-4PH                     |               | BS 17-4PHA      | 316         | 17025         | BS 316C        |
| 1.7149         | 20MnCrS5            | ECRM 187-2D    | 17-4PH                     |               | BS 17-4PHB      | 316         |               | IARM 5H        |
| 1.7160         |                     | ECRM 194-1D    | 17-4PH                     |               | BS 17-4PHC      | 316         |               | IARM 5i        |
| 1.8550         |                     | ECRM 129-3D    | 17-4 PH                    |               | IARM Fe174PH-18 | 316         |               | NILAB 500HAD   |
| 1.8519         |                     | HRT FE2010-N   | 17-4PH                     |               | SRM C2400       | 316         |               | SRM 1155A      |
| 1.8928         |                     | ECRM 194-2D    | 17-7PH                     |               | 13X PH17700     | 316 H       |               | 13X NSA2       |
| 1005           | 17025               | BS 1005        | 17-7PH 25(preceeded 17025) |               | BS 192          | 316 H       |               | CT 316         |
| 1005           |                     | ECRM 064-2D    | 17-7PH 25(preceeded 17025) |               | BS 192A         | 316 H       |               | IARM 339A      |
| 1005           |                     | RM Fe 1/5      | 17-7PH                     |               | IARM 152C       | 316 L       |               | 13X 31603      |
| 1005           |                     | SRM 1765       | 17-7PH                     |               | IARM Fe177PH-18 | 316 L       | 17025         | BS 316F        |
| 1005           |                     | SRM 1766       | 182FM                      |               | BS 150          | 316 L       |               | CZ SL-2A       |
| 1005           |                     | SS 111/1       | 18Cr2Ni12Mn                |               | CT ISO035A      | 316 L       |               | IARM Fe316L-18 |
| 1008           |                     | BS XCAS        | 201                        |               | BS 191          | 316 L       |               | IARM 163E      |
| 1008           |                     | ECRM 057-2D    | 201                        |               | SRM 1297        | 316 L       |               | SS 466/2       |
| 1009           | 17025               | BS 1009        | 20Cb3                      |               | BS 187A         | 316 MOD     |               | TL 2002        |
| 1009           |                     | IMZ 71         | 20Cb3                      |               | CT 20 Cb-3      | 316 Ti      |               | IRSID 1821     |
| 100C6          |                     | IRSID 1747     | 20MoCr4                    |               | ECRM 197-1D     | 316 Ti      |               | PV 112/1       |
| 1010           |                     | IMZ 111        | 2101                       |               | IARM 292A       | 316 Ti      |               | VS LG72        |
| 1010           |                     | IRSID 1665     | 21Cr6Ni9Mn                 |               | CT ISO129A      | 317 L       |               | BS 317L        |
| 1011           |                     | IMZ 73         | 2205                       | 17025         | BS 2205         | 317 L       | 25(pre-17025) | BS 9941        |
| 1016           | 17025               | BS 1016        | 2205                       | 17025         | BS 2205A        | 317 L       | 25(pre-17025) | BS 9942        |
| 1017           |                     | IMZ 112B       | 2205                       |               | IARM 212D       | 317 L       |               | IARM 153C      |
| 1017           |                     | IRSID 1664     | 2205                       |               | IARM Fe2205-18  | 318         | 17025         | BS 2205        |
| 1018           |                     | 12X 10180B     | 2304                       |               | IARM 317A       | 318         |               | BS 2205A       |
| 1018           | 17025               | 12X 10180C     | 2507                       |               | BS 2507         | 321         |               | 13X 32100      |
| 1018           |                     | BS 1018        | 2507                       |               | IARM 301B       | 321         | 17025         | BS 85D         |
| 1018           |                     | ECRM 087-1D    | 253 MA                     | 25(pre-17025) | BS 253          | 321         | 17025         | BS 321D        |
| 1018           |                     | IARM 28K       | 253 MA                     |               | IARM 316A       | 321         |               | IARM 6i        |
| 1020           | 17025               | BS 1020        | 254 SMO                    |               | BS 254          | 321         |               | IARM 6J        |
| 1020           |                     | IARM Fe1020-18 | 254 SMO                    |               | IARM 302B       | 321         |               | SRM 1171       |
| 1026           | 17025               | BS 1026        | 254 SMO                    |               | NILAB 501HAD    | 321         |               | SS 465/1       |
| 1026           |                     | IARM 359A      | 255, Duplex                |               | IARM 239B       | 321 - Ti    |               | IMZ 152        |
| 1030           | 17025               | BS 1030        | 255, Duplex                |               | IARM 239C       | 32750       |               | 13X NSA13      |
| 1030           |                     | IARM 209D      | 300M                       |               | 12X 44220       | 330         |               | IARM 7C        |
| 1033           |                     | IRSID 1663     | 300M                       | 17025         | BS 300          | 3310        |               | BS 3310        |
| 1035           | 17025               | BS 1035        | 300M                       |               | IARM 340A       | 347         |               | 13X 34700      |
| 1035           |                     | IRSID 1645     | 301                        |               | IARM 289A       | 347         |               | BS 347A        |
| 1035           |                     | IARM 360A      | 301                        |               | IARM 289B       | 347         |               | BS 347B        |
| 1039           |                     | IRSID 1637     | 301                        |               | IRSID 1819      | 347         |               | BS 347C        |
| 1040           |                     | 12X 10400      | 302                        |               | IARM 241D       | 347         |               | IARM 8G        |
| 1040           | 17025               | BS 3941        | 302 HQ                     |               | IARM 234C       | 347         |               | IARM 8H        |
| 1040           |                     | IARM 210D      | 303                        |               | 13X 30300       | 347         |               | IARM 8i        |
| 1040           |                     | IRSID 1657     | 303                        | 17025         | BS 303          | 347 H       |               | BS 87F         |
| 1042           |                     | IRSID 1656     | 303                        |               | CT 303          | 348         |               | SRM 1172       |
| 1042           |                     | NM EN-8        | 303                        |               | CZ SP-1A        | 355         | 17025         | BS 355         |
| 1043           |                     | IRSID 1652     | 303                        |               | IARM Fe303-18   | 355         |               | IARM 335A      |
| 1045           | 17025               | BS 1045        | 303 Se                     |               | IARM 253A       | 35MV7       |               | IRSID 1750     |
| 1045           |                     | BS 56E         | 303 Se                     |               | IARM 253B       | 405         |               | SRM 1295       |
| 1045           |                     | IARM 200D      | 304 H                      |               | 13X NSB1        | 409         |               | 13X 40900      |
| 1045           |                     | IPT 503        | 304 H + Ca                 | 17025         | BS CA304-4      | 409         |               | 13X 40930      |
| 1050           |                     | IARM Fe1050-18 | 304 H                      |               | CT 304          | 409 + Cr    |               | NCS HS20743    |
| 1060           |                     | IARM 373A      | 304 H                      |               | IARM Fe304H-18  | 410         |               | 13X 41008      |
| 1069           |                     | ECRM 059-2D    | 304 H                      |               | SS 468/1        | 410         | 25(pre-17025) | BS 0021        |
| 1070           | 17025               | BS 54H         | 304 L                      |               | 13X 30403       | 410, F6NM   | 25(pre-17025) | BS 0022        |
| 1078           |                     | ECRM 056-2D    | 304 L                      | 17025         | BS 304B         | 410         | 17025         | BS 410C        |
| 1078           |                     | SRM 1224       | 304 L                      |               | BS SS3951       | 410         |               | CT 410         |
| 1090           |                     | SS 602/2       | 304 L                      |               | IARM 162D       | 410         |               | IARM Fe410-18  |
| 1095           |                     | BS 64C         | 304 L                      |               | IARM Fe304L-18  | 410 + Mo    |               | ECRM 296-1D    |
| 1095           |                     | SRM 1227       | 304 L                      |               | ECRM 287-1D     | 410 + Mo    |               | IMZ 161        |
| 1117           | 25(preceeded 17025) | BS 3993        | 304 L                      |               | ECRM 292-1D     | 410 H       |               | 13X 41001      |
| 1117           |                     | BS 65C         | 304 L                      |               | IARM 162C       | 4130        | 17025         | BS 4130        |
| 1117           |                     | IARM 29E       | 304 L                      |               | PV 111/1        | 4130        |               | IARM 143F      |
| 1118           |                     | IARM 307A      | 304 L                      |               | SS 463/1        | 4130        |               | SRM 1225       |
| 1118           |                     | IARM 307B      | 305                        |               | ECRM 297-1D     | 4130 H      |               | IPT 501        |
| 1140 P         |                     | BS 52D         | 306                        |               | 13X 30600A      | 4140        |               | 12X 41400      |
| 1141           |                     | BS 66B         | 308                        |               | DSZU C017       | 4140        | 25(pre-17025) | BS 1962        |
| 1141           |                     | IARM 348A      | 309                        |               | 13X 30908       | 4140        |               | BS 4140C       |
| 1144           | 17025               | BS 1144        | 309                        |               | BS 82E          | 4140        |               | IARM 30H       |
| 1144           | 17025               | BS 1144A       | 309                        |               | BS 309          | 4140        |               | IARM 30J       |
| 1144           |                     | IARM 199C      | 309                        |               | IARM 3E         | 4140 Bi     |               | BS 4140A       |
| 11L17          | 17025               | BS 75F         | 310                        |               | 13X 31008       | 4140 Bi     |               | BS 4140B       |
| 11L17          | 17025               | BS 75G         | 310                        |               | BS 83G          | 41L40MOD    | 17025         | BS 70B         |
| 1215           | 17025               | BS 66L         | 310                        | 25(pre-17025) | BS 9841         | 41L40MOD    |               | BS 70C         |
| 1215           |                     | IARM 206B      | 310                        | 25(pre-17025) | BS 9842         | 4150 Bi & S |               | BS 4150MOD     |
| 12L14          | 17025               | BS 74C         | 310                        |               | CZ SL-3A        | 4150 S      | 17025         | BS 4150MOD-A   |
| 12L14          |                     | IARM 183C      | 310                        |               | IARM 4E         | 4150 S      | 17025         | BS 42          |
| 12Mn18Cr       |                     | BS 193         |                            |               |                 | 4150 S      |               | BS 42A         |
| 1345           |                     | BS XCCV        |                            |               |                 | 416         |               | BS 90F         |
| 13-8PH         |                     | 13X PH13800    |                            |               |                 | 416         | 17025         | BS 416         |
| 13-8PH         |                     | BS 184A        |                            |               |                 | 416         |               | CT 416         |
| 13-8PH         |                     | CT X92834      |                            |               |                 | 416         |               | IARM 10D       |
| 13-8PH         |                     | IARM 21D       |                            |               |                 | 416         |               | SRM 1223       |
| 1429           |                     | ECRM 058-2D    |                            |               |                 | 416 H       |               | 13X 41600      |
| 1513           |                     | IMZ 76         |                            |               |                 | 416 Se      |               | BS 151         |
| 1526 MOD       |                     | SRM 1269       |                            |               |                 | 418         |               | IARM Fe418-18  |
| 1541           |                     | IARM 349A      |                            |               |                 | 41CAD7      |               | IRSID 1749     |
| 1541           |                     | IPT 504        |                            |               |                 | 41L40       | 17025         | BS 70B         |
| 1541           |                     | IRSID 1648     |                            |               |                 | 41L50       | 17025         | BS 72B         |
| 1544           |                     | IRSID 1644     |                            |               |                 | 42          |               | CT ISO138A     |
| 15-5PH         |                     | BS 185A        |                            |               |                 | 42          |               | CT ISO139A     |
| 15-5PH         |                     | BS 9621        |                            |               |                 | 42CrMo4     |               | PV 101/1       |
| 15-5PH         |                     | BS 9622        |                            |               |                 | 420         |               | BS SS4951      |
|                |                     |                |                            |               |                 | 420         |               | BS SS4952      |

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| ALLOY      | ISO?               | NUMBER          | ALLOY                   | ISO?          | NUMBER           | ALLOY             | ISO?               | NUMBER          |
|------------|--------------------|-----------------|-------------------------|---------------|------------------|-------------------|--------------------|-----------------|
| 420        |                    | ECRM 272-1D     | A-6                     |               | IARM 40C         | Invar             |                    | 14X 93603       |
| 420        |                    | IARM 154C       | A615-75                 |               | IARM 378A        | Invar-36          |                    | BS 186B         |
| 420        |                    | SS 469          | A706-60                 |               | IARM 380A        | Invar-36 + Se     |                    | BS 186A         |
| 420 F      |                    | BS 152          | A706-60                 |               | IARM 380B        | Invar-36 + Se     |                    | IARM 24B        |
| 420 F S    |                    | IARM 352A       | A706-80                 |               | IARM 381A        | Invar 42          |                    | 14X 94100       |
| 422        |                    | 13X 42200       | Aermet 100              |               | CT ISO045A       | ISO 898-1         |                    | SS 457/2        |
| 422        | 17025              | BS 422          | Aermet 100              |               | IARM 242A        | Kovar             | 17025              | BS 160A         |
| 422        |                    | IARM 205D       | Aermet 100              |               | IARM FeA100-18   | Kovar             |                    | IARM 98B        |
| 430        | 17025              | BS 430          | AL6XN                   | 17025         | BS 189A          | Kovar             |                    | IARM FeKovar-18 |
| 430        |                    | IARM 11D        | AL6XN                   |               | IARM 157D        | L-2, 6150         |                    | BS 43A          |
| 430        |                    | NCS HS20742     | C-.5Mo                  |               | BS 3952          | L-6               | 17025              | BS 39B          |
| 430 F      |                    | BS 153          | C-.5Mo                  |               | IARM 229B        | L-6               |                    | IARM 43B        |
| 430 F      |                    | BS 154          | C-250                   |               | IARM 308A        | LDX2101           |                    | 13X 32101       |
| 430 F S    |                    | IARM 355A       | C-350                   |               | IARM 309A        | LF-2              | 17025              | BS LF2B         |
| 431        | 17025              | BS 431          | CA6NM                   |               | HRT FE2009-H     | LF-2              |                    | SS 601/2        |
| 431        |                    | BS 92B          | CA6NM                   |               | IARM 327A        | LF-3              |                    | BS LF3          |
| 431        |                    | IARM 12C        | CD3MN                   |               | ECRM 298-1D      | M-1               |                    | CT M1           |
| 431        |                    | HRT FE2010-H    | CD4MCU                  | 17025         | BS CD4MCU        | M-1               |                    | IARM 304A       |
| 431        |                    | SRM 1219        | CD4MCU                  | 17025         | BS CD4MCU-A      | M-10              |                    | CT M10          |
| 4320       |                    | BS 3961         | CD6MN                   |               | VS LG58          | M-10              |                    | IARM 324A       |
| 4330 MOD   |                    | BS 4330MOD      | CF-3                    |               | IRSID 1820       | M-152             |                    | 13X 64152       |
| 4330 MOD   |                    | BS 4330V        | CLA6                    |               | IARM 169B        | M-152             |                    | IARM 291A       |
| 4330 MOD   |                    | IARM 330B       | CLA7                    |               | IARM 170B        | M-2               |                    | CT M2           |
| 4340       | 17025              | BS 4340         | CLA11                   |               | IARM 180A        | M-2               |                    | IARM 44C        |
| 4340       | 17025              | BS 4340A        | CLA5                    |               | IARM 168A        | M-2               |                    | SRM 1157        |
| 4340       |                    | IARM 31G        | CLA9                    |               | IARM 172A        | M-35              |                    | IARM 320A       |
| 439 MOD    |                    | NCS HS11721-4   | CPM15V                  | 17025         | BS PM15          | M-4               |                    | IARM 251A       |
| 440 C      |                    | 13X 44004       | Custom 450              | 25(pre-17025) | BS 9811          | M-42              |                    | SS 487/1        |
| 440 C      | 17025              | BS 93F          | Custom 450              | 25(pre-17025) | BS 9812          | M-47              | 17025              | BS M-47         |
| 440 C      |                    | IARM 13D        | Custom 450              |               | CT 450           | M-50              | 17025              | BS M-50         |
| 440 F      |                    | BS 155          | Custom 450              |               | IARM 15C         | M-50              |                    | IARM 306B       |
| 440 F Se   |                    | BS 156          | Custom 455              |               | BS SS1961        | M-65              |                    | IARM FeM62-18   |
| 440 F Se   |                    | IARM 353A       | Custom 455              |               | BS SS1962        | M-7               |                    | CT M7           |
| 441        |                    | NCS HS11721-4   | Custom 455              |               | CT 455           | Maraging 250      |                    | CT 250          |
| 446        |                    | BS 94C          | Custom 455              |               | IARM 16C         | Maraging 300      | 25(pre17025)       | BS 161A         |
| 450        |                    | BS 450          | Custom 465              |               | CT ISO123A       | Maraging 300      |                    | CT 300          |
| 450        |                    | IARM 15C        | Custom 630              |               | CT 630           | Maraging 300      |                    | IARM 99D        |
| 455        |                    | 13X 45500       | D-2                     |               | BS 37G           | Mold Steel        | 17025              | BS PP20         |
| 446        |                    | IARM 14C        | D-2                     |               | CT D2            | NIT 135M          |                    | IARM 305B       |
| 4615       |                    | BS 3962         | D-2                     |               | IARM 41D         | Nitriding 135G    |                    | BS 68B          |
| 4620       |                    | BS 4620         | D-3, D-4                |               | ECRM 288-1D      | Nitriding 135G    | 17025              | BS 68E          |
| 4620       |                    | BS 51F          | D-6                     | 17025         | BS D-6           | Nitronic 40       |                    | 13X NSC6        |
| 4620       |                    | IARM 33D        | D6-AC                   |               | IARM 299A        | Nitronic 40       |                    | BS 190          |
| 465        |                    | 13X 46500       | DP1080                  |               | IARM FeDp1080-18 | Nitronic 40       |                    | IARM 19C        |
| 465        |                    | IARM 354A       | Duplex                  |               | 13X NSA9         | Nitronic 50       |                    | BS 180A         |
| 4820       | 17025              | BS 4820A        | Duplex                  | 17025         | BS 2205          | Nitronic 50       | 17025              | BS 180B         |
| 4820       |                    | IARM 155F       | Duplex                  |               | IMZ 163A         | Nitronic 50       |                    | IARM 17D        |
| 4820       |                    | IARM Fe4820-18  | Duplex                  |               | IMZ 164          | Nitronic 50       |                    | IARM FeN50-18   |
| 5140H      |                    | IARM Fe5140H-18 | Duplex                  |               | TL 2001          | Nitronic 60       |                    | 13X 21800       |
| 5160       |                    | IMZ 116         | E52100                  |               | BS 53G           | Nitronic 60       |                    | BS 181A         |
| 6150       |                    | BS 4941         | E52100                  |               | IARM 49E         | Nitronic 60       | 17025              | BS 181B         |
| 6150       |                    | IARM 34C        | E52100 Bi               |               | BS 53MOD         | Nitronic 60       |                    | IARM 18D        |
| 6418       |                    | BS 6418         | Elect./ Magnetic        |               | SRM 1159         | NMS 100           |                    | IARM 214A       |
| 6418       |                    | BS 69B          | Electrolytic            |               | SRM 1265a        | NMS 140           |                    | IARM 295A       |
| 6526       |                    | BS 9-4-30       | F-11                    |               | BS 45A           | NMS J38           |                    | IARM 294A       |
| 709        |                    | CT X67975       | F-11                    | 17025         | BS 45B           | O-1               | 17025              | BS 35D          |
| 8620       |                    | BS 8620A        | F-11                    |               | IARM 35L         | O-1               |                    | CT O1           |
| 8620       | 17025              | BS 8620F        | F-2                     |               | CT X27081        | O-6               | 17025              | BS 41           |
| 8620       |                    | IARM Fe8620-18  | F-22                    | 17025         | BS 46B           | O-6               | 25(preceded 17025) | BS 41A          |
| 8620       |                    | IPT 502         | F-22                    |               | IARM 36C         | O-6               |                    | IARM 45A        |
| 86L20      | 25(preceded 17025) | BS 73B          | F-22                    |               | SRM 1270         | O-6               |                    | IARM 45B        |
| 86L20      |                    | BS 73C          | F-22 + Cr               |               | HRT FE2009-N     | P-20              |                    | BS 55G          |
| 86L20      |                    | IARM 182B       | F-5                     |               | BS 47A           | PP-20             | 17025              | BS PP20         |
| 8630       | 17025              | BS 8630         | F-5                     |               | BS 47B           | Permendur 2V      |                    | IARM 326A       |
| 8740       | 17025              | BS 67C          | F-5                     |               | IARM 37C         | RA330             |                    | BS 86F          |
| 8740       |                    | IARM 252C       | F-51                    | 17025         | BS 2205          | Railroad Steel    | 17025              | BS 54H          |
| 8740       |                    | IARM 252D       | F-51                    |               | BS 2205A         | S-1               |                    | BS 33D          |
| 8740       |                    | IARM 252E       | F-9                     | 17025         | BS 48B           | S-1               |                    | BS 33E          |
| 8740       |                    | IARM 252F       | F-9                     |               | IARM FeF9-18     | S-1               |                    | IARM 46B        |
| 904L       |                    | 13X NSA12       | F-91                    |               | 13X 90901        | S-1 MOD           | 17025              | BS 33F          |
| 904L       |                    | ECRM 295-1D     | F-91                    | 17025         | BS 9905A         | S-5               |                    | BS 38C          |
| 9310       |                    | BS 58C          | F-91                    |               | HRT FE2003-H     | S-5               |                    | IARM 47B        |
| 9310       |                    | BS 58E          | F-91                    |               | IARM Fe91-18     | S-7               |                    | BS TS-7A        |
| 9310       |                    | IARM FeE9310-18 | Ferallium 255           | 17025         | BS 179B          | S-7               |                    | IARM 259A       |
| 9325       | 17025              | BS 9325A        | Ferallium 255           | 17025         | BS 179C          | S-7               |                    | SRM 1772        |
| 9-4-30     |                    | IARM 341A       | F6NM 25(preceded 17025) |               | BS 0022          | S42027            |                    | 13X 42027A      |
| A-10       |                    | BS A-10         | Greek Ascoloy           |               | BS 183A          | SA213-T22         |                    | IMZ 159         |
| A-11       |                    | BS 10V          | Greek Ascoloy           |               | BS 183B          | SA213-T22         |                    | IMZ 160         |
| A-11       | 17025              | BS A-11         | Greek Ascoloy           |               | BS 183C          | SA213-T22         |                    | IMZ 169         |
| A-106 Gr B |                    | SRM 1228        | Greek Ascoloy           |               | IARM 20C         | SAE G2500         |                    | BS 20E          |
| A-193 B16  |                    | BS 4942         | H-10                    |               | BS 49            | STA 361           |                    | IARM 268B       |
| A-193 B16  | 17025              | BS 4942A        | H-11                    |               | ECRM 276-2D      | T-1               |                    | 14X HS1         |
| A-2        |                    | BS 36D          | H-11                    |               | IARM 255A        | T-1               | 17025              | BS 30D          |
| A-2        |                    | CT A2           | H-11                    |               | IARM 255B        | T-1               |                    | IARM FeT1-18    |
| A-2        |                    | IARM 39B        | H-11                    |               | IMZ 173          | T-4               |                    | IARM 281A       |
| A-2        |                    | IARM 39C        | H-13                    | 17025         | BS H-13          | T-15              | 17025              | BS TS15         |
| A-20       |                    | BS 187C         | H-13                    | 17025         | BS H-13A         | T23               |                    | IARM FeT23-18   |
| A-242      |                    | IPT 500         | H-13                    |               | CT H13           | VM12              |                    | IMZ 196         |
| A-242 Mod  |                    | SRM C1285       | H-13                    |               | IARM 42C         | W-5               |                    | 14X 72305       |
| A-286      |                    | BS 188A         | H-13                    |               | IMZ 174          | Z30C13            |                    | IRSID 1825      |
| A-286      | 17025              | BS 188B         | H-19                    | 17025         | BS H-19          | Zeron 100, Duplex |                    | 13X NSA8        |
| A-286      |                    | IARM 26D        | HC 250+v                |               | SRM C1290        | Zeron 100, Duplex |                    | IARM 319A       |
| A-286      |                    | SRM 1230        | High Perm               |               | CT ISO124A       | Zeron 100, Duplex |                    | IARM FeZ100-18  |
| A-36       |                    | IARM 213C       | High Perm               |               | CT ISO136A       |                   |                    |                 |
| A-36       |                    | IARM 213D       | High Perm 49            |               | CT ISO141A       |                   |                    |                 |
| A-36       |                    | SRM 1767        | HSLA 100                |               | SRM 1271         |                   |                    |                 |
| A-485-1    |                    | BS A485-1       | HY 130                  |               | SRM 1226         |                   |                    |                 |
| A-6        |                    | BS 40B          | HY 80                   |               | SRM 1286         |                   |                    |                 |
| A-6        |                    | IARM 40B        | Hy-Tuff                 |               | IARM 342A        |                   |                    |                 |

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## CARBON STEEL SPECIFICATIONS

| Number | C         | Mn        | P     | S     |
|--------|-----------|-----------|-------|-------|
| 1005   | <0.06     | <0.35     | <0.03 | <0.05 |
| 1006   | <0.08     | 0.25-0.40 | <0.03 | <0.05 |
| 1008   | <0.10     | 0.30-0.50 | <0.03 | <0.05 |
| 1009   | <0.15     | <0.60     | <0.03 | <0.05 |
| 1010   | 0.08-0.13 | 0.30-0.60 | <0.03 | <0.05 |
| 1011   | 0.09-0.14 | 0.60-0.90 | <0.03 | <0.05 |
| 1012   | 0.10-0.15 | 0.30-0.60 | <0.03 | <0.05 |
| 1013   | 0.11-0.16 | 0.50-0.80 | <0.03 | <0.05 |
| 1015   | 0.13-0.18 | 0.30-0.60 | <0.03 | <0.05 |
| 1016   | 0.13-0.18 | 0.60-0.90 | <0.03 | <0.05 |
| 1017   | 0.15-0.20 | 0.30-0.60 | <0.03 | <0.05 |
| 1018   | 0.15-0.20 | 0.60-0.90 | <0.03 | <0.05 |
| 1019   | 0.15-0.20 | 0.70-1.00 | <0.03 | <0.05 |
| 1020   | 0.18-0.23 | 0.30-0.60 | <0.03 | <0.05 |
| 1021   | 0.18-0.23 | 0.60-0.90 | <0.03 | <0.05 |
| 1022   | 0.18-0.23 | 0.70-1.00 | <0.03 | <0.05 |
| 1023   | 0.20-0.25 | 0.30-0.60 | <0.03 | <0.05 |
| 1025   | 0.22-0.28 | 0.30-0.60 | <0.03 | <0.05 |
| 1026   | 0.22-0.28 | 0.60-0.90 | <0.03 | <0.05 |
| 1029   | 0.25-0.31 | 0.60-0.90 | <0.03 | <0.05 |
| 1030   | 0.28-0.34 | 0.60-0.90 | <0.03 | <0.05 |
| 1033   | 0.29-0.36 | 0.70-1.00 | <0.03 | <0.05 |
| 1034   | 0.32-0.38 | 0.50-0.80 | <0.03 | <0.05 |
| 1035   | 0.32-0.38 | 0.60-0.90 | <0.03 | <0.05 |
| 1037   | 0.32-0.38 | 0.70-1.00 | <0.03 | <0.05 |
| 1038   | 0.35-0.42 | 0.60-0.90 | <0.03 | <0.05 |
| 1039   | 0.37-0.44 | 0.70-1.00 | <0.03 | <0.05 |
| 1040   | 0.37-0.44 | 0.60-0.90 | <0.03 | <0.05 |
| 1042   | 0.40-0.47 | 0.60-0.90 | <0.03 | <0.05 |
| 1043   | 0.40-0.47 | 0.70-1.00 | <0.03 | <0.05 |
| 1044   | 0.43-0.50 | 0.30-0.60 | <0.03 | <0.05 |
| 1045   | 0.43-0.50 | 0.60-0.90 | <0.03 | <0.05 |
| 1046   | 0.43-0.50 | 0.70-1.00 | <0.03 | <0.05 |
| 1049   | 0.46-0.53 | 0.60-0.90 | <0.03 | <0.05 |
| 1050   | 0.48-0.55 | 0.60-0.90 | <0.03 | <0.05 |
| 1053   | 0.48-0.55 | 0.70-1.00 | <0.03 | <0.05 |
| 1055   | 0.50-0.60 | 0.60-0.90 | <0.03 | <0.05 |
| 1059   | 0.55-0.65 | 0.50-0.80 | <0.03 | <0.05 |
| 1060   | 0.55-0.65 | 0.60-0.90 | <0.03 | <0.05 |
| 1064   | 0.60-0.70 | 0.50-0.80 | <0.03 | <0.05 |
| 1065   | 0.60-0.70 | 0.60-0.90 | <0.03 | <0.05 |
| 1069   | 0.65-0.75 | 0.40-0.70 | <0.03 | <0.05 |
| 1070   | 0.65-0.75 | 0.60-0.90 | <0.03 | <0.05 |
| 1074   | 0.70-0.80 | 0.50-0.80 | <0.03 | <0.05 |
| 1078   | 0.72-0.85 | 0.30-0.60 | <0.03 | <0.05 |
| 1080   | 0.75-0.88 | 0.60-0.90 | <0.03 | <0.05 |
| 1084   | 0.83-0.93 | 0.60-0.90 | <0.03 | <0.05 |
| 1085   | 0.80-0.94 | 0.70-1.00 | <0.03 | <0.05 |
| 1086   | 0.80-0.93 | 0.30-0.50 | <0.03 | <0.05 |
| 1090   | 0.85-0.98 | 0.60-0.90 | <0.03 | <0.05 |
| 1095   | 0.90-1.03 | 0.30-0.50 | <0.03 | <0.05 |
| Number | C         | Mn        | P     | S     |

## CARBON STEEL SPECIFICATIONS

| Number | C         | Mn        | P      | S     | Si        |
|--------|-----------|-----------|--------|-------|-----------|
| 1513   | 0.10-0.16 | 1.10-1.40 | <0.03  | <0.05 | .         |
| 1522   | 0.18-0.24 | 1.10-1.40 | <0.04  | <0.05 | .         |
| 1524   | 0.19-0.25 | 1.35-1.65 | <0.04  | <0.05 | .         |
| 1526   | 0.22-0.29 | 1.10-1.40 | <0.04  | <0.05 | .         |
| 1527   | 0.22-0.29 | 1.20-1.50 | <0.04  | <0.05 | .         |
| 1533   | 0.30-0.37 | 1.10-1.40 | <0.04  | <0.05 | .         |
| 1534   | 0.30-0.37 | 1.20-1.50 | <0.04  | <0.05 | .         |
| 1541   | 0.36-0.44 | 1.35-1.65 | <0.04  | <0.05 | .         |
| 1544   | 0.40-0.47 | 0.80-1.10 | <0.04  | <0.05 | .         |
| 1545   | 0.43-0.50 | 0.80-1.10 | <0.04  | <0.05 | .         |
| 1546   | 0.44-0.52 | 1.00-1.30 | <0.04  | <0.05 | .         |
| 1548   | 0.44-0.52 | 1.10-1.40 | <0.04  | <0.05 | .         |
| 1552   | 0.47-0.55 | 1.20-1.50 | <0.04  | <0.05 | .         |
| 1553   | 0.48-0.55 | 0.80-1.10 | <0.04  | <0.05 | .         |
| 1566   | 0.60-0.70 | 0.85-1.15 | <0.04  | <0.05 | .         |
| 1570   | 0.65-0.75 | 0.80-1.10 | <0.04  | <0.05 | .         |
| 1580   | 0.75-0.88 | 0.80-1.10 | <0.04  | <0.05 | .         |
| 1590   | 0.85-0.98 | 0.80-1.10 | <0.04  | <0.05 | .         |
| LF2    | <0.30     | 0.60-1.35 | <0.035 | <0.04 | 0.15-0.30 |

| Number | C | Mn | P | S | Si |
|--------|---|----|---|---|----|
|--------|---|----|---|---|----|

## RESULFURIZED STEEL SPECIFICATIONS

| Number | C         | Mn        | P         | S         |
|--------|-----------|-----------|-----------|-----------|
| 1108   | 0.08-0.13 | 0.50-0.80 | <0.04     | 0.08-0.13 |
| 1109   | 0.08-0.13 | 0.60-0.90 | <0.04     | 0.08-0.13 |
| 1110   | 0.08-0.13 | 0.30-0.60 | <0.04     | 0.08-0.13 |
| 1116   | 0.14-0.20 | 1.10-1.40 | <0.04     | 0.16-0.23 |
| 1117   | 0.14-0.20 | 1.00-1.30 | <0.04     | 0.08-0.13 |
| 1118   | 0.14-0.20 | 1.30-1.60 | <0.04     | 0.08-0.13 |
| 1119   | 0.14-0.20 | 1.00-1.30 | <0.04     | 0.24-0.33 |
| 1123   | 0.20-0.27 | 1.20-1.50 | <0.04     | 0.06-0.09 |
| 1132   | 0.27-0.34 | 1.35-1.65 | <0.04     | 0.09-0.13 |
| 1137   | 0.32-0.39 | 1.35-1.65 | <0.03     | 0.08-0.13 |
| 1139   | 0.35-0.43 | 1.35-1.65 | <0.04     | 0.13-0.20 |
| 1140   | 0.37-0.44 | 0.70-1.00 | <0.03     | 0.08-0.13 |
| 1141   | 0.37-0.45 | 1.35-1.65 | <0.03     | 0.08-0.13 |
| 1144   | 0.40-0.48 | 1.35-1.65 | <0.03     | 0.24-0.33 |
| 1145   | 0.41-0.49 | 0.70-1.00 | <0.04     | 0.08-0.13 |
| 1146   | 0.42-0.49 | 0.70-1.00 | <0.04     | 0.08-0.13 |
| 1151   | 0.48-0.55 | 0.70-1.00 | <0.04     | 0.08-0.13 |
| 1152   | 0.48-0.55 | 0.70-1.00 | <0.04     | 0.06-0.09 |
| 1211   | <0.13     | 0.60-0.90 | 0.07-0.12 | 0.10-0.15 |
| 1212   | <0.13     | 0.70-1.00 | 0.07-0.12 | 0.16-0.23 |
| 1213   | <0.13     | 0.70-1.00 | 0.07-0.12 | 0.24-0.33 |
| 1215   | <0.09     | 0.75-1.05 | 0.04-0.09 | 0.26-0.35 |

| Number | C | Mn | P | S |
|--------|---|----|---|---|
|--------|---|----|---|---|

These are specifications,  
not samples for sale.

## LOW ALLOY STEEL SPECIFICATIONS

| Number | C         | Mn        | P      | S           | Si        | Ni        | Cr         | Mo        | Pb        | Other                           |
|--------|-----------|-----------|--------|-------------|-----------|-----------|------------|-----------|-----------|---------------------------------|
| 1330   | 0.28-0.33 | 1.60-1.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | .         | .         | .                               |
| 1335   | 0.33-0.38 | 1.60-1.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | .         | .         | .                               |
| 1340   | 0.38-0.43 | 1.60-1.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | .         | .         | .                               |
| 1345   | 0.43-0.48 | 1.60-1.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | .         | .         | .                               |
| 3140   | 0.38-0.43 | 0.70-0.90 | <0.04  | <0.04       | 0.15-0.35 | 1.10-1.40 | 0.55-0.75  | .         | .         | .                               |
| 4023   | 0.20-0.25 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | 0.20-0.30 | .         | .                               |
| 4027   | 0.25-0.30 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | 0.20-0.30 | .         | .                               |
| 4028   | 0.25-0.30 | 0.70-0.90 | <0.035 | 0.035-0.050 | 0.15-0.35 | .         | .          | 0.20-0.30 | .         | .                               |
| 4037   | 0.35-0.40 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | 0.20-0.30 | .         | .                               |
| 4047   | 0.45-0.50 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | .          | 0.20-0.30 | .         | .                               |
| 4118   | 0.18-0.23 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.40-0.60  | 0.08-0.15 | .         | .                               |
| 4120   | 0.18-0.23 | 0.80-1.20 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 4121   | 0.18-0.23 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.45-0.65  | 0.15-0.25 | .         | .                               |
| 4130   | 0.28-0.33 | 0.40-0.60 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4135   | 0.33-0.38 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4137   | 0.35-0.40 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4140   | 0.38-0.43 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 41L40  | 0.38-0.43 | 0.75-1.00 | <0.035 | 0.02-0.04   | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | 0.15-0.35 | .                               |
| 4142   | 0.40-0.45 | 0.45-0.65 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4145   | 0.43-0.48 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4147   | 0.45-0.50 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 4150   | 0.48-0.53 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | .         | .                               |
| 41L50  | 0.48-0.53 | 0.75-1.00 | <0.035 | 0.02-0.04   | 0.15-0.35 | .         | 0.80-1.10  | 0.15-0.25 | 0.15-0.35 | .                               |
| 4320   | 0.17-0.22 | 0.45-0.65 | <0.035 | <0.04       | 0.15-0.35 | 1.65-2.00 | 0.40-0.60  | 0.20-0.30 | .         | .                               |
| 4340   | 0.38-0.43 | 0.60-0.80 | <0.035 | <0.04       | 0.15-0.35 | 1.65-2.00 | 0.70-0.90  | 0.20-0.30 | .         | .                               |
| 4615   | 0.13-0.18 | 0.45-0.65 | <0.035 | <0.04       | 0.15-0.35 | 1.65-2.00 | .          | 0.20-0.30 | .         | .                               |
| 4617   | 0.15-0.20 | 0.45-0.65 | <0.035 | <0.04       | 0.15-0.35 | 1.65-2.00 | .          | 0.20-0.30 | .         | .                               |
| 4620   | 0.17-0.22 | 0.45-0.65 | <0.035 | <0.04       | 0.15-0.35 | 1.65-2.00 | .          | 0.20-0.30 | .         | .                               |
| 4715   | 0.13-0.18 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.70-1.00 | 0.45-0.65  | 0.45-0.65 | .         | .                               |
| 4720   | 0.17-0.22 | 0.50-0.70 | <0.035 | <0.04       | 0.15-0.35 | 0.90-1.20 | 0.35-0.55  | 0.15-0.25 | .         | .                               |
| 4815   | 0.13-0.18 | 0.40-0.60 | <0.035 | <0.04       | 0.15-0.35 | 3.25-3.75 | .          | 0.20-0.30 | .         | .                               |
| 4820   | 0.18-0.23 | 0.50-0.70 | <0.035 | <0.04       | 0.15-0.35 | 3.25-3.75 | .          | 0.20-0.30 | .         | .                               |
| 50B46  | 0.44-0.49 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.20-0.35  | .         | .         | B: 0.0005-0.003                 |
| 5120   | 0.17-0.22 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | .         | .                               |
| 51L20  | 0.17-0.22 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | 0.15-0.35 | .                               |
| 5130   | 0.28-0.33 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | .         | .         | .                               |
| 5132   | 0.30-0.35 | 0.60-0.80 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.75-1.00  | .         | .         | .                               |
| 5140   | 0.38-0.43 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | .         | .                               |
| 5150   | 0.48-0.53 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | .         | .                               |
| 5160   | 0.56-0.64 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | .         | .                               |
| 51B60  | 0.56-0.64 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.70-0.90  | .         | .         | B: >0.0005                      |
| 6150   | 0.48-0.53 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | .         | 0.80-1.10  | .         | .         | V: >0.15                        |
| 8615   | 0.13-0.18 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8617   | 0.15-0.20 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8620   | 0.18-0.23 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 86L20  | 0.18-0.21 | 0.70-0.90 | <0.035 | 0.02-0.04   | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | 0.15-0.35 | .                               |
| 8622   | 0.20-0.25 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8630   | 0.28-0.33 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8637   | 0.35-0.40 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8640   | 0.38-0.43 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8645   | 0.43-0.48 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.15-0.25 | .         | .                               |
| 8720   | 0.18-0.23 | 0.70-0.90 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.20-0.30 | .         | .                               |
| 8740   | 0.38-0.43 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.20-0.30 | .         | .                               |
| 8822   | 0.20-0.25 | 0.75-1.00 | <0.035 | <0.04       | 0.15-0.35 | 0.40-0.70 | 0.40-0.60  | 0.30-0.40 | .         | .                               |
| 9259   | 0.56-0.64 | 0.75-1.00 | <0.035 | <0.04       | 0.70-1.10 | .         | 0.45-0.65  | .         | .         | .                               |
| 9260   | 0.56-0.64 | 0.75-1.00 | <0.035 | <0.04       | 1.80-2.20 | .         | .          | .         | .         | .                               |
| E4340  | 0.38-0.43 | 0.65-0.85 | <0.025 | <0.025      | 0.15-0.35 | 1.65-2.00 | 0.70-0.90  | 0.20-0.30 | .         | .                               |
| E51100 | 0.98-1.10 | 0.25-0.45 | <0.025 | <0.025      | 0.15-0.35 | .         | 0.90-1.15  | .         | .         | .                               |
| E52100 | 0.98-1.10 | 0.25-0.45 | <0.025 | <0.025      | 0.15-0.35 | .         | 1.30-1.60  | .         | .         | .                               |
| E9310  | 0.08-0.13 | 0.45-0.65 | <0.025 | <0.025      | 0.15-0.35 | 3.00-3.50 | 1.00-1.40  | 0.08-0.15 | .         | .                               |
| F-11   | 0.10-0.20 | 0.30-0.80 | <0.04  | <0.04       | 0.50-1.00 | .         | 1.00-1.50  | 0.44-0.65 | .         | .                               |
| F-22   | <0.15     | 0.30-0.60 | <0.03  | <0.03       | <0.50     | .         | 2.00-2.50  | 0.90-1.10 | .         | .                               |
| F-5    | <0.15     | 0.30-0.60 | <0.03  | <0.03       | <0.50     | .         | 4.00-6.00  | 0.45-0.65 | .         | .                               |
| F-9    | <0.15     | 0.30-0.60 | <0.03  | <0.03       | 0.50-1.0  | .         | 8.00-10.00 | 0.90-1.10 | .         | .                               |
| F-91   | 0.08-0.12 | 0.30-0.60 | <0.02  | <0.01       | 0.20-0.50 | <0.40     | 8.00-9.50  | 0.85-1.05 | .         | Al: <0.04      N: 0.03-0.07     |
| F-91   | continued |           |        |             |           |           |            |           |           | Nb: 0.06-0.10      V: 0.18-0.25 |
| LF2    | <0.30     | 0.60-1.35 | <0.035 | <0.04       | 0.15-0.30 | .         | .          | .         | .         | .                               |
| LF3    | <0.20     | <0.90     | <0.035 | <0.04       | 0.20-0.35 | 3.25-3.75 | .          | .         | .         | .                               |
| Number | C         | Mn        | P      | S           | Si        | Ni        | Cr         | Mo        | Pb        | Other                           |

These are specifications,  
not samples for sale.

## TOOL STEEL SPECIFICATIONS

\* notes optional chemistry

| Number | C         | Mn        | P      | S      | Si        | Ni        | Cr          | Co          | Mo         | V          | W           | Other         |
|--------|-----------|-----------|--------|--------|-----------|-----------|-------------|-------------|------------|------------|-------------|---------------|
| A-2    | 0.95-1.05 | <1.00     | <0.03  | <0.03  | <0.50     | .         | 4.75-5.50   | .           | 0.90-1.40  | 0.15-0.50  | .           | .             |
| A-4    | 0.95-1.05 | 1.80-2.20 | <0.03  | <0.03  | <0.50     | .         | 0.90-2.20   | .           | 0.90-1.40  | .          | .           | .             |
| A-6    | 0.65-0.75 | 1.80-2.50 | <0.03  | <0.03  | <0.50     | .         | 0.90-1.20   | .           | 0.90-1.40  | .          | .           | .             |
| A-7    | 2.00-2.85 | <0.80     | <0.03  | <0.03  | <0.50     | .         | 5.00-5.75   | .           | 0.90-1.40  | 3.90-5.15  | 0.50-1.50   | .             |
| A-8    | 0.50-0.60 | <0.50     | <0.03  | <0.03  | 0.75-1.10 | .         | 4.75-5.50   | .           | 1.15-1.65  | .          | 1.00-1.50   | .             |
| A-9    | 0.45-0.55 | <0.50     | <0.03  | <0.03  | 0.95-1.15 | 1.25-1.75 | 4.75-5.50   | .           | 1.30-1.80  | 0.80-1.40  | .           | .             |
| A-10   | 1.25-1.50 | 1.60-2.10 | <0.03  | <0.03  | 1.00-1.50 | 1.55-2.05 | .           | .           | 1.25-1.75  | .          | .           | .             |
| A-11   | 2.45      | 0.50      | .      | .      | 0.90      | .         | 5.25        | .           | 1.30       | 9.75       | .           | .             |
| D-2    | 1.40-1.60 | <0.60     | <0.03  | <0.03  | <0.60     | .         | 11.00-13.00 | <1.00       | 0.70-1.20  | <1.10      | .           | .             |
| D-3    | 2.00-2.35 | <0.60     | <0.03  | <0.03  | <0.60     | .         | 11.00-13.50 | .           | .          | <1.00      | <1.00       | .             |
| D-4    | 2.05-2.40 | <0.60     | <0.03  | <0.03  | <0.60     | .         | 11.00-13.00 | .           | 0.70-1.20  | <1.00      | .           | .             |
| D-5    | 1.40-1.60 | <0.60     | <0.03  | <0.03  | <0.60     | .         | 11.00-13.00 | 2.50-3.50   | 0.70-1.20  | <1.00      | .           | .             |
| D-7    | 2.15-2.50 | <0.60     | <0.03  | <0.03  | <0.60     | .         | 11.50-13.50 | .           | 0.70-1.20  | 3.80-4.40  | .           | .             |
| H-10   | 0.35-0.45 | 0.25-0.70 | <0.03  | <0.03  | 0.80-1.20 | .         | 3.00-3.75   | .           | 2.00-3.00  | 0.25-0.75  | .           | .             |
| H-11   | 0.33-0.43 | 0.20-0.50 | <0.03  | <0.03  | 0.80-1.20 | .         | 4.75-5.50   | .           | 1.10-1.60  | 0.30-0.60  | .           | .             |
| H-12   | 0.30-0.40 | 0.20-0.50 | <0.03  | <0.03  | 0.80-1.20 | .         | 4.75-5.50   | .           | 1.25-1.75  | <0.50      | 1.00-1.70   | .             |
| H-13   | 0.32-0.45 | 0.20-0.50 | <0.03  | <0.03  | 0.80-1.20 | .         | 4.75-5.50   | .           | 1.10-1.75  | 0.80-1.20  | .           | .             |
| H-14   | 0.35-0.45 | 0.20-0.50 | <0.03  | <0.03  | 0.80-1.20 | .         | 4.75-5.50   | .           | .          | .          | 4.00-5.25   | .             |
| H-19   | 0.32-0.45 | 0.20-0.50 | <0.03  | <0.03  | 0.80-1.20 | .         | 4.00-4.75   | 4.00-4.50   | 0.30-0.55  | 1.75-2.20  | 3.75-4.50   | 4.50          |
| H-21   | 0.26-0.36 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.50 | .         | 3.00-3.75   | .           | .          | 0.30-0.60  | 8.50-10.00  | .             |
| H-22   | 0.30-0.40 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.40 | .         | 1.75-3.75   | .           | .          | 0.25-0.50  | 10.00-11.75 | .             |
| H-23   | 0.25-0.35 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.60 | .         | 11.00-12.75 | .           | .          | 0.75-1.25  | 11.00-12.75 | .             |
| H-24   | 0.42-0.53 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.40 | .         | 2.50-3.50   | .           | .          | 0.40-0.60  | 14.00-16.00 | .             |
| H-26   | 0.45-0.55 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.40 | .         | 3.75-4.50   | .           | .          | 0.75-1.25  | 17.25-19.00 | .             |
| H-42   | 0.55-0.70 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | .           | 4.50-5.50  | 1.75-2.20  | 5.50-6.75   | .             |
| L-2    | 0.45-1.00 | 0.10-0.90 | <0.03  | <0.03  | <0.50     | .         | 0.70-1.20   | .           | <0.25      | 0.10-0.30  | .           | .             |
| L-6    | 0.65-0.75 | 0.25-0.80 | <0.03  | <0.03  | <0.50     | 1.25-2.00 | 0.60-1.20   | .           | <0.50      | .          | .           | .             |
| M-1    | 0.78-0.88 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.50 | .         | 3.50-4.00   | .           | 8.20-9.20  | 1.00-1.35  | 1.40-2.10   | .             |
| M-2    | 0.78-1.05 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | .           | 4.50-5.50  | 1.75-2.20  | 5.50-6.75   | .             |
| M-3.1  | 1.00-1.10 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | .           | 4.75-6.50  | 2.25-2.75  | 5.00-6.75   | .             |
| M-3.2  | 1.15-1.25 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | .           | 4.75-6.50  | 2.75-3.25  | 5.00-6.75   | .             |
| M-4    | 1.25-1.40 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.75   | .           | 4.25-5.50  | 3.75-4.50  | 5.25-6.50   | .             |
| M-6    | 0.75-0.85 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | 11.00-13.00 | 4.50-5.50  | 1.30-1.70  | 3.75-4.75   | .             |
| M-7    | 0.97-1.05 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.55 | .         | 3.50-4.00   | .           | 8.20-9.20  | 1.75-2.25  | 1.40-2.10   | .             |
| M-10   | 0.84-1.05 | 0.10-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | .           | 7.75-8.50  | 1.80-2.20  | .           | .             |
| M-30   | 0.75-0.85 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.50-4.25   | 4.50-5.50   | 7.75-9.00  | 1.00-1.40  | 1.30-2.30   | .             |
| M-33   | 0.85-0.92 | 0.15-0.40 | <0.03  | <0.03  | 0.25-0.55 | .         | 3.50-4.00   | 7.75-8.75   | 9.00-10.00 | 1.00-1.35  | 1.30-2.10   | .             |
| M-34   | 0.85-0.92 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.50-4.00   | 7.75-8.75   | 7.75-9.20  | 1.90-2.30  | 1.40-2.10   | .             |
| M-36   | 0.80-0.90 | 0.15-0.40 | <0.03  | <0.03  | 0.20-0.45 | .         | 3.75-4.50   | 7.75-8.75   | 4.50-5.50  | 1.75-2.25  | 5.50-6.50   | .             |
| M-41   | 1.05-1.15 | 0.20-0.60 | <0.03  | <0.03  | 0.15-0.50 | .         | 3.75-4.50   | 4.75-5.75   | 3.25-4.25  | 1.75-2.25  | 6.25-7.00   | .             |
| M-42   | 1.05-1.15 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.65 | .         | 3.50-4.25   | 7.75-8.75   | 9.00-10.00 | 0.95-1.35  | 1.15-1.85   | .             |
| M-46   | 1.22-1.30 | 0.20-0.40 | <0.03  | <0.03  | 0.40-0.65 | .         | 3.70-4.20   | 7.80-8.80   | 8.00-8.50  | 3.00-3.30  | 1.90-2.20   | .             |
| M-48   | 1.50      | .         | .      | .      | .         | .         | 3.75        | 9.00        | 5.25       | 3.10       | 10.0        | .             |
| M-52   | 0.90      | .         | .      | .      | .         | .         | 4.00        | .           | 4.00       | 2.00       | 1.25        | .             |
| M-61   | 1.60      | .         | .      | .      | .         | .         | 4.00        | .           | 6.50       | 5.00       | 12.0        | .             |
| M-62   | 1.30      | .         | .      | .      | .         | .         | 3.75        | .           | 10.5       | 2.00       | 6.25        | .             |
| O-1    | 0.85-1.00 | 1.00-1.40 | <0.03  | <0.03  | <0.50     | .         | 0.40-0.60   | .           | .          | <0.30      | 0.40-0.60   | .             |
| O-2    | 0.85-0.95 | 1.40-1.80 | <0.03  | <0.03  | <0.50     | .         | <0.35       | .           | <0.30      | <0.30      | .           | .             |
| O-6    | 1.25-1.55 | 0.30-1.10 | <0.03  | <0.03  | 0.55-1.50 | .         | <0.30       | .           | 0.20-0.30  | .          | .           | .             |
| O-7    | 1.10-1.30 | <1.00     | <0.03  | <0.03  | <0.60     | .         | 0.35-0.85   | .           | <0.30      | <0.40      | 1.00-2.00   | .             |
| P-20   | 0.28-0.40 | 0.60-1.00 | <0.03  | <0.03  | 0.20-0.80 | .         | 1.40-2.00   | .           | 0.30-0.55  | .          | .           | .             |
| P-21   | 0.18-0.22 | 0.20-0.40 | <0.03  | <0.03  | 0.20-0.40 | 4.00-4.25 | 0.20-0.30   | .           | .          | 0.15-0.25  | .           | Al: 1.05-1.25 |
| P-6    | 0.05-0.15 | 0.35-0.70 | <0.03  | <0.03  | 0.10-0.40 | 3.25-3.75 | 1.25-1.75   | .           | .          | .          | .           | .             |
| S-1    | 0.40-0.55 | 0.10-0.40 | <0.03  | <0.03  | 0.15-1.20 | .         | 1.00-1.80   | .           | <0.50      | 0.15-0.30  | 1.50-3.00   | .             |
| S-2    | 0.40-0.55 | 0.30-0.50 | <0.03  | <0.03  | 0.90-1.20 | .         | 0.90-1.20   | .           | 0.30-0.60  | <0.50      | .           | .             |
| S-4    | 0.50-0.65 | 0.60-0.95 | <0.03  | <0.03  | 1.75-2.25 | .         | <0.35       | .           | .          | <0.35      | .           | .             |
| S-5    | 0.50-0.65 | 0.60-1.00 | <0.03  | <0.03  | 1.75-2.25 | .         | <0.35       | .           | 0.20-1.35  | <0.35      | .           | .             |
| S-6    | 0.40-0.50 | 1.20-1.50 | <0.03  | <0.03  | 2.00-2.50 | .         | 1.20-1.50   | .           | 0.30-0.50  | 0.20-0.40  | .           | .             |
| S-7    | 0.45-0.55 | 0.20-0.80 | <0.03  | <0.03  | 0.20-1.00 | .         | 3.00-3.50   | .           | 1.30-1.80  | 0.20-0.30* | .           | .             |
| T-1    | 0.65-0.80 | 0.10-0.40 | <0.03  | <0.03  | 0.20-0.40 | .         | 3.75-4.50   | .           | .          | 0.90-1.30  | 17.25-18.25 | .             |
| T-15   | 1.50-1.60 | 0.15-0.40 | <0.03  | <0.03  | 0.15-0.40 | .         | 3.75-5.00   | 4.75-5.25   | <1.00      | 4.50-5.25  | 11.75-13.00 | .             |
| T-4    | 0.70-0.80 | 0.10-0.40 | <0.03  | <0.03  | 0.20-0.40 | .         | 3.75-4.50   | 4.25-5.75   | 0.40-1.00  | 0.80-1.20  | 17.50-19.00 | .             |
| T-5    | 0.75-0.85 | 0.20-0.40 | <0.03  | <0.03  | 0.20-0.40 | .         | 3.75-5.00   | 7.00-9.50   | 0.50-1.25  | 1.80-2.40  | 17.50-19.00 | .             |
| T-6    | 0.75-0.85 | 0.20-0.40 | <0.03  | <0.03  | 0.20-0.40 | .         | 4.00-4.75   | 11.00-13.00 | 0.40-1.00  | 1.50-2.10  | 18.50-21.00 | .             |
| T-8    | 0.75-0.85 | 0.20-0.40 | <0.03  | <0.03  | 0.20-0.40 | .         | 3.75-4.50   | 4.25-5.75   | 0.40-1.00  | 1.80-2.40  | 13.25-14.75 | .             |
| W-1    | 0.70-1.50 | 0.10-0.40 | <0.025 | <0.025 | 0.10-0.40 | <0.20     | <0.15       | .           | <0.10      | <0.10      | <0.15       | Cu: <0.20     |
| W-2    | 0.85-1.50 | 0.10-0.40 | <0.03  | <0.03  | 0.10-0.40 | <0.20     | <0.15       | .           | <0.10      | 0.15-0.35  | <0.15       | Cu: <0.20     |
| W-5    | 1.05-1.15 | 0.10-0.40 | <0.03  | <0.03  | 0.10-0.40 | <0.20     | 0.40-0.60   | .           | <0.10      | <0.10      | <0.15       | Cu: <0.20     |

| Number | C | Mn | P | S | Si | Ni | Cr | Co | Mo | V | W | Other |
|--------|---|----|---|---|----|----|----|----|----|---|---|-------|
|--------|---|----|---|---|----|----|----|----|----|---|---|-------|

These are specifications,  
not samples for sale.

## STAINLESS AND HIGH ALLOY STEEL SPECIFICATIONS

\* notes optional chemistry

| Number | C         | Mn       | P      | S      | Si        | Cu        | Ni          | Cr          | Mo        | N     | Nb        | Other          |
|--------|-----------|----------|--------|--------|-----------|-----------|-------------|-------------|-----------|-------|-----------|----------------|
| 13-8PH | <0.05     | <0.20    | <0.01  | <0.008 | <0.10     | .         | 7.50-8.50   | 12.25-13.25 | 2.00-2.50 | <0.01 | .         | Al: 0.90-1.35  |
| 15-5PH | <0.07     | <1.00    | <0.04  | <0.03  | <1.00     | 2.50-4.50 | 3.50-5.50   | 14.00-15.50 | .         | .     | 0.15-0.45 |                |
| 17-4PH | <0.07     | <1.00    | <0.04  | <0.03  | <1.00     | 3.00-5.00 | 3.00-5.00   | 15.00-17.50 | .         | .     | 0.15-0.45 |                |
| 201    | <0.15     | 5.5-7.5  | <0.060 | <0.03  | <1.00     | .         | 3.50-5.50   | 16.00-18.00 | .         | <0.25 | .         |                |
| 202    | <0.15     | 7.5-10.0 | <0.060 | <0.03  | <1.00     | .         | 4.00-6.00   | 17.00-19.00 | .         | <0.25 | .         |                |
| 301    | <0.15     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 6.00-8.00   | 16.00-18.00 | .         | .     | .         |                |
| 302    | <0.15     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 8.00-10.00  | 17.00-19.00 | .         | .     | .         |                |
| 302B   | <0.15     | <2.00    | <0.045 | <0.03  | 2.00-3.00 | .         | 8.00-10.00  | 17.00-19.00 | .         | .     | .         |                |
| 303    | <0.15     | <2.00    | <0.20  | >0.15  | <1.00     | .         | 8.00-10.00  | 17.00-19.00 | <0.60*    | .     | .         | Zr: <0.60*     |
| 304    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 8.00-10.50  | 18.00-20.00 | .         | .     | .         |                |
| 304L   | <0.03     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 8.00-12.00  | 18.00-20.00 | .         | .     | .         |                |
| 305    | <0.12     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 10.00-13.00 | 17.00-19.00 | .         | .     | .         |                |
| 308    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 10.00-12.00 | 19.00-21.00 | .         | .     | .         |                |
| 309    | <0.20     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 12.00-15.00 | 22.00-24.00 | .         | .     | .         |                |
| 310    | <0.25     | <2.00    | <0.045 | <0.03  | <1.50     | .         | 19.00-22.00 | 24.00-26.00 | .         | .     | .         |                |
| 314    | <0.25     | <2.00    | <0.045 | <0.03  | 1.50-3.00 | .         | 19.00-22.00 | 23.00-26.00 | .         | .     | .         |                |
| 316    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 10.00-14.00 | 16.00-18.00 | 2.00-3.00 | .     | .         |                |
| 316    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 10.00-14.00 | 16.00-18.00 | 2.00-3.00 | .     | .         |                |
| 316L   | <0.03     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 10.00-14.00 | 16.00-18.00 | 2.00-3.00 | .     | .         |                |
| 321    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 9.00-12.00  | 17.00-19.00 | .         | .     | .         | Ti: >5xC       |
| 347    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 9.00-13.00  | 17.00-19.00 | .         | .     | >10xC     |                |
| 348    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 9.00-13.00  | 17.00-19.00 | .         | .     | >10xC     | Ta: <0.10      |
| 384    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 17.00-19.00 | 15.00-17.00 | .         | .     | .         |                |
| 385    | <0.08     | <2.00    | <0.045 | <0.03  | <1.00     | .         | 14.00-16.00 | 11.50-13.50 | .         | .     | .         |                |
| 403    | <0.15     | <1.00    | <0.04  | <0.03  | <0.50     | .         | .           | 11.50-13.00 | .         | .     | .         |                |
| 405    | <0.08     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 11.50-14.50 | .         | .     | .         | Al: 0.10-0.30  |
| 409    | <0.08     | <1.00    | <0.04  | <0.01  | <1.00     | .         | <0.50       | 10.50-11.75 | .         | .     | .         | Ti: 6\mtC-0.75 |
| 410    | <0.15     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 11.50-13.50 | .         | .     | .         |                |
| 414    | <0.15     | <1.00    | <0.04  | <0.03  | <1.00     | .         | 1.25-2.50   | 11.50-13.50 | .         | .     | .         |                |
| 416    | <0.15     | <1.25    | <0.06  | >0.15  | <1.00     | .         | .           | 12.00-14.00 | <0.60*    | .     | .         | Zr: <0.60*     |
| 420    | >0.15     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 12.00-14.00 | .         | .     | .         |                |
| 422    | 0.20-0.25 | <1.00    | <0.04  | <0.03  | <0.75     | <0.50     | 0.50-1.00   | 11.00-12.50 | 0.75-1.25 | .     | .         | V: 0.15-0.30   |
| 422    | continued |          |        |        |           |           |             |             |           |       |           | W: 0.75-1.25   |
| 430    | <0.12     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 16.00-18.00 | .         | .     | .         |                |
| 430F   | <0.12     | <1.25    | <0.06  | >0.15  | <1.00     | .         | .           | 16.00-18.00 | <0.60*    | .     | .         | Zr: <0.60*     |
| 431    | <0.20     | <1.00    | <0.04  | <0.03  | <1.00     | .         | 1.25-2.50   | 15.00-17.00 | .         | .     | .         |                |
| 440A   | 0.60-0.75 | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 16.00-18.00 | <0.75     | .     | .         |                |
| 440B   | 0.75-0.95 | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 16.00-18.00 | <0.75     | .     | .         |                |
| 440C   | 0.95-1.20 | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 16.00-18.00 | <0.75     | .     | .         |                |
| 450    | <0.05     | <1.00    | <0.03  | <0.03  | <1.00     | 1.25-1.75 | 5.00-7.00   | 14.00-16.00 | 0.50-1.00 | .     | 8\mtC     |                |
| 455    | <0.05     | <0.50    | <0.04  | <0.03  | <0.50     | 1.50-2.50 | 7.50-9.50   | 11.00-12.50 | <0.50     | .     | 0.10-0.50 | Ti: 0.80-1.40  |
| 501    | >0.10     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 4.00-6.00   | 0.40-0.65 | .     | .         |                |
| 502    | <0.10     | <1.00    | <0.04  | <0.03  | <1.00     | .         | .           | 4.00-6.00   | 0.40-0.65 | .     | .         |                |
| Duplex | <0.05     | <3.00    | <0.035 | <0.03  | <1.50     | <2.50*    | 4.00-7.00   | 18.00-25.00 | 0.20-5.50 | <0.40 | .         |                |

These are specifications,  
not samples for sale.