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IRON CHIPS

# = class, where 1 = CRM and 2 = RM analysis listed in mass %

| # | Number       | C       | Mn      | P        | S       | Si      | Cu      | Ni      | Cr      | N       | Al      | Co       | Mo      | Nb       | O      | Sn       | Ti       | V        | W        |
|---|--------------|---------|---------|----------|---------|---------|---------|---------|---------|---------|---------|----------|---------|----------|--------|----------|----------|----------|----------|
| 1 | NCS HC41001  | 0.021   | 0.204   | 0.0115   | 0.0092  | 0.074   | 0.027   | 0.003   | 0.022   | .       | .       | .        | 0.060   | .        | .      | 0.014    | .        | 0.003    | .        |
| 1 | NCS HC15014  | 0.0208  | 0.246   | 0.0121   | 0.007   | 0.0922  | 0.020   | 0.0202  | 0.013   | .       | 0.046   | .        | .       | .        | .      | 0.0012   | .        | .        | .        |
| 1 | VS S1/2      | 0.0036  | 0.0010  | 0.0014   | 0.0042  | 0.0088  | 0.0093  | 0.0047  | 0.0016  | 0.0129  | 0.0074  | 0.0007   | 0.0003  | .        | .      | 0.00028  | .        | .        | .        |
| 1 | IARM 27D     | 0.003   | (0.001) | 0.001    | 0.0008  | 0.002   | 0.002   | 0.003   | 0.002   | 0.0003  | 0.0009  | 0.004    | (0.001) | <0.001   | 0.006  | 0.001    | 0.001    | <0.001   | 0.001    |
| 1 | NCS HC15002f | 0.0013  | 0.00024 | (0.0001) | 0.0019  | 0.0017  | 0.00043 | 0.0027  | 0.00043 | .       | 0.00039 | (0.0001) | 0.0024  | .        | .      | (0.0001) | (0.0001) | (0.0001) | (0.0001) |
| 1 | ECRM 088-2   | 0.0006  | 0.0809  | 0.0048   | 0.0070  | 0.0052  | 0.0163  | 0.0275  | 0.0244  | .       | .       | 0.0061   | .       | .        | .      | .        | .        | 0.00029  | .        |
| 2 | DH SE26-10   | 0.00038 | 0.00220 | <0.0002  | <0.0004 | <0.0005 | 0.00074 | 0.00049 | 0.00132 | 0.00026 | 0.00023 | <0.0001  | 0.00007 | <0.00003 | 0.0120 | 0.00004  | 0.00005  | <0.00003 | <0.00006 |

analysis listed in mg/kg except % which is mass %

| Number       | Sol.Al | Ins.Al | Ag   | As   | B    | Bi   | Ca  | Mg  | Pb   | Sb   | Zn  | Units |
|--------------|--------|--------|------|------|------|------|-----|-----|------|------|-----|-------|
| NCS HC41001  | .      | .      | .    | 24   | .    | .    | .   | .   | .    | .    | .   | 150 g |
| NCS HC15014  | .      | .      | .    | 2    | .    | .    | .   | .   | 0.85 | 5    | .   | 100 g |
| VS S1/2      | .      | .      | .    | 3    | .    | .    | .   | .   | .    | .    | 2.7 | 100 g |
| IARM 27D     | .      | .      | .    | <20  | 2    | .    | .   | .   | (1)  | .    | .   | 100 g |
| NCS HC15002f | .      | .      | .    | (1)  | .    | (1)  | 17  | 2.7 | (1)  | (1)  | (1) | 15 g  |
| ECRM 088-2   | .      | .      | .    | .    | .    | .    | 7.2 | .   | .    | .    | .   | 100 g |
| DH SE26-10   | <1     | 2.3    | <0.2 | <0.4 | <1.1 | <0.1 | <3  | <1  | <0.1 | <0.3 | 1.4 | 50 g  |

CRM IRON CHIPS AND POWDER

analysis listed in mass %

| Number       | C        | Mn     | P      | S       | Si       | Cu     | Ni     | Cr     | N       | Al    | Ins.Al | As     | B      | Co     | Mo       | Ti                      | Units        |
|--------------|----------|--------|--------|---------|----------|--------|--------|--------|---------|-------|--------|--------|--------|--------|----------|-------------------------|--------------|
| NCS HC15007  | 0.091    | 0.399  | 0.0246 | 0.017   | 0.341    | 0.201  | 0.243  | 0.148  | .       | 0.180 | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15007a | 0.080    | 0.358  | 0.036  | 0.031   | 0.506    | 0.254  | 0.203  | 0.170  | 0.018   | 0.432 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC15006  | 0.080    | 0.043  | 0.0159 | 0.0075  | 0.171    | 0.135  | 0.147  | 0.043  | .       | 0.088 | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15017  | 0.061    | 0.319  | 0.04   | 0.005   | 0.166    | 0.02   | 0.02   | 0.022  | 0.0146  | 0.284 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC15006a | 0.061    | 0.254  | 0.021  | 0.0058  | 0.341    | 0.168  | 0.182  | 0.114  | 0.012   | 0.412 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| BAM 031-3    | 0.055    | 0.329  | 0.014  | 0.021   | 0.037    | 0.020  | .      | .      | 0.0050  | 0.054 | .      | 0.013  | .      | .      | .        | .                       | 100 g chips  |
| BAM 033-1    | 0.043    | 0.379  | 0.171  | 0.022   | (0.0028) | 0.017  | .      | .      | 0.0100  | .     | .      | 0.0177 | .      | .      | .        | .                       | 100 g chips  |
| BAM 031-2    | 0.0344   | 0.296  | 0.053  | (0.052) | .        | 0.083  | .      | .      | 0.012   | .     | .      | 0.061  | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15005a | 0.030    | 0.106  | 0.0061 | 0.025   | 0.182    | 0.123  | 0.162  | 0.147  | 0.011   | 0.205 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| ECRM 083-1   | 0.028    | 0.289  | 0.0077 | 0.0100  | .        | 0.016  | 0.014  | .      | 0.00189 | .     | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15004  | 0.0272   | 0.246  | 0.0094 | 0.012   | 0.0994   | 0.031  | 0.0202 | 0.013  | .       | 0.37  | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15004a | 0.027    | 0.195  | 0.014  | 0.0063  | 0.018    | 0.089  | 0.116  | 0.048  | 0.016   | 0.290 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC15013  | 0.023    | 0.193  | 0.0095 | 0.015   | 0.585    | 0.025  | 0.0168 | 0.0036 | .       | .     | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC41002  | 0.023    | 0.178  | 0.016  | 0.009   | 0.075    | .      | .      | .      | .       | 0.309 | 0.003  | .      | .      | .      | .        | .                       | 150 g chips  |
| NCS HC15016  | 0.022    | 0.201  | 0.0072 | 0.0027  | 0.199    | 0.066  | 0.066  | 0.032  | 0.0123  | 0.217 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC15015  | 0.017    | 0.151  | 0.01   | 0.0022  | 0.214    | 0.118  | 0.105  | 0.017  | 0.0064  | 0.413 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC15012  | 0.0137   | 0.0080 | 0.0012 | 0.016   | (0.0017) | 0.031  | 0.023  | 0.0071 | .       | .     | .      | .      | .      | .      | .        | .                       | 100 g chips  |
| NCS HC15003a | 0.012    | 0.034  | 0.0019 | 0.020   | 0.017    | 0.021  | 0.030  | 0.016  | 0.015   | 0.060 | .      | .      | .      | .      | .        | .                       | 50 g chips   |
| NCS HC13013  | 0.0041   | 0.126  | 0.0085 | 0.021   | 0.018    | .      | .      | .      | .       | .     | .      | .      | .      | .      | .        | .                       | 150 g powder |
| IPT 73       | 0.0034   | 0.044  | 0.0034 | 0.0049  | 0.0028   | 0.076  | 0.033  | 0.030  | 0.0076  | .     | .      | .      | .      | 0.004  | .        | TEMPORARILY UNAVAILABLE |              |
| NCS HC11001  | 0.0016   | 0.0063 | 0.0064 | 0.0053  | 0.001    | 0.0044 | 0.012  | 0.0032 | 0.0074  | .     | .      | .      | .      | 0.0063 | 0.0026   | .                       | 50 g chips   |
| GBW 01401A   | 0.0015   | 0.017  | 0.0014 | 0.0015  | 0.049    | 0.0030 | 0.012  | 0.0056 | 0.0025  | 0.010 | .      | .      | .      | 0.0024 | 0.0028   | 0.0025                  | 150 g chips  |
| ECRM 097-1C  | (<0.002) | 0.0064 | 0.0016 | 0.0022  | (<0.01)  | 0.0020 | 0.0025 | 0.0016 | 0.0007  | .     | .      | 0.0051 | 0.0003 | 0.0036 | (<0.001) | .                       | 100 g chips  |

| Number | C | Mn | P | S | Si | Cu | Ni | Cr | N | Al | Ins.Al | As | B | Co | Mo | Ti | Units |
|--------|---|----|---|---|----|----|----|----|---|----|--------|----|---|----|----|----|-------|
|--------|---|----|---|---|----|----|----|----|---|----|--------|----|---|----|----|----|-------|

## CRM CARBON STEEL CHIPS WITH NITROGEN

analysis listed in mass %

JSS: 150 g units

all others: 100 g units

| Number        | C      | Mn     | P      | S      | Si     | Cu     | Ni     | Cr     | Al           | Mo      | N        | Nb       | Ti      | V      | W       | As     | B        | Ca      | Co     | O        | Pb       | Sn     | Zr |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------------|---------|----------|----------|---------|--------|---------|--------|----------|---------|--------|----------|----------|--------|----|
| ECRM 063-1    | 1.26   | 0.30   | 0.019  | 0.022  | 0.24   | (0.09) | (0.10) | (0.16) | .            | (0.012) | (0.005)  | .        | .       | .      | .       | (0.02) | .        | .       | .      | .        | .        | .      | .  |
| ECRM 090-1C * | 1.054  | 0.226  | 0.013  | 0.0095 | 0.281  | .      | 0.053  | 0.121  | .            | 0.009   | 0.0146   | 0.00043  | .       | 0.204  | .       | .      | .        | .       | .      | .        | 0.00239  | .      | .  |
| ECRM 078-1    | 1.050  | 0.225  | 0.0047 | 0.0066 | 0.181  | 0.054  | .      | .      | 0.0197       | .       | 0.0094   | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| JSS 066-4     | 0.845  | 0.788  | 0.0175 | 0.0052 | 0.227  | 0.0117 | .      | .      | 0.038        | .       | 0.0047   | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| ECRM 056-2C   | 0.8181 | 0.5073 | 0.0103 | 0.0093 | 0.2006 | 0.0129 | 0.0218 | 0.0146 | 0.00024(sol) | .       | .        | .        | .       | .      | .       | (0.02) | .        | .       | .      | .        | .        | .      | .  |
| IARM 270A     | 0.76   | 0.79   | 0.009  | 0.016  | 0.51   | 0.156  | 0.179  | 0.155  | 0.020        | 0.024   | (0.0003) | 0.024    | 0.013   | 0.010  | 0.003   | <0.001 | 0.0002   | (0.002) | 0.004  | (0.001)  | <0.002   | 0.023  | .  |
| IARM 254A     | 0.500  | 0.78   | 0.010  | 0.024  | 0.211  | 0.091  | 0.044  | 0.050  | 0.025        | 0.013   | 0.0096   | 0.001    | 0.001   | 0.002  | (0.001) | 0.005  | 0.0002   | .       | 0.006  | (0.003)  | (0.0003) | 0.005  | .  |
| IARM 200B     | 0.452  | 0.755  | 0.013  | 0.026  | 0.219  | 0.228  | 0.089  | 0.132  | 0.003        | 0.018   | 0.0097   | 0.001    | 0.002   | 0.024  | 0.002   | 0.005  | 0.0001   | .       | 0.007  | 0.004    | 0.0004   | 0.009  | .  |
| IARM 200A     | 0.45   | 0.76   | 0.006  | 0.014  | 0.27   | 0.090  | 0.048  | 0.092  | 0.003        | 0.018   | 0.0084   | 0.001    | 0.002   | 0.057  | (0.001) | .      | <0.0005  | .       | 0.006  | (0.0031) | .        | 0.007  | .  |
| IARM 210C     | 0.443  | 0.87   | 0.033  | 0.025  | 0.219  | 0.36   | 0.097  | 0.161  | 0.005        | 0.017   | 0.0090   | 0.025    | 0.001   | 0.005  | <0.005  | 0.008  | 0.0003   | .       | 0.008  | 0.009    | 0.002    | 0.019  | .  |
| IARM 210B     | 0.40   | 0.67   | 0.011  | 0.005  | 0.20   | 0.020  | 0.028  | 0.058  | 0.029        | 0.016   | 0.0059   | (0.001)  | 0.002   | 0.0014 | (0.003) | 0.0025 | (0.0002) | .       | 0.003  | 0.0012   | <0.002   | 0.0013 | .  |
| IARM 210A     | 0.39   | 0.82   | 0.015  | 0.023  | 0.22   | 0.27   | 0.11   | 0.11   | 0.003        | 0.022   | 0.0124   | (0.002)  | (0.002) | 0.052  | .       | 0.007  | (0.0005) | .       | 0.008  | (0.0033) | .        | 0.011  | .  |
| JSS 050-6     | 0.38   | 0.50   | 0.013  | 0.0057 | 0.19   | 0.008  | .      | .      | 0.023        | .       | 0.0029   | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| IARM 209C     | 0.31   | 0.70   | 0.008  | 0.024  | 0.233  | 0.21   | 0.071  | 0.117  | 0.003        | 0.016   | 0.0123   | 0.0018   | 0.0018  | 0.032  | 0.004   | 0.007  | 0.0002   | 0.007   | 0.001  | 0.004    | 0.001    | 0.017  | .  |
| BCS 434/2     | 0.275  | 1.546  | 0.0611 | 0.0141 | 0.510  | .      | 0.037  | 0.238  | .            | .       | 0.0104   | 0.038    | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| JSS 030-7     | 0.196  | 0.75   | 0.024  | 0.0076 | 0.24   | 0.024  | .      | .      | 0.023        | .       | 0.0033   | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| IARM 28B      | 0.18   | 0.75   | 0.010  | 0.029  | 0.23   | 0.36   | 0.13   | 0.13   | 0.003        | 0.029   | 0.0094   | 0.002    | 0.002   | 0.002  | (0.001) | 0.008  | 0.0002   | .       | 0.011  | 0.0070   | (0.001)  | 0.014  | .  |
| IARM 28D      | 0.1700 | 0.80   | 0.010  | 0.016  | 0.27   | 0.11   | 0.090  | 0.081  | 0.0110       | 0.025   | 0.0079   | 0.002    | 0.001   | 0.019  | (0.003) | 0.0039 | 0.0002   | .       | 0.009  | 0.006    | .        | 0.008  | .  |
| IARM 28E      | 0.169  | 0.68   | 0.009  | 0.0026 | 0.171  | 0.120  | 0.145  | 0.079  | 0.011        | 0.033   | 0.0088   | 0.001    | 0.001   | 0.019  | 0.002   | 0.007  | 0.0001   | .       | 0.008  | 0.0052   | <0.001   | 0.010  | .  |
| IARM 28C      | 0.16   | 0.76   | 0.011  | 0.011  | 0.25   | 0.23   | 0.24   | 0.073  | 0.010        | 0.042   | 0.0084   | 0.0014   | 0.001   | 0.024  | (0.004) | 0.004  | 0.0002   | .       | 0.008  | 0.0074   | .        | 0.016  | .  |
| IARM 213A     | 0.16   | 0.66   | 0.015  | 0.034  | 0.15   | 0.41   | 0.15   | 0.15   | 0.0018       | 0.048   | 0.0082   | 0.002    | 0.001   | 0.024  | (0.007) | 0.007  | 0.0003   | .       | 0.008  | 0.011    | 0.0025   | 0.018  | .  |
| IARM 28F      | 0.150  | 0.76   | 0.012  | 0.011  | 0.27   | 0.254  | 0.25   | 0.077  | 0.012        | 0.042   | 0.0089   | 0.002    | 0.0012  | 0.023  | (0.004) | 0.004  | 0.0002   | 0.0011  | 0.007  | 0.0061   | (0.0005) | 0.015  | .  |
| JSS 023-8     | 0.112  | 0.48   | 0.020  | 0.0067 | 0.22   | 0.010  | .      | .      | (0.015)      | .       | (0.0037) | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| GBW 01407a    | 0.080  | 0.358  | 0.036  | 0.031  | 0.506  | 0.254  | 0.203  | 0.170  | 0.432        | .       | 0.018    | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| GBW 01406a    | 0.061  | 0.254  | 0.021  | 0.0058 | 0.341  | 0.168  | 0.182  | 0.114  | 0.412        | .       | 0.012    | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| ECRM 057-2    | 0.0507 | 0.246  | 0.0120 | 0.0127 | .      | 0.0146 | 0.0096 | 0.0114 | 0.059        | .       | 0.0023   | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| GBW 01405a    | 0.030  | 0.106  | 0.0061 | 0.025  | 0.182  | 0.123  | 0.162  | 0.147  | 0.205        | .       | 0.011    | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| GBW 01404a    | 0.027  | 0.195  | 0.014  | 0.0063 | 0.180  | 0.089  | 0.116  | 0.048  | 0.290        | .       | 0.016    | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| BCS 111       | 0.0258 | 0.155  | 0.0033 | 0.0054 | 0.0253 | 0.0171 | 0.0387 | 0.0197 | 0.0348       | 0.0008  | 0.0034   | (0.0005) | 0.0004  | 0.0009 | .       | 0.0021 | .        | .       | 0.0144 | .        | .        | 0.0015 | .  |
| BCS 431/2     | 0.0249 | 0.902  | 0.121  | 0.0065 | 0.015  | .      | 0.040  | 0.049  | .            | .       | 0.0052   | 0.0040   | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| GBW 01403a    | 0.012  | 0.034  | 0.0019 | 0.020  | 0.017  | 0.021  | 0.030  | 0.016  | 0.060        | .       | 0.015    | .        | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| BCS 432/2     | 0.0065 | 0.712  | 0.0171 | 0.036  | 0.0822 | .      | 0.0196 | 0.0166 | .            | .       | 0.0066   | 0.0174   | .       | .      | .       | .      | .        | .       | .      | .        | .        | .      | .  |
| Number        | C      | Mn     | P      | S      | Si     | Cu     | Ni     | Cr     | Al           | Mo      | N        | Nb       | Ti      | V      | W       | As     | B        | Ca      | Co     | O        | Pb       | Sn     | Zr |

\* ECRM 090-1C also contains Ga: 0.00228 and Zn: 0.00209.

CRM CARBON STEEL CHIPS

analysis listed in mass % except \* which is mg/kg IPT 11A: 120 g units BS CE, CMSI 1080-1084, IPT 55, GBW, JSS, NCS HC11120-11125: 150 g units BCS, all others: 100 g units

| Number      | C     | Mn    | P      | S      | Si     | Cu    | Ni    | Cr     | Mo     | Al(t)   | Al(s)    | Ti     | V      | Co     | As     | B*  | Bi*  | Ca*    | Nb      | Pb       | Sb     | Sn      | W         | Zr      |
|-------------|-------|-------|--------|--------|--------|-------|-------|--------|--------|---------|----------|--------|--------|--------|--------|-----|------|--------|---------|----------|--------|---------|-----------|---------|
| GBW 01208   | 1.26  | 0.28  | 0.018  | 0.0105 | 0.25   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NM 2002     | 1.16  | 0.55  | 0.078  | 0.019  | 0.048  | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BS CE 027 * | 1.00  | 0.24  | 0.029  | 0.0035 | 0.24   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IPT 55      | 0.837 | 0.923 | 0.023  | 0.027  | 0.240  | 0.187 | 0.174 | 0.215  | 0.099  | 0.093   | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 161/4   | 0.817 | 0.504 | 0.0105 | 0.0096 | 0.202  | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| GBW 01207   | 0.81  | 0.23  | 0.013  | 0.0065 | 0.18   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1069   | 0.736 | 0.67  | 0.032  | 0.020  | 0.297  | 0.028 | 0.010 | 0.0065 | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| GBW 01206   | 0.725 | 1.28  | 0.016  | 0.030  | 0.24   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1067   | 0.66  | 0.66  | 0.030  | 0.019  | 0.27   | 0.023 | 0.24  | 0.31   | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| GBW 01210a  | 0.613 | 0.818 | 0.023  | 0.014  | 0.234  | 0.016 | 0.027 | 0.015  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IPT 13A     | 0.573 | 0.723 | 0.011  | 0.014  | 0.260  | 0.076 | 0.065 | 0.098  | 0.018  | 0.027   | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC22109 | 0.551 | 0.613 | 0.024  | 0.039  | 0.427  | 0.174 | 0.154 | 0.303  | 0.044  | 0.2149  | 0.213    | .      | 0.0096 | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1063   | 0.494 | 0.266 | 0.052  | 0.052  | 0.078  | 0.117 | 0.130 | 0.300  | .      | 0.026   | .        | 0.0021 | 0.0066 | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 435/2   | 0.489 | 0.390 | 0.0373 | 0.0424 | 0.328  | .     | 0.133 | 0.184  | .      | .       | .        | .      | .      | 0.0116 | .      | .   | .    | .      | 0.134   | .        | .      | .       | .         | .       |
| CMSI 1049   | 0.484 | 0.611 | 0.022  | 0.0082 | 0.297  | 0.088 | 0.045 | 0.052  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 459/2   | 0.467 | 0.909 | 0.0482 | 0.0481 | 0.640  | .     | 0.043 | 0.113  | .      | 0.015   | (0.013)  | .      | 0.0585 | 0.0890 | .      | 110 | .    | 0.0102 | 0.0044  | 0.0121   | .      | .       | (0.074)   |         |
| GBW 01205b  | 0.455 | 0.734 | 0.024  | 0.023  | 0.270  | 0.105 | 0.026 | 0.037  | 0.0055 | .       | 0.034    | .      | .      | 0.0083 | 0.0089 | .   | <0.1 | .      | 0.0013  | 0.0091   | 0.066  | .       | .         |         |
| CMSI 1084   | 0.450 | 0.615 | 0.0221 | 0.021  | 0.285  | 0.105 | 0.026 | 0.037  | 0.0055 | .       | 0.034    | .      | .      | 0.0083 | 0.0089 | .   | <0.1 | .      | 0.0013  | 0.0091   | 0.066  | .       | .         |         |
| NCS HC41135 | 0.437 | 0.533 | 0.031  | 0.033  | 0.358  | 0.185 | 0.229 | 0.189  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IPT 14A     | 0.415 | 0.699 | 0.029  | 0.036  | 0.292  | 0.278 | 0.104 | 0.100  | 0.029  | (0.009) | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IPT 71      | 0.406 | 1.04  | 0.017  | 0.025  | 0.541  | 0.125 | 0.085 | 0.174  | 0.018  | 0.038   | .        | .      | .      | .      | .      | 84  | .    | .      | .       | .        | .      | .       | .         |         |
| BCS 460/2   | 0.383 | 0.616 | 0.0374 | 0.0099 | 0.126  | .     | .     | .      | .      | 0.024   | (0.019)  | .      | 0.0322 | 0.0106 | .      | 27  | .    | 0.068  | 0.0005  | (0.0006) | .      | .       | (<0.0005) |         |
| NM 138      | 0.38  | 0.56  | 0.026  | 0.027  | 0.30   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC11125 | 0.341 | 0.923 | 0.051  | 0.01   | 0.416  | 0.187 | 0.143 | 0.069  | .      | 0.072   | 0.067    | 0.055  | 0.136  | .      | .      | .   | .    | .      | .       | .        | .      | sol.Ti: | 0.054     |         |
| CMSI 1043   | 0.34  | 0.66  | 0.013  | 0.020  | 0.16   | 0.22  | 0.045 | 0.24   | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1059   | 0.338 | 0.856 | 0.038  | 0.012  | 0.475  | 0.053 | 0.042 | 0.270  | .      | 0.0079  | .        | 0.0030 | 0.0026 | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC11120 | 0.338 | 0.551 | 0.016  | 0.014  | 0.265  | 0.138 | 0.071 | 0.154  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1083   | 0.327 | 0.511 | 0.0214 | 0.023  | 0.300  | 0.212 | 0.036 | 0.024  | 0.0060 | .       | 0.051    | .      | .      | 0.011  | 0.010  | .   | <0.1 | .      | 0.00062 | 0.012    | 0.049  | .       | .         |         |
| BCS 452/1   | 0.323 | 1.30  | 0.035  | 0.017  | 0.355  | 0.22  | 0.19  | 0.067  | 0.054  | .       | .        | 0.031  | .      | .      | 0.015  | .   | <0.1 | .      | 0.00062 | 0.012    | 0.094  | 0.054   | 0.025     |         |
| BCS 457/2   | 0.307 | 0.327 | 0.0098 | 0.0448 | 0.105  | .     | .     | .      | .      | 0.088   | 0.084    | .      | 0.153  | 0.0217 | .      | 46  | .    | .      | 0.0174  | 0.0098   | 0.050  | .       | .         | .       |
| Number      | C     | Mn    | P      | S      | Si     | Cu    | Ni    | Cr     | Mo     | Al(t)   | Al(s)    | Ti     | V      | Co     | As     | B*  | Bi*  | Ca*    | Nb      | Pb       | Sb     | Sn      | W         | Zr      |
| CMSI 1047   | 0.303 | 0.649 | 0.022  | 0.012  | 0.323  | 0.114 | 0.033 | 0.059  | .      | .       | .        | .      | .      | 0.0095 | 0.0083 | .   | 0.26 | .      | .       | 0.00054  | 0.0031 | 0.069   | .         | .       |
| CMSI 1081   | 0.275 | 0.656 | 0.0168 | 0.016  | 0.330  | 0.127 | 0.031 | 0.037  | 0.0058 | .       | 0.040    | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IRSID 021-1 | 0.243 | 1.29  | 0.013  | 0.013  | 0.271  | 0.167 | 0.255 | 0.125  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1048   | 0.239 | 0.525 | 0.025  | 0.014  | 0.278  | 0.172 | 0.027 | 0.066  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC22107 | 0.233 | 0.532 | 0.011  | 0.034  | 0.304  | 0.239 | 0.421 | 0.251  | 0.029  | 0.1067  | 0.104    | .      | 0.0038 | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IPT 11A     | 0.205 | 0.439 | 0.009  | 0.011  | 0.030  | 0.013 | 0.079 | 0.121  | 0.010  | 0.153   | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1046   | 0.200 | 0.473 | 0.016  | 0.012  | 0.332  | 0.063 | 0.036 | 0.075  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 458/2   | 0.198 | 0.479 | 0.0281 | 0.0314 | 0.504  | .     | .     | .      | .      | 0.055   | 0.053    | .      | 0.105  | 0.198  | .      | 69  | .    | 0.0510 | 0.0140  | 0.089    | .      | .       | (0.064)   |         |
| CMSI 1055   | 0.188 | 0.461 | 0.0269 | 0.052  | 0.150  | 0.268 | 0.175 | 0.128  | .      | 0.048   | .        | 0.0028 | 0.0048 | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 453/1   | 0.160 | 1.38  | 0.044  | 0.026  | 0.34   | 0.099 | 0.11  | 0.26   | 0.081  | .       | .        | 0.073  | .      | .      | 0.052  | .   | .    | .      | .       | .        | .      | 0.022   | 0.30      | .       |
| CMSI 1041   | 0.145 | 0.45  | 0.035  | 0.015  | 0.31   | 0.105 | 0.23  | 0.10   | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1095   | 0.118 | 0.483 | 0.013  | 0.0168 | 0.252  | 0.022 | 0.020 | 0.020  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC41134 | 0.112 | 0.644 | 0.033  | 0.017  | 0.367  | 0.030 | 0.033 | 0.426  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 456/2   | 0.112 | 0.220 | 0.0212 | 0.0221 | 0.297  | .     | .     | .      | .      | 0.0017  | (0.0013) | .      | 0.0221 | 0.0504 | .      | 15  | .    | .      | 0.0057  | 0.0189   | 0.0172 | .       | .         | (0.014) |
| NM 133      | 0.11  | 0.45  | 0.015  | 0.01   | 0.06   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| CMSI 1080   | 0.102 | 0.550 | 0.0170 | 0.017  | 0.228  | 0.034 | 0.026 | 0.035  | 0.0059 | .       | 0.017    | .      | .      | 0.0058 | 0.0066 | .   | <0.1 | .      | 0.00020 | 0.0010   | 0.0030 | .       | .         | .       |
| CMSI 1040   | 0.10  | 0.325 | 0.047  | 0.014  | 0.51   | 0.080 | 0.040 | 0.074  | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| BCS 433/2   | 0.096 | 1.188 | 0.011  | 0.0083 | 0.0071 | .     | 0.037 | 0.0262 | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | 0.0590  | .        | .      | .       | .         | .       |
| CMSI 1052   | 0.091 | 0.569 | 0.0123 | 0.031  | 0.266  | 0.196 | 0.241 | 0.093  | .      | 0.095   | .        | 0.0098 | 0.011  | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| IRSID 012-1 | 0.082 | .     | 0.083  | 0.255  | .      | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NCS HC22106 | 0.061 | 0.153 | 0.043  | 0.025  | 0.063  | 0.071 | 0.021 | 0.056  | 0.0046 | 0.5585  | 0.556    | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| JSS 170-7   | 0.052 | 0.43  | .      | 0.18   | 0.18   | 0.081 | 0.049 | 0.011  | 0.045  | .       | .        | 0.105  | .      | .      | 0.032  | .   | .    | 19     | .       | .        | .      | 0.056   | .         | .       |
| BCS 451/1   | 0.051 | 0.62  | 0.009  | 0.014  | 0.116  | 0.47  | 0.016 | 0.104  | 0.039  | .       | .        | 0.105  | .      | .      | 0.041  | .   | .    | .      | .       | .        | .      | 0.002   | 0.099     | .       |
| JSS 172-7   | 0.051 | 0.43  | .      | 0.20   | 0.20   | .     | .     | .      | .      | 0.012   | .        | .      | 0.010  | 0.052  | 0.041  | 10  | .    | .      | 0.050   | .        | 0.0022 | .       | .         | 0.009   |
| IPT 39      | 0.048 | 0.340 | 0.021  | 0.034  | 0.061  | 0.019 | 0.048 | 0.084  | 0.012  | 0.169   | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| NM 139      | 0.028 | 0.39  | 0.011  | 0.020  | 0.12   | .     | .     | .      | .      | .       | .        | .      | .      | .      | .      | .   | .    | .      | .       | .        | .      | .       | .         | .       |
| Number      | C     | Mn    | P      | S      | Si     | Cu    | Ni    | Cr     | Mo     | Al(t)   | Al(s)    | Ti     | V      | Co     | As     | B*  | Bi*  | Ca*    | Nb      | Pb       | Sb     | Sn      | W         | Zr      |

| CRM           |        |        |         |         |          |         |         |         |         |         |         |          |        |         |         |         |         |         |          |            |           | LOW ALLOY STEEL CHIPS WITH NITROGEN |         |  |  |  |  |  |  |  |  | IPT 96: 120 g |  |  | JK, JSS, NCS: 150 g |  |  | all others: 100 g |  |  |
|---------------|--------|--------|---------|---------|----------|---------|---------|---------|---------|---------|---------|----------|--------|---------|---------|---------|---------|---------|----------|------------|-----------|-------------------------------------|---------|--|--|--|--|--|--|--|--|---------------|--|--|---------------------|--|--|-------------------|--|--|
| Number        | C      | Mn     | P       | S       | Si       | Cu      | Ni      | Cr      | Al      | Als     | Co      | Mo       | N      | Nb      | Ti      | V       | W       | As      | B        | O          | Pb        | T.RE                                | Sn      |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 036-1     | 0.858  | 0.327  | 0.0074  | 0.0095  | 0.194    | 0.065   | (0.058) | (0.091) | (0.015) | .       | .       | .        | 0.010  | .       | .       | (0.019) | .       | 0.0233  | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 182-1    | 0.790  | 0.389  | 0.0076  | 0.011   | 0.368    | 0.141   | 0.152   | 0.591   | 0.020   | .       | .       | .        | 0.0102 | .       | .       | 0.1770  | .       | 0.0202  | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| JK 3B         | 0.742  | 0.803  | 0.0101  | 0.0071  | 0.251    | 0.0175  | 0.0591  | 0.0529  | 0.0036  | .       | 0.0048  | 0.0051   | 0.0054 | .       | .       | (0.002) | .       | .       | .        | .          | .         | .                                   | 0.0044  |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 059-2C   | 0.721  | 0.495  | 0.0046  | 0.0084  | 0.188    | 0.0074  | 0.0198  | 0.0090  | 0.00045 | 0.00020 | .       | 0.0018   | 0.0051 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IPT 29A       | 0.614  | 0.565  | 0.012   | 0.0076  | 0.372    | 0.012   | 0.794   | 0.845   | .       | 0.028   | .       | 0.276    | 0.0039 | .       | .       | 0.080   | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 079-2    | 0.596  | 0.743  | 0.0233  | 0.192   | 0.247    | 0.046   | 0.022   | 0.0379  | 0.021   | .       | .       | .        | 0.0074 | .       | .       | .       | .       | 0.004   | .        | .          | .         | .                                   | 0.0037  |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 091-1    | 0.518  | .      | .       | .       | .        | .       | 0.310   | 0.312   | .       | .       | .       | 0.098    | 0.0111 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 194A     | 0.517  | 1.04   | 0.039   | 0.025   | 0.49     | 0.26    | 0.79    | 0.70    | 0.102   | .       | 0.052   | 0.40     | 0.0055 | 0.056   | 0.078   | 0.333   | 0.13    | 0.031   | 0.0058   | 0.0012     | 0.0010    | .                                   | 0.017   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 34B      | 0.48   | 0.81   | 0.021   | 0.021   | 0.29     | 0.21    | 0.14    | 0.94    | 0.024   | .       | 0.009   | 0.053    | 0.0089 | 0.002   | 0.002   | 0.16    | (<0.01) | 0.006   | 0.0002   | 0.0018     | (<0.01)   | .                                   | 0.012   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 299A *** | 0.47   | 0.70   | 0.008   | 0.002   | 0.22     | 0.10    | 0.57    | 1.03    | 0.09    | .       | (0.006) | 0.99     | 0.003  | 0.006   | 0.004   | 0.12    | 0.01    | 0.005   | 0.0005   | 0.002      | .         | .                                   | 0.005   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 030-4     | 0.456  | 0.603  | 0.018   | 0.021   | 0.318    | 0.061   | 0.042   | 0.117   | 0.042   | .       | .       | .        | 0.0051 | .       | .       | .       | .       | 0.012   | .        | .          | .         | .                                   | 0.0055  |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 080-1    | 0.452  | 1.116  | 0.028   | 0.024   | 0.317    | .       | .       | 0.025   | .       | .       | .       | .        | 0.0073 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | (0.006) |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 252A     | 0.419  | 0.91   | 0.024   | 0.009   | 0.248    | 0.107   | 0.507   | 0.501   | 0.017   | .       | 0.008   | 0.206    | 0.0085 | 0.002   | 0.001   | 0.005   | 0.004   | 0.005   | 0.0002   | (0.001)    | 0.0007    | .                                   | 0.007   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 252C     | 0.416  | 0.92   | 0.025   | 0.008   | 0.248    | 0.109   | 0.505   | 0.501   | 0.017   | .       | 0.008   | 0.205    | 0.0083 | 0.002   | 0.001   | 0.005   | <0.005  | 0.004   | (0.0001) | (0.002)    | 0.001     | .                                   | 0.007   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 305A *** | 0.40   | 0.62   | 0.006   | 0.001   | 0.38     | 0.098   | 0.143   | 1.61    | 1.09    | .       | 0.034   | 0.41     | 0.0044 | 0.003   | 0.003   | 0.013   | 0.01    | 0.005   | 0.0004   | 0.002      | Zr:0.0014 | .                                   | 0.005   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 30C      | 0.39   | 0.84   | 0.021   | 0.016   | 0.28     | 0.16    | 0.18    | 0.94    | 0.027   | .       | 0.009   | 0.16     | 0.0108 | (0.002) | 0.003   | 0.004   | .       | .       | (0.0001) | 0.0025     | Ca: 0.003 | .                                   | 0.014   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 143D *** | 0.31   | 0.55   | 0.011   | 0.011   | 0.24     | 0.14    | 0.14    | 1.00    | 0.025   | .       | 0.008   | 0.20     | 0.008  | .       | 0.002   | 0.004   | .       | .       | .        | .          | .         | .                                   | 0.008   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IPT 142       | 0.304  | 0.801  | 0.022   | 0.025   | 0.242    | 0.226   | 0.421   | 0.505   | 0.029   | 0.027   | 0.008   | 0.179    | 0.0133 | 0.020   | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 143B     | 0.29   | 0.48   | 0.009   | 0.009   | 0.28     | 0.13    | 0.14    | 0.93    | 0.018   | .       | 0.009   | 0.20     | 0.0080 | (0.002) | (0.001) | 0.004   | .       | .       | 0.0001   | 0.0023     | .         | .                                   | 0.012   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 032-2     | 0.271  | 0.556  | 0.0129  | 0.0254  | 0.282    | 0.085   | (0.040) | (0.088) | .       | .       | .       | .        | 0.0044 | .       | .       | .       | .       | 0.020   | .        | .          | .         | .                                   | (0.006) |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| Number        | C      | Mn     | P       | S       | Si       | Cu      | Ni      | Cr      | Al      | Als     | Co      | Mo       | N      | Nb      | Ti      | V       | W       | As      | B        | O          | Pb        | T.RE                                | Sn      |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 017-1    | 0.261  | 0.725  | 0.015   | 0.022   | 0.266    | 0.062   | 0.085   | 0.044   | .       | .       | .       | .        | 0.0091 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 195B     | 0.255  | 1.84   | 0.018   | 0.005   | 1.16     | 0.52    | 1.00    | 0.216   | 0.029   | .       | 0.101   | 0.052    | 0.0070 | 0.007   | 0.002   | 0.082   | 0.38    | 0.021   | 0.0039   | 0.0017     | 0.002     | .                                   | 0.084   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 197-1C   | 0.219  | 0.792  | 0.0073  | 0.0232  | 0.275    | 0.152   | 0.148   | 0.451   | 0.0313  | .       | 0.0135  | 0.402    | 0.0114 | .       | 0.0005  | .       | .       | 0.0083  | .        | .          | .         | .                                   | 0.0097  |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 229A     | 0.218  | 0.86   | 0.008   | 0.010   | 0.331    | 0.014   | 0.029   | 0.015   | 0.027   | .       | 0.011   | 0.493    | 0.0071 | 0.002   | 0.002   | 0.006   | (0.003) | (0.001) | 0.0002   | 0.0013     | (0.001)   | .                                   | 0.002   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 182B     | 0.21   | 0.81   | 0.016   | 0.037   | 0.27     | 0.017   | 0.47    | 0.49    | 0.038   | .       | 0.006   | 0.172    | 0.0040 | (0.003) | (0.003) | 0.004   | (0.01)  | (0.003) | (0.0003) | (0.003)    | 0.19      | .                                   | 0.0019  |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| JSS 514-8     | 0.201  | 0.836  | 0.0166  | 0.0188  | 0.186    | 0.0120  | 0.0282  | 1.20    | 0.031   | .       | .       | 0.265    | 0.0096 | .       | .       | 0.0059  | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 32B      | 0.20   | 0.81   | 0.016   | 0.024   | 0.25     | 0.14    | 0.44    | 0.54    | 0.038   | .       | 0.009   | 0.15     | 0.0078 | 0.003   | 0.001   | 0.004   | (<0.01) | 0.005   | 0.0002   | 0.0030     | (<0.01)   | .                                   | 0.011   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 32C *    | 0.188  | 0.81   | 0.009   | 0.024   | 0.220    | 0.119   | 0.447   | 0.49    | 0.026   | .       | 0.006   | 0.169    | 0.0081 | 0.002   | 0.002   | 0.003   | 0.004   | 0.004   | 0.0001   | 0.0018     | (0.001)   | .                                   | 0.006   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 194-1C   | 0.1532 | 1.188  | 0.0097  | 0.00059 | 0.431    | 0.0751  | 0.3417  | 0.733   | 0.0837  | .       | .       | 0.2857   | 0.0115 | .       | .       | 0.0243  | .       | 0.0042  | 0.0020   | Ca: 0.0026 | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 077-2    | 0.151  | 1.28   | 0.022   | 0.014   | 0.293    | .       | .       | (0.016) | 0.034   | .       | .       | .        | 0.0054 | .       | .       | 0.0584  | .       | 0.007   | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 060-1    | 0.122  | 0.45   | (0.024) | (0.031) | (0.17)   | (0.060) | (0.039) | (0.028) | (0.004) | .       | .       | (<0.005) | 0.0040 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | (0.005) |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IPT 96        | 0.109  | 0.845  | 0.017   | 0.0049  | 0.286    | 0.272   | 0.018   | 0.614   | .       | 0.041   | 0.0048  | .        | 0.0092 | 0.0072  | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 042-1     | 0.108  | 0.666  | 0.007   | 0.024   | 0.037    | 0.041   | 0.029   | 0.016   | 0.010   | .       | .       | .        | 0.0078 | 0.054   | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| IARM 268B     | 0.087  | 0.58   | 0.011   | 0.035   | 0.21     | 0.31    | 0.127   | 0.094   | 0.002   | .       | 0.003   | 0.033    | 0.0015 | 0.006   | <0.001  | 0.047   | 0.01    | <0.005  | 0.0011   | (0.015)    | <0.003    | .                                   | 0.010   |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 183-1    | 0.0831 | 0.354  | 0.089   | 0.031   | 0.421    | 0.445   | 0.073   | 0.670   | 0.027   | .       | .       | .        | 0.0064 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| JSS 512-7     | 0.073  | 0.45   | 0.0089  | 0.0097  | 0.18     | 0.008   | 0.015   | 0.059   | (0.017) | .       | .       | (0.010)  | 0.0034 | .       | .       | (0.001) | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| NCS HC22201   | 0.073  | 0.675  | 0.0253  | 0.0053  | 0.438    | 0.089   | 0.096   | 0.090   | .       | 0.093   | .       | .        | 0.013  | 0.044   | .       | .       | .       | .       | .        | .          | .         | 0.048                               | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| NCS HC22202   | 0.069  | 0.991  | 0.0135  | 0.0076  | 0.715    | 0.075   | 0.071   | 0.228   | .       | 0.123   | .       | .        | 0.014  | 0.076   | .       | .       | .       | .       | .        | .          | .         | 0.018                               | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 057-1 ** | 0.066  | 0.52   | (0.030) | (0.032) | (0.058)  | .       | .       | .       | (0.018) | .       | .       | .        | 0.016  | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 031-3     | 0.055  | 0.329  | 0.014   | 0.021   | 0.037    | 0.020   | .       | .       | 0.054   | .       | .       | .        | 0.0050 | .       | .       | .       | .       | 0.013   | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 033-1     | 0.043  | 0.379  | 0.171   | 0.022   | (0.0028) | 0.017   | .       | .       | .       | .       | .       | .        | 0.0100 | .       | .       | .       | .       | 0.0177  | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| BAM 031-2     | 0.0344 | 0.296  | 0.053   | (0.052) | .        | 0.083   | .       | .       | .       | .       | .       | .        | 0.012  | .       | .       | .       | .       | 0.061   | .        | .          | .         | last of stock                       | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 083-1    | 0.028  | 0.289  | 0.0077  | 0.0100  | .        | 0.016   | 0.014   | .       | .       | .       | .       | .        | 0.0022 | .       | .       | .       | .       | .       | .        | .          | .         | .                                   | .       |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| ECRM 064-1C   | 0.0026 | 0.1641 | 0.0091  | 0.0104  | 0.0065   | 0.0077  | 0.0115  | 0.0184  | 0.0330  | 0.0302  | 0.0027  | 0.00077  | 0.0026 | 0.0146  | 0.0189  | 0.00015 | .       | 0.0036  | .        | .          | 0.00018   | .                                   | 0.00051 |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |
| Number        | C      | Mn     | P       | S       | Si       | Cu      | Ni      | Cr      | Al      | Als     | Co      | Mo       | N      | Nb      | Ti      | V       | W       | As      | B        | O          | Pb        | T.RE                                | Sn      |  |  |  |  |  |  |  |  |               |  |  |                     |  |  |                   |  |  |

\* IARM 32C also contains Ca: 0.0008 and Sb: 0.003  
 \*\* Clearance Sale Item  
 \*\*\* Provisional Analysis

## CRM LOW ALLOY STEEL CHIPS

analysis listed in mass % except \* which is mg/kg

| Number       | C       | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Al     | Als    | Co      | Mo      | Nb     | Ti      | V       | W      | As     | B      | Bt     | Bs     | Ca* | Sn    | Units |       |
|--------------|---------|--------|---------|---------|--------|--------|--------|--------|--------|--------|---------|---------|--------|---------|---------|--------|--------|--------|--------|--------|-----|-------|-------|-------|
| BCS 401/2    | 0.935   | 1.197  | 0.0265  | 0.0078  | 0.602  | 0.101  | 0.019  | 0.138  | 0.074  | .      | 0.0042  | 0.495   | .      | .       | 0.496   | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| CMSI 1106    | 0.81    | 0.19   | 0.060   | 0.047   | 0.29   | 0.295  | 0.11   | 0.53   | .      | 0.065  | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| VS UNL 12/3  | 0.755   | 0.330  | 0.0098  | 0.0050  | 0.259  | 0.220  | 0.255  | 0.737  | .      | .      | .       | 0.196   | .      | .       | 0.64    | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| BCS 404/1    | 0.74    | 0.31   | 0.057   | 0.024   | 0.87   | 0.34   | 0.40   | 0.48   | .      | .      | .       | 0.31    | .      | .       | 0.11    | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| IPT 60A      | 0.715   | .      | .       | 0.012   | .      | .      | .      | .      | .      | .      | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| NCS HC17206a | 0.664   | 1.92   | 0.04    | 0.044   | 0.517  | 0.174  | 0.069  | 0.099  | 0.0034 | 0.0014 | .       | .       | .      | 0.0058  | 0.063   | .      | .      | .      | 0.0005 | 0.0004 | .   | .     | 100 g |       |
| IPT 33       | 0.603   | 0.772  | 0.011   | 0.007   | 0.133  | 0.036  | 0.059  | 0.793  | .      | 0.099  | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| NCS HC17205a | 0.574   | 1.65   | 0.022   | 0.012   | 1.90   | 0.085  | 0.361  | 0.161  | 0.073  | 0.070  | .       | .       | .      | 0.245   | 0.402   | .      | .      | .      | 0.0024 | 0.0021 | .   | .     | 100 g |       |
| CMSI 1184    | 0.558   | 1.47   | 0.0235  | 0.032   | 0.507  | 0.161  | 0.246  | 0.74   | .      | .      | .       | 0.245   | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| ECRM 055-1   | 0.51    | 0.77   | 0.016   | 0.036   | 0.24   | (0.15) | (0.12) | (0.16) | .      | .      | .       | (0.016) | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| IPT 12A      | 0.435   | 0.908  | 0.012   | 0.009   | 0.348  | 0.082  | 0.508  | 0.528  | .      | .      | .       | 0.172   | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| CMSI 1111    | 0.43    | 0.18   | 0.018   | 0.036   | 0.685  | 0.035  | 0.020  | 0.020  | .      | 0.036  | .       | 0.28    | .      | 0.087   | 0.081   | .      | .      | .      | .      | 0.0028 | .   | .     | 150 g |       |
| NCS HC17204a | 0.396   | 0.887  | 0.026   | 0.015   | 0.195  | 0.116  | 0.262  | 0.215  | 0.049  | 0.048  | .       | .       | .      | 0.058   | 0.101   | .      | .      | .      | 0.0040 | 0.0032 | .   | .     | 100 g |       |
| CMSI 1190    | 0.392   | 1.08   | 0.028   | 0.019   | 0.626  | 0.030  | 0.241  | 0.174  | 0.086  | 0.082  | .       | .       | .      | 0.116   | 0.023   | .      | .      | .      | 0.0042 | 0.0037 | .   | .     | 100 g |       |
| ECRM 084-1   | 0.391   | 0.860  | 0.018   | 0.029   | 0.265  | 0.267  | 0.154  | .      | .      | .      | .       | 0.033   | .      | .       | .       | .      | .      | .      | .      | .      | .   | 0.023 | 100 g |       |
| CMSI 1134    | 0.34    | 1.00   | 0.0043  | 0.0017  | 0.52   | 0.052  | 0.67   | 0.40   | 0.061  | .      | .       | 0.083   | .      | .       | .       | 0.34   | .      | 0.013  | .      | .      | .   | .     | 150 g |       |
| NCS HC17203a | 0.337   | 0.449  | 0.031   | 0.067   | 1.06   | 0.251  | 0.111  | 0.297  | 0.193  | 0.188  | .       | .       | .      | 0.248   | 0.147   | .      | .      | .      | 0.0057 | 0.0047 | .   | .     | 100 g |       |
| NCS HC28214  | 0.312   | 1.35   | 0.023   | 0.017   | 0.292  | 0.243  | 0.117  | 0.069  | 0.0421 | 0.040  | 0.013   | 0.010   | .      | 0.023   | 0.0013  | 0.0022 | .      | .      | .      | .      | .   | .     | 100 g |       |
| ECRM 086-1C  | 0.297   | 0.879  | 0.024   | 0.037   | 0.206  | 0.320  | 0.168  | 0.150  | .      | .      | .       | .       | .      | .       | .       | .      | 0.023  | .      | .      | .      | .   | 0.026 | 100 g |       |
| NCS HC13207  | 0.294   | 1.48   | 0.036   | 0.009   | 0.070  | 0.035  | 0.019  | 0.037  | .      | 0.029  | .       | 0.038   | .      | 0.023   | 0.025   | .      | .      | .      | .      | 0.011  | .   | .     | 150 g |       |
| CMSI 1144    | 0.24    | 1.35   | 0.0195  | 0.010   | 0.65   | 0.35   | 0.027  | 0.014  | .      | .      | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| CMSI 1138    | 0.23    | 0.305  | 0.021   | 0.021   | 0.28   | 0.10   | 0.092  | 0.081  | 0.027  | .      | .       | 0.23    | .      | 0.054   | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| NCS HC28210  | 0.224   | 0.764  | 0.026   | 0.0083  | 0.288  | 0.175  | 0.452  | 0.621  | 0.0087 | 0.0051 | 0.013   | 0.254   | .      | 0.0020  | 0.0033  | 0.0018 | .      | .      | .      | .      | .   | 100 g |       |       |
| ECRM 054-1   | 0.22    | (0.88) | 0.092   | (0.10)  | (0.05) | (0.21) | (0.14) | (0.17) | .      | .      | .       | (0.02)  | .      | .       | (<0.01) | .      | (0.03) | .      | .      | .      | .   | .     | 100 g |       |
| IPT 16A      | 0.212   | 0.820  | 0.019   | 0.018   | 0.287  | 0.053  | 0.559  | 0.493  | .      | 0.016  | .       | 0.201   | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| Number       | C       | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Al     | Als    | Co      | Mo      | Nb     | Ti      | V       | W      | As     | B      | Bt     | Bs     | Ca* | Sn    | Units |       |
| ECRM 061-1   | 0.210   | (0.61) | (0.019) | (0.034) | 0.12   | (0.10) | (0.21) | .      | .      | .      | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | .     | 100 g |
| CMSI 1142    | 0.21    | 1.44   | 0.042   | 0.025   | 0.77   | 0.14   | 0.051  | 0.031  | .      | .      | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| CMSI 1124    | 0.209   | 0.609  | 0.015   | 0.014   | 0.298  | 0.089  | 0.093  | 0.808  | .      | .      | .       | 0.0088  | 0.089  | .       | 0.0032  | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| NCS HC28208  | 0.203   | 0.502  | 0.020   | 0.018   | 0.221  | 0.181  | 0.050  | 0.907  | 0.0142 | 0.012  | 0.013   | 0.194   | .      | 0.0010  | 0.0025  | 0.0024 | .      | .      | .      | .      | .   | 100 g |       |       |
| NCS HC28213  | 0.202   | 1.19   | 0.015   | 0.014   | 0.271  | 0.223  | 0.128  | 0.082  | 0.0419 | 0.040  | 0.011   | 0.017   | .      | 0.024   | 0.0013  | 0.0016 | .      | .      | .      | .      | .   | 100 g |       |       |
| NCS HC17202a | 0.180   | 1.30   | 0.016   | 0.023   | 0.241  | 0.304  | 0.167  | 0.428  | 0.125  | 0.121  | .       | .       | .      | 0.179   | 0.172   | .      | .      | .      | 0.0021 | 0.0018 | .   | .     | 100 g |       |
| JK 21        | 0.175   | 1.455  | 0.016   | 0.011   | 0.36   | 0.045  | 0.035  | 0.024  | 0.032  | .      | .       | 0.004   | 0.0175 | .       | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| ECRM 087-1   | 0.174   | 0.671  | 0.010   | 0.046   | 0.263  | 0.171  | 0.118  | 0.078  | .      | .      | 0.015   | 0.021   | .      | 0.021   | .       | .      | 0.024  | .      | .      | .      | .   | 0.017 | 100 g |       |
| CMSI 1140    | 0.166   | 1.33   | 0.014   | 0.022   | 0.162  | 0.017  | 0.040  | 0.027  | .      | 0.029  | .       | 0.003   | .      | 0.034   | 0.110   | .      | .      | .      | 0.0011 | .      | .   | .     | 150 g |       |
| CMSI 1137    | 0.15    | 0.95   | 0.0092  | 0.011   | 0.43   | 0.057  | 0.018  | 0.009  | 0.0095 | .      | .       | 0.105   | .      | 0.028   | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| IPT 93       | 0.140   | 1.02   | 0.036   | 0.028   | 0.261  | 0.129  | 0.053  | 0.104  | 0.045  | .      | .       | 0.013   | .      | 0.034   | .       | .      | .      | 0.0022 | .      | .      | .   | .     | 100 g |       |
| IPT 47       | 0.122   | 0.959  | 0.013   | 0.020   | 0.273  | 0.245  | 0.221  | 0.573  | .      | .      | .       | .       | 0.032  | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| ECRM 096-1C  | 0.113   | 1.35   | 0.019   | 0.0009  | 0.263  | 0.022  | 0.020  | 0.019  | 0.044  | .      | .       | 0.003   | 0.029  | .       | 0.0036  | .      | .      | .      | .      | .      | 21  | .     | 100 g |       |
| ECRM 096-2C  | 0.1050  | 1.320  | 0.0128  | 0.0016  | 0.263  | 0.0170 | 0.0253 | 0.0243 | 0.0460 | .      | .       | 0.0020  | 0.0252 | .       | .       | .      | .      | .      | .      | .      | 20  | .     | 100 g |       |
| NCS HC28215  | 0.104   | 0.476  | 0.093   | 0.024   | 0.308  | 0.295  | 0.011  | 0.016  | .      | 0.0015 | 0.0057  | .       | .      | (0.004) | 0.0034  | .      | .      | .      | .      | .      | .   | 100 g |       |       |
| ECRM 081-1   | 0.099   | 0.605  | 0.014   | 0.014   | 0.105  | 0.026  | 0.042  | .      | 0.023  | .      | (0.017) | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 100 g |       |
| CMSI 1104    | 0.097   | 0.87   | 0.011   | 0.096   | 0.29   | 0.034  | 0.29   | 0.76   | 0.073  | .      | .       | .       | .      | .       | .       | .      | .      | .      | .      | .      | .   | .     | 150 g |       |
| NCS HC17201a | 0.087   | 0.234  | 0.0067  | 0.049   | 1.41   | 0.371  | 0.480  | 0.653  | 0.392  | 0.386  | .       | .       | .      | 0.046   | 0.536   | .      | .      | .      | 0.0054 | 0.0044 | .   | .     | 100 g |       |
| CMSI 1135    | 0.074   | 1.23   | 0.0045  | 0.0064  | 0.35   | 0.033  | 0.32   | 0.22   | 0.015  | .      | .       | 0.025   | .      | .       | .       | 0.48   | .      | 0.0006 | .      | .      | .   | .     | 100 g |       |
| CMSI 1112    | 0.045   | 0.396  | 0.054   | 0.069   | 0.46   | 0.030  | 0.016  | 0.0095 | .      | 0.028  | .       | 0.11    | .      | 0.041   | 0.051   | .      | .      | .      | .      | 0.028  | .   | .     | 150 g |       |
| BCS 421      | (0.049) | (0.11) | (0.012) | (0.027) | (0.07) | .      | .      | .      | .      | .      | .       | .       | .      | .       | .       | 0.52   | .      | .      | .      | .      | .   | .     | 100 g |       |
| Number       | C       | Mn     | P       | S       | Si     | Cu     | Ni     | Cr     | Al     | Als    | Co      | Mo      | Nb     | Ti      | V       | W      | As     | B      | Bt     | Bs     | Ca* | Sn    | Units |       |

Sb: 0.0046

T.RE: 22 ppm

## CRM MILD STEEL CHIPS WITH NITROGEN

analysis listed in mass % except \* which is mg/kg

JSS 501, 502: 100 g

JK, other JSS, NILAB: 150 g

all others: 100 g

| Number      | C      | Mn    | P      | S        | Si    | Cu     | Ni      | Cr      | Al      | Als   | Co       | Mo      | N      | Nb     | Ti       | V       | W       | As      | B        | O        | Pb       | Sn     | Zr*  |
|-------------|--------|-------|--------|----------|-------|--------|---------|---------|---------|-------|----------|---------|--------|--------|----------|---------|---------|---------|----------|----------|----------|--------|------|
| BCS 402/2   | 1.311  | 0.228 | 0.0161 | 0.0138   | 0.111 | 0.302  | 0.808   | 0.652   | 0.161   | .     | .        | 0.140   | 0.0069 | .      | .        | 0.194   | .       | .       | .        | .        | .        | .      | .    |
| ECRM 035-2C | 1.277  | 0.305 | 0.0038 | 0.011    | 0.216 | 0.0085 | 0.0190  | 0.0104  | 0.0193  | .     | .        | 0.0056  | 0.0230 | .      | 0.0030   | .       | .       | 0.0017  | .        | .        | .        | .      | .    |
| JK 20A      | 1.263  | .     | .      | 0.0094   | .     | .      | .       | .       | .       | .     | .        | .       | 0.0027 | .      | .        | 0.161   | 1.75    | .       | .        | .        | 0.160    | .      | .    |
| IARM 196A   | 1.08   | 2.40  | 0.040  | 0.014    | 0.35  | 0.25   | 0.61    | 2.35    | 0.015   | .     | 0.013    | 0.129   | 0.0084 | 0.087  | 0.014    | 0.157   | 0.189   | 0.025   | 0.0017   | 0.0021   | 0.001    | 0.033  | 60   |
| IARM 49C    | 1.04   | 0.31  | 0.009  | 0.013    | 0.26  | 0.082  | 0.064   | 1.35    | 0.016   | .     | 0.007    | 0.015   | 0.0078 | 0.001  | 0.003    | 0.008   | .       | 0.004   | (0.0001) | (0.0012) | .        | 0.005  | .    |
| NILAB 100IA | 1.002  | 0.333 | 0.012  | 0.018    | .     | 0.019  | 0.027   | 1.517   | 0.005   | .     | 0.007    | 0.012   | 0.0046 | .      | 0.0007   | 0.004   | .       | 0.004   | .        | .        | .        | .      | .    |
| ECRM 195-1C | 0.756  | 0.571 | 0.017  | 0.012    | 0.467 | 0.036  | 0.33    | 1.56    | .       | .     | .        | 0.77    | 0.010  | .      | .        | 0.31    | .       | .       | .        | .        | .        | .      | .    |
| ECRM 179-2C | 0.598  | 0.539 | 0.027  | (0.0006) | 0.578 | 0.111  | 0.078   | 1.081   | .       | .     | (0.0153) | 0.070   | 0.0068 | .      | 0.0014   | 0.188   | 1.87    | .       | .        | .        | .        | .      | .    |
| BAM 130-1   | 0.546  | 1.593 | 0.0209 | 0.0158   | 0.313 | 0.072  | (0.031) | (0.032) | 0.0038  | .     | .        | .       | 0.0093 | .      | .        | (0.003) | .       | 0.0167  | .        | .        | .        | .      | .    |
| IPT 100     | 0.462  | 0.755 | 0.016  | 0.019    | 0.188 | 0.053  | 0.524   | 1.08    | .       | 0.029 | .        | 0.94    | 0.053  | .      | .        | 0.117   | .       | .       | .        | .        | .        | .      | .    |
| JSS 502-6   | 0.43   | 0.70  | 0.018  | 0.0097   | 0.25  | 0.067  | 0.049   | 1.01    | 0.026   | .     | .        | 0.17    | 0.0049 | .      | .        | (0.004) | .       | .       | .        | .        | .        | .      | .    |
| IARM 31E    | 0.417  | 0.74  | 0.008  | 0.002    | 0.27  | 0.050  | 1.69    | 0.81    | 0.031   | .     | 0.005    | 0.264   | 0.0042 | 0.002  | 0.0030   | 0.0038  | <0.01   | (0.003) | (0.0003) | <0.005   | (0.001)  | 0.0031 | 14   |
| IARM 31C    | 0.413  | 0.78  | 0.013  | 0.0072   | 0.24  | 0.178  | 1.75    | 0.84    | 0.019   | .     | 0.012    | 0.28    | 0.0076 | 0.0042 | 0.003    | 0.005   | 0.008   | 0.0056  | (0.0003) | 0.0018   | (0.0003) | 0.010  | .    |
| IARM 31D    | 0.4120 | 0.79  | 0.009  | 0.0053   | 0.264 | 0.171  | 1.71    | 0.830   | 0.023   | .     | 0.012    | 0.238   | 0.0084 | 0.006  | 0.003    | 0.005   | 0.009   | 0.006   | (0.0002) | 0.0013   | <0.005   | 0.010  | .    |
| IARM 30F    | 0.407  | 0.79  | 0.013  | 0.018    | 0.24  | 0.033  | 0.023   | 1.02    | 0.026   | .     | 0.005    | 0.204   | 0.0045 | 0.0014 | 0.002    | 0.004   | 0.002   | 0.005   | (0.0002) | 0.003    | 0.001    | 0.007  | .    |
| BCS 114     | 0.403  | 0.416 | 0.0044 | 0.0046   | 0.295 | 0.358  | 1.502   | 0.187   | 0.078   | .     | 0.0171   | 0.184   | 0.0043 | 0.0042 | 0.0096   | 0.0086  | .       | 0.0025  | 0.0008   | .        | .        | 0.041  | 51   |
| BCS 112     | 0.394  | 0.436 | 0.0043 | 0.0026   | 0.289 | 0.149  | 1.461   | 1.236   | 0.0148  | .     | 0.0175   | 0.190   | 0.0024 | 0.0065 | 0.0100   | .       | .       | 0.0021  | 0.0007   | .        | .        | 0.0086 | .    |
| IARM 30D    | 0.391  | 0.83  | 0.013  | 0.020    | 0.244 | 0.241  | 0.159   | 0.978   | 0.035   | .     | 0.013    | 0.220   | 0.0097 | 0.002  | 0.002    | 0.003   | (0.004) | 0.008   | 0.0004   | 0.0014   | (0.0003) | 0.017  | .    |
| BAM 129-2   | 0.373  | 0.726 | 0.0075 | 0.0044   | 0.380 | 0.131  | .       | 1.469   | 0.873   | .     | .        | .       | 0.011  | .      | .        | (0.008) | .       | (0.026) | .        | .        | .        | .      | .    |
| JSS 507-5   | 0.36   | 0.76  | 0.015  | (0.0079) | 0.20  | 0.17   | 0.075   | 0.99    | 0.022   | .     | .        | 0.21    | 0.0102 | .      | .        | .       | .       | .       | .        | .        | .        | .      | .    |
| JK 7B       | 0.342  | 0.697 | 0.0057 | 0.0064   | 0.267 | 0.021  | 1.34    | 1.34    | 0.014   | 0.010 | .        | 0.182   | 0.0050 | .      | .        | 0.004   | .       | .       | .        | .        | .        | .      | .    |
| ECRM 184-1  | 0.333  | 0.528 | 0.0047 | 0.0032   | 0.218 | 0.060  | 3.318   | 1.287   | 0.0522  | .     | 0.0560   | 0.457   | 0.0051 | .      | .        | 0.108   | .       | 0.0180  | .        | .        | .        | .      | .    |
| JSS 501-6   | 0.318  | 0.738 | 0.0232 | 0.0129   | 0.246 | 0.1034 | 0.063   | 1.039   | 0.0322  | .     | .        | 0.218   | 0.0058 | .      | 0.0210   | .       | .       | .       | .        | .        | .        | .      | .    |
| IARM 143C   | 0.297  | 0.56  | 0.006  | 0.011    | 0.21  | 0.22   | 0.155   | 0.95    | 0.038   | .     | 0.011    | 0.22    | 0.0089 | 0.002  | 0.002    | 0.003   | 0.002   | 0.008   | 0.0002   | 0.0014   | (0.001)  | 0.020  | .    |
| IARM 33D    | 0.209  | 0.593 | 0.009  | 0.023    | 0.207 | 0.072  | 1.78    | 0.139   | 0.026   | .     | 0.008    | 0.229   | 0.0053 | 0.002  | 0.003    | 0.002   | <0.005  | 0.0035  | 0.0002   | 0.0013   | <0.001   | 0.005  | .    |
| IARM 155B   | 0.207  | 0.635 | 0.009  | 0.028    | 0.313 | 0.152  | 3.57    | 0.149   | 0.027   | .     | 0.011    | 0.239   | 0.0080 | 0.0024 | 0.003    | 0.003   | (0.01)  | 0.0038  | 0.0002   | 0.0017   | 0.0005   | 0.008  | .    |
| IARM 155C   | 0.204  | 0.550 | 0.009  | 0.025    | 0.286 | 0.130  | 3.36    | 0.099   | 0.027   | .     | 0.011    | 0.265   | 0.0079 | 0.002  | 0.0019   | 0.002   | <0.01   | 0.004   | 0.0002   | 0.0018   | (0.001)  | 0.007  | .    |
| JSS 517-7   | 0.200  | 0.826 | 0.0107 | 0.0084   | 0.250 | 0.0132 | 3.04    | 1.75    | (0.006) | .     | .        | 0.516   | 0.0061 | .      | .        | (0.003) | .       | .       | .        | .        | .        | .      | .    |
| ECRM 180-1  | 0.197  | 1.286 | 0.0174 | 0.0249   | 0.362 | 0.115  | 0.096   | 1.250   | .       | .     | .        | .       | 0.0068 | .      | .        | .       | .       | 0.030   | .        | .        | .        | .      | .    |
| ECRM 187-1C | 0.195  | 1.354 | 0.014  | 0.025    | 0.026 | 0.161  | 0.096   | 1.186   | 0.046   | .     | 0.014    | .       | 0.014  | .      | .        | .       | .       | 0.018   | 0.0004   | .        | .        | 0.011  | .    |
| IARM 33B    | 0.19   | 0.54  | 0.010  | 0.014    | 0.22  | 0.15   | 1.68    | 0.17    | 0.022   | .     | 0.010    | 0.22    | 0.0070 | 0.003  | 0.002    | 0.002   | (<0.01) | 0.005   | 0.0002   | 0.0020   | (<0.01)  | 0.010  | .    |
| IARM 33C    | 0.184  | 0.562 | 0.009  | 0.017    | 0.25  | 0.223  | 1.71    | 0.133   | 0.025   | .     | 0.008    | 0.236   | 0.0078 | 0.002  | 0.0014   | 0.0021  | 0.0026  | (0.005) | (0.0002) | 0.0021   | <0.002   | 0.009  | .    |
| JSS 513-7   | 0.173  | 0.84  | 0.016  | 0.021    | 0.29  | 0.011  | 0.024   | 1.14    | 0.034   | .     | .        | (0.005) | 0.0077 | .      | .        | 0.006   | .       | .       | .        | .        | .        | .      | .    |
| IPT 97      | 0.165  | 1.11  | 0.015  | 0.026    | 0.231 | 0.129  | 0.227   | 1.22    | .       | 0.028 | 0.012    | 0.064   | 0.0119 | 0.023  | 0.002    | 0.024   | .       | .       | 0.0022   | .        | .        | .      | .    |
| ECRM 193-1C | 0.14   | 0.97  | 0.007  | 0.009    | 0.40  | 0.60   | 1.18    | 0.18    | 0.025   | .     | 0.007    | 0.35    | 0.0108 | 0.0232 | (0.0013) | (0.002) | .       | 0.0062  | .        | .        | .        | .      | .    |
| IARM 35H *  | 0.14   | 0.56  | 0.004  | 0.028    | 0.56  | 0.032  | 0.071   | 1.11    | 0.028   | .     | 0.004    | 0.47    | 0.0076 | 0.002  | 0.002    | 0.004   | 0.004   | 0.003   | 0.0004   | 0.0023   | 0.001    | 0.002  | .    |
| IARM 36B    | 0.14   | 0.49  | 0.010  | 0.038    | 0.21  | 0.13   | 0.18    | 2.18    | 0.030   | .     | 0.012    | 0.95    | 0.0102 | 0.004  | 0.003    | 0.006   | (<0.01) | 0.009   | (0.002)  | 0.0018   | (0.003)  | 0.008  | .    |
| IARM 38B    | 0.130  | 0.427 | 0.023  | 0.013    | 0.78  | 0.119  | 0.15    | 8.84    | 0.032   | .     | 0.017    | 0.94    | 0.0192 | 0.007  | 0.004    | 0.014   | (0.01)  | 0.01    | 0.0004   | 0.0030   | <0.001   | 0.010  | 30   |
| IARM 35B    | 0.13   | 0.45  | 0.006  | 0.015    | 0.58  | 0.11   | 0.084   | 1.12    | 0.016   | .     | 0.008    | 0.46    | 0.0079 | 0.003  | 0.003    | 0.005   | (<0.01) | 0.006   | 0.0005   | 0.0016   | (<0.01)  | 0.006  | .    |
| IARM 35F    | 0.126  | 0.50  | 0.009  | 0.020    | 0.57  | 0.030  | 0.047   | 1.16    | 0.036   | .     | 0.004    | 0.48    | 0.0060 | 0.003  | 0.0027   | 0.004   | 0.004   | <0.01   | 0.0003   | 0.0016   | <0.003   | 0.002  | 12   |
| IARM 35D ** | 0.124  | 0.51  | 0.008  | 0.017    | 0.57  | 0.061  | 0.047   | 1.20    | 0.029   | .     | 0.006    | 0.46    | 0.0070 | 0.003  | 0.002    | 0.004   | 0.004   | 0.003   | 0.0002   | (0.001)  | <0.0005  | 0.005  | 11   |
| IARM 37B    | 0.119  | 0.431 | 0.011  | 0.016    | 0.235 | 0.137  | 0.11    | 4.82    | 0.025   | .     | 0.017    | 0.470   | 0.0155 | 0.005  | 0.0021   | 0.012   | 0.013   | 0.006   | 0.0002   | 0.0024   | (0.0003) | 0.008  | .    |
| IARM 156B   | 0.117  | 0.59  | 0.008  | 0.001    | 0.32  | 0.116  | 3.24    | 1.31    | 0.065   | .     | 0.010    | 0.105   | 0.0019 | 0.004  | 0.005    | 0.005   | <0.01   | 0.004   | 0.0011   | <0.003   | .        | 0.006  | (20) |
| IARM 35C    | 0.115  | 0.44  | 0.012  | 0.014    | 0.56  | 0.271  | 0.102   | 1.09    | 0.029   | .     | 0.011    | 0.52    | 0.0093 | 0.002  | 0.003    | 0.005   | (0.005) | (0.005) | 0.0004   | 0.0016   | (0.001)  | 0.017  | .    |
| IARM 238A   | 0.110  | 0.40  | 0.007  | 0.010    | 0.31  | 0.17   | 0.256   | 8.23    | 0.03    | .     | 0.026    | 0.94    | 0.047  | 0.086  | 0.003    | 0.22    | <0.03   | 0.012   | 0.0004   | 0.003    | .        | 0.013  | 20   |

| Number | C | Mn | P | S | Si | Cu | Ni | Cr | Al | Als | Co | Mo | N | Nb | Ti | V | W | As | B | O | Pb | Sn | Zr* |
|--------|---|----|---|---|----|----|----|----|----|-----|----|----|---|----|----|---|---|----|---|---|----|----|-----|
|--------|---|----|---|---|----|----|----|----|----|-----|----|----|---|----|----|---|---|----|---|---|----|----|-----|

\* Provisional Analysis

\*\* IARM 35D also contains Ca: 0.0004, and Sb: 0.002

CRM MILD STEEL CHIPS

| Number       | C     | Mn     | P       | S        | Si      | Cu           | Ni      | Cr    | Al       | Als   | Co     | Mo     | Ti     | V           | W     | As     | B     | Bi | Pb      | Sb     | Sn     | Units |       |
|--------------|-------|--------|---------|----------|---------|--------------|---------|-------|----------|-------|--------|--------|--------|-------------|-------|--------|-------|----|---------|--------|--------|-------|-------|
| ECRM 185-1   | 1.172 | (0.41) | (0.02)  | 0.0209   | (0.25)  | (0.17)       | (0.17)  | 0.990 | .        | .     | .      | .      | .      | .           | .     | .      | .     | .  | .       | .      | .      | 0.021 | 100 g |
| ECRM 188-1   | 1.094 | .      | .       | 0.0113   | .       | .            | (0.28)  | 1.538 | .        | .     | (0.06) | (0.17) | .      | (0.02)      | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1251    | 1.090 | 0.433  | 0.0112  | (0.0005) | 0.431   | 0.158        | 0.134   | 1.442 | 0.0363   | .     | .      | 0.060  | 0.0074 | .           | .     | 0.023  | .     | .  | .       | 0.0025 | 0.0273 | 150 g |       |
| NCS HC21201b | 0.990 | 0.315  | 0.0065  | 0.0054   | 0.239   | 0.086        | 0.042   | 1.47  | 0.037    | 0.035 | 0.0093 | 0.032  | 0.0035 | .           | .     | 0.0092 | .     | .  | 0.00017 | 0.0045 | 0.020  | 100 g |       |
| CMSI 1101    | 0.91  | 2.09   | 0.054   | 0.030    | 0.056   | 0.20         | 0.076   | 0.10  | .        | 0.015 | .      | .      | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| BAM 126-1    | 0.841 | 1.817  | 0.0092  | 0.0050   | (0.241) | (0.098)      | (0.038) | 0.317 | .        | .     | .      | .      | .      | 0.143       | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| BCS 403/2    | 0.750 | 1.677  | 0.055   | 0.0381   | 0.209   | 0.221        | 0.223   | 0.463 | 0.0485   | .     | .      | 0.088  | .      | 0.341       | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1103    | 0.70  | 0.28   | 0.083   | 0.064    | 0.041   | 0.22         | 0.93    | 1.45  | (0.0007) | .     | .      | .      | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| IRSID 113-1  | 0.680 | 0.586  | (0.013) | (0.006)  | 0.249   | 0.146        | 1.744   | 0.816 | .        | .     | .      | 0.413  | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1192 *  | 0.569 | 1.90   | 0.038   | 0.0038   | 0.204   | 0.116        | 0.413   | 0.018 | 0.279    | 0.276 | .      | .      | 0.064  | 0.283       | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| NCS HC28212  | 0.506 | 0.664  | 0.014   | 0.022    | 0.304   | 0.208        | 0.109   | 1.04  | 0.0049   | 0.002 | 0.014  | 0.016  | 0.0021 | 0.154       | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| IPT 31       | 0.497 | 0.794  | 0.021   | 0.009    | 0.146   | 0.251        | 0.106   | 1.15  | .        | 0.087 | .      | .      | .      | 0.250       | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| BCS 407/2    | 0.490 | 0.195  | 0.038   | 0.0105   | 0.66    | 0.397        | 0.527   | 3.03  | 0.040    | .     | .      | 0.83   | .      | 0.19        | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1183    | 0.476 | 0.675  | 0.0201  | 0.016    | 0.273   | 0.203        | 1.25    | 0.62  | .        | 0.016 | .      | .      | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| JSS 150-16   | 0.475 | 0.137  | 0.0346  | 0.0296   | 0.219   | ( $<0.003$ ) | 3.98    | 0.298 | 0.023    | .     | .      | 0.201  | .      | 0.0195      | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| BCS 407/1    | 0.47  | 0.047  | 0.030   | 0.010    | 0.59    | 0.57         | 0.59    | 2.95  | .        | .     | .      | .      | .      | 0.78        | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1156    | 0.467 | 0.687  | 0.025   | 0.022    | 0.472   | .            | 1.515   | 1.03  | .        | 0.22  | .      | .      | .      | 0.147       | 0.69  | .      | .     | .  | .       | .      | .      | .     | 150 g |
| CMSI 1131    | 0.45  | 0.12   | 0.038   | 0.025    | 0.11    | 0.298        | 1.80    | 1.20  | 0.100    | .     | .      | 0.26   | .      | .           | 0.056 | .      | 0.010 | .  | .       | .      | .      | .     | 150 g |
| ECRM 082-1   | 0.415 | 0.769  | 0.013   | 0.030    | 0.235   | 0.025        | 0.027   | 0.018 | .        | .     | .      | .      | .      | .           | .     | .      | .     | .  | .       | .      | 0.149  | .     | 100 g |
| IPT 17A      | 0.415 | 0.724  | 0.014   | 0.021    | 0.260   | 0.074        | 1.76    | 0.820 | .        | .     | 0.039  | 0.259  | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| CMSI 1125    | 0.409 | 0.742  | 0.015   | 0.011    | 0.376   | 0.086        | 0.063   | 1.053 | .        | .     | .      | 0.0088 | .      | 0.0023      | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| IRSID 107-1  | 0.407 | 0.611  | .       | .        | 0.286   | 0.108        | 0.191   | 1.443 | 0.345    | .     | .      | .      | 0.323  | .           | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| IPT 25       | 0.400 | 0.902  | 0.012   | 0.007    | 0.222   | 0.040        | 0.072   | 1.01  | .        | .     | .      | 0.280  | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| ECRM 155-1   | 0.40  | 0.56   | 0.019   | 0.012    | 0.23    | (0.17)       | 1.43    | 1.08  | (0.01)   | .     | .      | 0.34   | .      | ( $<0.01$ ) | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| ECRM 190-1C  | 0.395 | 1.28   | 0.0112  | 0.0044   | 0.278   | .            | 0.934   | 2.18  | .        | .     | 0.034  | 0.410  | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |
| JSS 151-16   | 0.393 | 1.697  | 0.0297  | 0.0174   | 0.103   | 0.0969       | 2.92    | 0.101 | 0.0279   | .     | .      | 0.0540 | .      | 0.0503      | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| CMSI 1153    | 0.39  | 4.25   | 0.0246  | 0.011    | 0.335   | 0.275        | 0.238   | 1.44  | 0.93     | .     | .      | 0.17   | .      | .           | .     | .      | .     | .  | .       | .      | .      | .     | 150 g |
| ECRM 152-1   | 0.39  | 1.61   | 0.032   | 0.043    | 0.18    | 0.21         | 0.15    | 0.09  | .        | .     | .      | 0.26   | .      | ( $<0.01$ ) | .     | .      | .     | .  | .       | .      | .      | .     | 100 g |

| Number      | C      | Mn     | P       | S       | Si     | Cu     | Ni    | Cr     | Al      | Als   | Co      | Mo      | Ti    | V       | W     | As      | B     | Bi | Pb | Sb        | Sn       | Units   |       |
|-------------|--------|--------|---------|---------|--------|--------|-------|--------|---------|-------|---------|---------|-------|---------|-------|---------|-------|----|----|-----------|----------|---------|-------|
| IRSID 102-1 | 0.389  | 0.367  | 0.012   | (0.006) | 0.281  | 0.169  | 4.40  | 0.261  | .       | .     | .       | 1.20    | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| IRSID 108-1 | 0.384  | 0.690  | 0.0176  | 0.017   | 0.340  | 0.118  | 0.215 | 2.92   | .       | 0.017 | .       | 0.538   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| CMSI 1155   | 0.375  | 0.691  | 0.026   | 0.032   | 0.345  | 0.164  | 0.26  | 0.999  | .       | .     | .       | .       | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| CMSI 1154   | 0.367  | 0.56   | 0.018   | 0.027   | 0.375  | .      | 3.95  | 0.957  | .       | .     | .       | 0.143   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| GBW 01334a  | 0.358  | 0.573  | 0.014   | 0.0086  | 0.272  | 0.150  | 0.020 | 1.03   | .       | 0.061 | .       | 0.137   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| IRSID 023-1 | 0.331  | 0.667  | 0.021   | 0.016   | 0.264  | .      | .     | .      | .       | .     | .       | .       | .     | .       | .     | .       | .     | .  | .  | 0.280     | .        | .       | 100 g |
| CMSI 1152   | 0.33   | 1.02   | 0.032   | 0.024   | 0.40   | 0.17   | 0.26  | 0.18   | .       | .     | .       | 1.37    | .     | 0.25    | 0.50  | .       | 0.034 | .  | .  | .         | .        | .       | 150 g |
| ECRM 153-1  | 0.315  | 0.81   | 0.011   | 0.027   | 0.079  | 0.088  | 2.55  | 0.66   | (0.003) | .     | .       | 0.58    | .     | .       | .     | .       | .     | .  | .  | .         | 0.011    | .       | 100 g |
| IPT 36      | 0.315  | 0.430  | 0.016   | 0.004   | 0.291  | 0.129  | 0.217 | 1.25   | .       | 0.86  | .       | 0.201   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| CMSI 1160   | 0.302  | 0.503  | 0.039   | 0.061   | 0.278  | 0.257  | 0.278 | 0.94   | 0.011   | .     | .       | 0.244   | .     | 0.217   | 0.056 | .       | .     | .  | .  | .         | .        | .       | 150 g |
| BCS 408/2   | 0.289  | 0.557  | 0.056   | 0.030   | 0.237  | 0.694  | 4.13  | 0.111  | 0.154   | .     | .       | 0.098   | .     | 0.067   | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| BCS 408/1   | 0.285  | 0.51   | 0.037   | 0.028   | 0.23   | 0.66   | 4.45  | 0.102  | .       | .     | .       | 0.09    | .     | 0.031   | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| BCS 408     | 0.28   | 0.64   | 0.043   | 0.030   | 0.24   | 0.73   | 4.58  | 0.090  | .       | .     | .       | 0.14    | .     | 0.19    | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| JSS 152-16  | 0.277  | 0.440  | 0.0174  | 0.0056  | 0.387  | 0.500  | 1.98  | 0.584  | 0.0212  | .     | .       | 1.010   | .     | 0.100   | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| NCS HC28211 | 0.265  | 0.934  | 0.013   | 0.014   | 0.312  | 0.148  | 0.082 | 1.13   | 0.0199  | 0.018 | 0.012   | 0.011   | 0.070 | 0.0038  | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| GBW 01356a  | 0.212  | 0.460  | 0.0174  | 0.0117  | 0.270  | 0.031  | .     | 0.972  | .       | .     | .       | 0.191   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| NCS HC28209 | 0.202  | 1.02   | 0.017   | 0.011   | 0.225  | 0.141  | 0.047 | 1.21   | 0.0220  | 0.020 | 0.013   | .       | .     | 0.0035  | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| JSS 153-16  | 0.179  | 0.799  | 0.0103  | 0.0106  | 0.307  | 0.300  | 1.002 | 1.006  | 0.0201  | .     | .       | 1.314   | .     | 0.198   | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| GBW 01351   | 0.177  | 0.50   | 0.017   | 0.019   | 0.254  | 0.170  | 2.84  | 0.781  | 0.067   | .     | .       | 0.136   | .     | .       | 0.193 | .       | .     | .  | .  | .         | .        | .       | 150 g |
| JK 24C      | 0.1744 | .      | 0.0151  | 0.0010  | .      | .      | .     | 1.048  | .       | .     | .       | 0.578   | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| BCS 406/2   | 0.173  | 0.447  | 0.0102  | 0.043   | 0.342  | 0.289  | 1.62  | 2.001  | 0.013   | .     | .       | 0.98    | .     | 0.010   | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| NM 212      | 0.154  | 0.51   | 0.046   | 0.035   | 0.287  | .      | 3.05  | 0.84   | .       | .     | .       | .       | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| ECRM 106-2  | 0.153  | 0.727  | .       | .       | 0.238  | 0.078  | 1.430 | 1.030  | .       | .     | .       | 0.054   | .     | .       | .     | (0.057) | .     | .  | .  | .         | (0.0022) | (0.010) | 100 g |
| CMSI 1132   | 0.15   | 0.39   | 0.022   | 0.014   | 0.092  | 0.20   | 1.42  | 0.56   | 0.061   | .     | .       | 0.21    | .     | .       | 0.15  | .       | 0.075 | .  | .  | .         | .        | .       | 150 g |
| NCS HC23205 | 0.124  | 0.527  | 0.021   | 0.021   | 0.183  | 0.195  | 2.82  | 0.740  | 0.052   | .     | .       | 0.141   | .     | .       | 0.202 | .       | .     | .  | .  | .         | .        | .       | 100 g |
| SRM 2171    | 0.066  | 0.73   | 0.006   | 0.0012  | 0.338  | 1.47   | 3.35  | 0.550  | 0.019   | .     | .       | 0.546   | .     | 0.003   | .     | .       | .     | .  | .  | Nb: 0.024 | .        | .       | 150 g |
| SRM 179     | 0.027  | 0.094  | 0.006   | 0.026   | 3.19   | 0.056  | 0.050 | 0.022  | 0.0028  | .     | .       | 0.014   | .     | $<0.01$ | .     | .       | .     | .  | .  | .         | 0.004    | .       | 150 g |
| JSS 155-15  | 0.0360 | 0.178  | 0.00163 | 0.0045  | 0.490  | 0.385  | 0.173 | 3.09   | .       | .     | .       | 0.718   | .     | 0.396   | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| CMSI 1105   | 0.035  | 1.79   | 0.089   | 0.009   | 0.59   | 0.46   | 0.020 | 1.03   | .       | 0.59  | .       | .       | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 150 g |
| ECRM 154-1  | (0.31) | (0.62) | (0.020) | (0.009) | (0.22) | (0.14) | 3.54  | (0.05) | .       | .     | (0.037) | (0.029) | .     | .       | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |
| NM 234      | .      | 0.39   | .       | .       | 0.88   | 0.33   | 0.54  | 5.99   | .       | .     | .       | .       | .     | 0.69    | .     | .       | .     | .  | .  | .         | .        | .       | 100 g |

RM LOW ALLOY STEEL CHIPS, chart 1 of 2

analysis listed in mass % except \* which is mg/kg

C12X, DH: 50 g chips

BS CE: 150 g chips

all others: 100 g chips

| Number    | C      | Mn     | P      | S      | Si     | Cu     | Ni     | Cr     | Al     | Al.sol | Al.insol | Co     | Mo      | N      | Nb       | Ti     | V      |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|---------|--------|----------|--------|--------|
| BS CE26 * | 0.88   | 0.18   | 0.042  | 0.005  | 0.24   | .      | .      | .      | .      | .      | .        | .      | .       | .      | .        | .      | .      |
| C12X LA50 | 0.81   | 0.98   | 0.057  | 0.015  | 0.67   | 0.09   | 0.13   | 0.12   | 0.19   | .      | .        | .      | 0.19    | .      | .        | .      | 0.58   |
| C12X LA40 | 0.67   | 0.24   | 0.044  | 0.021  | 0.28   | 0.29   | 0.46   | 0.64   | 0.19   | .      | .        | .      | 0.46    | .      | .        | .      | 0.36   |
| BS CE24 * | 0.63   | 0.84   | 0.016  | 0.010  | 0.27   | 0.066  | 0.045  | 0.016  | 0.044  | .      | .        | 0.010  | 0.006   | .      | .        | .      | .      |
| IARM 170A | 0.56   | 0.019  | 0.039  | 0.025  | 0.010  | 0.005  | 1.51   | 2.55   | 0.032  | .      | .        | 0.004  | 1.57    | 0.0003 | 0.004    | 0.006  | 0.006  |
| IARM 34A  | 0.51   | 0.78   | 0.01   | 0.010  | 0.22   | 0.18   | 0.34   | 0.99   | 0.014  | .      | .        | 0.009  | 0.044   | 0.0076 | 0.003    | 0.003  | 0.17   |
| DH E2208  | 0.4843 | 0.8406 | 0.0144 | 0.0013 | 0.2616 | 0.0202 | 0.0416 | 0.9596 | 0.0271 | .      | .        | 0.0037 | 0.0105  | .      | 0.0005   | 0.0018 | 0.1325 |
| C12X LA30 | 0.48   | 1.50   | 0.032  | 0.04   | 0.13   | 0.20   | 0.31   | 0.37   | 0.06   | .      | .        | .      | 0.30    | .      | .        | .      | 0.19   |
| BS CSN-2C | 0.469  | 0.60   | 0.021  | 0.0305 | 0.17   | 0.073  | 0.071  | 0.072  | .      | .      | .        | .      | (0.006) | 0.0173 | .        | .      | .      |
| C12X 3570 | 0.45   | 0.24   | 0.016  | 0.062  | 0.23   | .      | .      | .      | 0.06   | .      | .        | 0.21   | .       | .      | (<0.001) | .      | 0.19   |
| IARM 30A  | 0.43   | 0.90   | 0.016  | 0.032  | 0.27   | 0.22   | 0.19   | 1.05   | 0.019  | .      | .        | 0.010  | 0.18    | 0.0105 | 0.001    | 0.002  | 0.004  |
| C12X 3560 | 0.36   | 0.44   | 0.049  | 0.031  | 0.37   | .      | .      | .      | 0.05   | .      | .        | 0.12   | .       | .      | 0.02     | .      | 0.09   |
| DH E2123  | 0.335  | 1.237  | 0.0166 | 0.0104 | 0.232  | 0.0172 | 0.0209 | 0.0316 | .      | 0.0289 | 0.0011   | 0.0035 | 0.00271 | .      | .        | 0.0465 | 0.0031 |
| IARM 169A | 0.31   | 0.21   | 0.033  | 0.065  | 0.79   | 0.31   | 2.50   | 2.19   | 0.30   | .      | .        | 0.005  | 0.95    | 0.0004 | 0.005    | 0.005  | 0.006  |
| C12X LA70 | 0.295  | 0.62   | 0.051  | 0.039  | 0.39   | 0.23   | 0.31   | 1.04   | 1.14   | .      | .        | 0.15   | 0.26    | .      | .        | .      | 0.24   |
| DH E2104  | 0.2913 | 1.081  | 0.0179 | 0.006  | 0.298  | 0.0368 | 0.0871 | 0.531  | .      | 0.0335 | 0.0023   | 0.0029 | 0.0403  | 0.004  | .        | 0.0316 | 0.0042 |
| C12X 3540 | 0.27   | 0.86   | 0.066  | 0.015  | 0.19   | .      | .      | .      | 0.01   | .      | .        | 0.03   | .       | .      | 0.07     | .      | 0.02   |
| C12X 3490 | 0.24   | 0.69   | 0.021  | 0.024  | 0.26   | 0.20   | 0.23   | 0.10   | 0.32   | .      | .        | 0.006  | 0.06    | .      | .        | 0.085  | 0.002  |
| C12X LA80 | 0.205  | 1.05   | 0.028  | 0.024  | 0.26   | 0.30   | 3.98   | 1.98   | 0.12   | .      | .        | 0.06   | 0.39    | .      | .        | .      | 0.05   |
| DH E2110  | 0.2035 | 1.483  | 0.0186 | 0.0169 | 0.500  | 0.056  | 0.0179 | 0.023  | .      | 0.0385 | 0.002    | 0.0042 | 0.00249 | .      | .        | 0.0014 | 0.0019 |
| C12X 3550 | 0.20   | 0.62   | 0.028  | 0.024  | 0.48   | .      | .      | .      | <0.01  | .      | .        | 0.05   | .       | .      | 0.02     | .      | 0.11   |
| IARM 182A | 0.20   | 0.90   | 0.028  | 0.023  | 0.25   | 0.23   | 0.50   | 0.56   | 0.020  | .      | .        | 0.011  | 0.18    | 0.0067 | 0.003    | 0.005  | 0.005  |
| IARM 32A  | 0.20   | 0.80   | 0.011  | 0.024  | 0.23   | 0.12   | 0.49   | 0.45   | 0.003  | .      | .        | 0.007  | 0.18    | 0.0093 | 0.003    | 0.002  | 0.068  |

| Number     | As      | B        | B.sol   | Ca*     | O*   | Pb      | Sb      | Sn      | W       | Zn      | Zr      |
|------------|---------|----------|---------|---------|------|---------|---------|---------|---------|---------|---------|
| BS CE 26 * | .       | .        | .       | .       | .    | .       | .       | .       | .       | .       | .       |
| C12X LA50  | .       | .        | .       | .       | .    | .       | .       | .       | .       | .       | .       |
| C12X LA40  | .       | .        | .       | .       | .    | .       | .       | .       | .       | .       | .       |
| BS CE 24 * | 0.0029  | .        | .       | .       | .    | .       | .       | .       | .       | .       | .       |
| IARM 170A  | (0.005) | (0.0002) | .       | (1)     | 3    | (<0.01) | .       | 0.002   | (0.018) | .       | (0.003) |
| IARM 34A   | (0.006) | (0.0002) | .       | .       | (14) | .       | .       | 0.009   | (0.02)  | .       | .       |
| DH E2208   | 0.004   | .        | .       | 26      | .    | .       | 0.0005  | 0.0004  | .       | .       | .       |
| C12X LA30  | .       | .        | .       | .       | .    | .       | .       | .       | .       | .       | .       |
| BS CSN-2C  | .       | .        | .       | 33      | .    | .       | .       | .       | .       | .       | .       |
| C12X 3570  | .       | 0.014    | .       | .       | .    | .       | <0.005  | .       | .       | .       | .       |
| IARM 30A   | (0.006) | (0.0001) | .       | .       | (31) | .       | .       | 0.009   | (<0.01) | .       | .       |
| C12X 3560  | .       | 0.007    | .       | .       | .    | .       | 0.02    | .       | .       | .       | 0.01    |
| DH E2123   | 0.003   | 0.0022   | 0.0019  | <0.0001 | .    | 0.00008 | 0.00041 | 0.00062 | .       | 0.00044 | .       |
| IARM 169A  | (0.009) | (0.001)  | .       | .       | 6    | (0.002) | .       | 0.003   | 0.65    | .       | .       |
| C12X LA70  | .       | .        | .       | .       | .    | .       | .       | 0.05    | .       | .       | .       |
| DH E2104   | 0.0079  | 0.00347  | 0.00304 | 0.0002  | .    | 0.00157 | 0.00048 | 0.0005  | .       | 0.0006  | .       |
| C12X 3540  | .       | 0.0002   | .       | .       | .    | .       | 0.05    | .       | .       | .       | 0.03    |
| C12X 3490  | 0.005   | .        | .       | .       | .    | .       | .       | 0.16    | 0.08    | .       | .       |
| C12X LA80  | .       | .        | .       | .       | .    | .       | .       | 0.10    | .       | .       | .       |
| DH E2110   | 0.006   | 0.00006  | .       | 0.0003  | .    | 0.00048 | 0.0008  | 0.00178 | .       | 0.00053 | .       |
| C12X 3550  | .       | 0.001    | .       | .       | .    | .       | 0.08    | .       | .       | .       | <0.01   |
| IARM 182A  | .       | 0.0003   | .       | 0.003%  | 14   | 0.14    | .       | 0.012   | (0.008) | .       | (0.003) |
| IARM 32A   | (0.005) | (0.0002) | .       | .       | (37) | .       | .       | 0.006   | .       | .       | .       |

\* Clearance Sale Items

\* Clearance Sale Items



**RESULFURIZED STEEL**

# = class, where 1 = CRM and 2 = RM \* CMSI 1110 lists soluble Aluminum and Boron, and also contains Se: 0.006 CMSI 1110: 150 g IPT 43: 120 g all others: 100 g

| # | Number      | S      | C     | Mn    | P       | Si      | Cu     | Ni     | Cr     | Al      | Co      | Mo     | N       | Ti     | V      | W        | As     | B        | Bi    | Nb       | O        | Pb      | Sb     | Sn     | Zn     |
|---|-------------|--------|-------|-------|---------|---------|--------|--------|--------|---------|---------|--------|---------|--------|--------|----------|--------|----------|-------|----------|----------|---------|--------|--------|--------|
| 2 | C14X FM10   | 0.65   | 0.50  | 0.54  | 0.029   | 0.07    | .      | .      | .      | .       | .       | 0.34   | .       | .      | .      | .        | .      | .        | .     | .        | .        | .       | .      | .      | .      |
| 1 | ECRM 085-1C | 0.336  | 0.067 | 0.977 | 0.062   | 0.008   | 0.291  | .      | .      | .       | 0.019   | .      | .       | .      | 0.0021 | .        | .      | .        | .     | .        | .        | 0.0010  | 0.0073 | .      | 0.0025 |
| 1 | IPT 41B     | 0.322  | 0.072 | 1.08  | 0.057   | 0.022   | 0.005  | 0.012  | 0.037  | .       | .       | .      | .       | .      | .      | .        | .      | .        | .     | .        | .        | 0.220   | .      | .      | .      |
| 1 | BAM 039-2   | 0.310  | 0.107 | 1.274 | 0.083   | 0.011   | 0.117  | 0.051  | 0.048  | .       | .       | .      | 0.0113  | .      | .      | .        | .      | .        | .     | .        | .        | 0.207   | .      | .      | .      |
| 1 | IRSID 022-1 | 0.300  | 0.115 | 0.797 | 0.057   | .       | .      | .      | .      | .       | .       | .      | .       | .      | .      | .        | .      | .        | .     | .        | .        | .       | .      | .      | .      |
| 1 | IARM 233A   | 0.30   | 0.082 | 0.80  | 0.072   | 0.010   | 0.096  | 0.038  | 0.045  | 0.002   | 0.0046  | 0.011  | 0.0057  | 0.001  | 0.002  | 0.002    | 0.004  | 0.001    | 0.14  | (0.001)  | 0.013    | 0.003   | 0.002  | 0.011  | .      |
| 1 | IARM 199B   | 0.29   | 0.45  | 1.45  | 0.009   | 0.18    | 0.089  | 0.035  | 0.048  | 0.003   | 0.007   | 0.008  | 0.0059  | 0.002  | 0.003  | 0.002    | 0.005  | 0.002    | .     | (0.002)  | (0.0048) | (<0.01) | .      | 0.005  | .      |
| 2 | IARM 199A   | 0.27   | 0.44  | 1.47  | 0.008   | 0.16    | 0.11   | 0.10   | 0.10   | (0.002) | 0.007   | 0.031  | 0.0071  | 0.001  | 0.003  | .        | .      | .        | .     | 0.003    | 0.0021   | .       | .      | 0.007  | .      |
| 1 | IARM 206A   | 0.26   | 0.068 | 0.90  | 0.069   | (0.019) | 0.098  | 0.044  | 0.041  | 0.003   | 0.009   | 0.012  | 0.0119  | 0.0015 | 0.002  | .        | 0.008  | 0.0006   | .     | (0.002)  | (0.019)  | .       | .      | 0.005  | .      |
| 1 | IRSID 024-1 | 0.235  | 0.104 | 0.726 | 0.018   | 0.139   | .      | .      | .      | .       | .       | .      | .       | .      | .      | .        | .      | .        | .     | .        | .        | 0.287   | .      | .      | .      |
| 1 | ECRM 058-2C | 0.1712 | 0.424 | 1.186 | 0.0098  | 0.1080  | 0.261  | 0.199  | 0.1211 | .       | .       | 0.0589 | 0.0107  | .      | .      | .        | 0.0095 | .        | .     | .        | .        | .       | .      | .      | .      |
| 2 | C14X FM20   | 0.134  | 0.10  | 1.37  | 0.053   | 0.14    | .      | .      | .      | .       | .       | 0.06   | .       | .      | .      | .        | .      | .        | .     | .        | .        | .       | .      | .      | .      |
| 1 | IARM 29C    | 0.13   | 0.18  | 1.20  | 0.011   | 0.28    | 0.15   | 0.075  | 0.076  | 0.003   | (0.01)  | 0.016  | 0.010   | 0.0015 | 0.003  | (0.002)  | 0.009  | 0.003    | .     | (0.003)  | 0.005    | <0.001  | .      | 0.008  | .      |
| 1 | C12X 3520   | 0.126  | 0.275 | 0.200 | 0.070   | 0.414   | 0.140  | 0.376  | 0.313  | 0.257   | 0.020   | 0.261  | (0.006) | 0.291  | 0.029  | 0.202    | 0.036  | .        | 0.008 | 0.104    | .        | 0.006   | 0.022  | 0.110  | 0.005  |
| 1 | ECRM 051-1  | 0.126  | 0.181 | 1.18  | (0.025) | (0.11)  | (0.15) | (0.14) | (0.05) | .       | .       | .      | .       | .      | .      | .        | .      | .        | .     | .        | .        | .       | .      | .      | .      |
| 1 | CMSI 1110 * | 0.122  | 0.78  | 0.675 | 0.013   | 0.88    | 0.036  | 0.021  | 0.019  | 0.10    | .       | 0.65   | .       | 0.039  | 0.33   | .        | .      | 0.0058   | .     | .        | .        | .       | .      | .      | .      |
| 1 | IARM 29D    | 0.1153 | 0.17  | 1.07  | 0.018   | 0.050   | 0.085  | 0.042  | 0.076  | 0.0033  | (0.023) | 0.016  | 0.0057  | 0.0014 | 0.0018 | (0.0030) | 0.0046 | (0.0003) | .     | (0.0027) | (0.0082) | .       | .      | 0.0072 | .      |
| 1 | IPT 43      | 0.112  | 0.310 | 1.42  | 0.029   | 0.207   | 0.056  | 0.056  | 0.098  | .       | .       | 0.013  | .       | .      | .      | .        | .      | .        | .     | .        | .        | .       | .      | .      | .      |

| # | Number | S | C | Mn | P | Si | Cu | Ni | Cr | Al | Co | Mo | N | Ti | V | W | As | B | Bi | Nb | O | Pb | Sb | Sn | Zn |
|---|--------|---|---|----|---|----|----|----|----|----|----|----|---|----|---|---|----|---|----|----|---|----|----|----|----|
|---|--------|---|---|----|---|----|----|----|----|----|----|----|---|----|---|---|----|---|----|----|---|----|----|----|----|

**CRM RESULFURIZED STEEL POWDER**

| Number      | C     | Mn    | P     | S     | Gravimetric Si | Photometric Si | SiO <sub>2</sub> | Units        |
|-------------|-------|-------|-------|-------|----------------|----------------|------------------|--------------|
| NCS HC56104 | 0.399 | 1.09  | 0.034 | 0.329 | 0.280          | 0.274          | (0.0069)         | Powder 150 g |
| NCS HC56103 | 0.334 | 1.91  | 0.048 | 0.236 | 0.531          | 0.518          | (0.0069)         | Powder 150 g |
| NCS HC56101 | 0.312 | 0.475 | 0.152 | 0.057 | 0.167          | 0.159          | (0.0106)         | Powder 150 g |
| NCS HC56102 | 0.251 | 0.804 | 0.104 | 0.129 | 0.527          | 0.478          | (0.053)          | Powder 150 g |

**SILICON STEEL CHIPS WITH NITROGEN**

# = class, where 1 = CRM and 2 = RM \* VS S9/4 also contains Mg: 0.0007, Pb: 0.0029, and Sb: 0.0009

| # | Number      | Si    | C      | Mn     | P      | S      | Cu     | Ni     | Cr     | Al     | Als    | As      | B*  | Co     | Mo     | N       | Nb     | O* | Sn      | Ti     | V      | W     | Other |            |
|---|-------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|-----|--------|--------|---------|--------|----|---------|--------|--------|-------|-------|------------|
| 1 | ECRM 191-2C | 3.267 | 0.0043 | 0.1334 | 0.0087 | 0.0029 | 0.0165 | 0.0224 | 0.0314 | 0.985  | .      | 0.0018  | .   | .      | 0.0020 | 0.00105 | .      | .  | 0.0050  | 0.0024 | .      | .     | .     | .          |
| 1 | NCS HC14213 | 3.18  | 0.076  | 0.081  | 0.0090 | 0.023  | 0.066  | .      | .      | .      | 0.031  | .       | .   | .      | .      | 0.0081  | .      | .  | .       | .      | 0.138  | .     | .     | .          |
| 1 | NCS HC14214 | 3.15  | 0.044  | 0.060  | 0.0081 | 0.025  | 0.162  | .      | .      | .      | 0.014  | .       | .   | .      | .      | 0.0040  | .      | .  | .       | .      | .      | .     | .     | .          |
| 1 | VS S9/4 *   | 3.12  | 0.040  | 0.066  | 0.0063 | 0.0034 | 0.139  | 0.097  | 0.044  | 0.0106 | 0.0074 | 0.0061  | .   | 0.0101 | 0.0050 | 0.0130  | .      | .  | 0.0040  | 0.0057 | 0.0009 | .     | .     | Zn: 0.0006 |
| 2 | IARM 173A   | 1.70  | 0.85   | 0.011  | 0.015  | 0.004  | 0.72   | 0.024  | 4.39   | 0.48   | .      | (<0.01) | 4   | 0.010  | 0.015  | 0.0006  | 0.006  | 7  | 0.003   | 0.004  | 0.28   | 0.041 | .     | .          |
| 1 | NCS HC14216 | 1.57  | 0.0030 | 0.234  | 0.0090 | 0.0066 | 0.035  | .      | .      | .      | 0.027  | .       | .   | .      | .      | 0.0048  | .      | .  | .       | .      | .      | .     | .     | .          |
| 2 | IARM 172A   | 1.29  | 0.78   | 0.010  | 0.007  | 0.004  | 0.40   | 0.025  | 3.52   | 0.39   | .      | (0.005) | 3   | 0.006  | 0.014  | 0.0004  | 0.004  | 6  | 0.003   | 0.003  | 0.003  | 0.038 | .     | .          |
| 1 | BCS 404/2   | 1.121 | 0.696  | 0.532  | 0.0479 | 0.0228 | 0.427  | 0.393  | 0.774  | 0.017  | .      | .       | .   | .      | 0.307  | 0.0089  | .      | .  | .       | .      | 0.107  | .     | .     | .          |
| 2 | IARM 167A   | 1.08  | 0.003  | 1.36   | 0.019  | 0.087  | 0.95   | 1.00   | 0.016  | 0.64   | .      | (0.004) | (2) | 0.003  | 1.25   | 0.0005  | 0.006  | 7  | 0.003   | 0.003  | 0.59   | 1.19  | .     | .          |
| 1 | ECRM 181-1  | 1.054 | 0.0589 | 1.047  | 0.018  | 0.035  | 0.174  | 0.070  | 0.126  | 0.022  | .      | .       | .   | .      | .      | 0.0068  | .      | .  | .       | .      | .      | .     | .     | .          |
| 2 | IARM 166A   | 0.91  | 0.003  | 1.29   | 0.005  | 0.073  | 0.64   | 0.77   | 0.014  | 0.55   | .      | (0.004) | (2) | 0.004  | 1.08   | 0.0002  | 0.006  | 6  | (0.003) | 0.002  | 0.40   | 1.02  | .     | .          |
| 1 | ECRM 276-1  | 0.985 | 0.364  | 0.368  | 0.012  | 0.011  | 0.083  | 0.178  | 5.29   | .      | .      | .       | .   | .      | 1.47   | 0.021   | .      | .  | .       | .      | 0.541  | .     | .     | .          |
| 1 | BCS 113     | 0.931 | 0.837  | 1.207  | 0.0595 | 0.0294 | 0.179  | 0.0784 | 1.248  | 0.0151 | .      | .       | 66  | 0.0415 | 0.056  | 0.0109  | 0.0487 | .  | 0.0067  | 0.0390 | 0.201  | 0.012 | .     | Zr: 0.0029 |
| 1 | NCS HC14215 | 0.477 | 0.0032 | 0.256  | 0.080  | 0.0076 | 0.033  | .      | .      | .      | 0.022  | .       | .   | .      | .      | 0.0020  | .      | .  | .       | .      | .      | .     | .     | .          |

| # | Number | Si | C | Mn | P | S | Cu | Ni | Cr | Al | Als | As | B* | Co | Mo | N | Nb | O* | Sn | Ti | V | W | Other |
|---|--------|----|---|----|---|---|----|----|----|----|-----|----|----|----|----|---|----|----|----|----|---|---|-------|
|---|--------|----|---|----|---|---|----|----|----|----|-----|----|----|----|----|---|----|----|----|----|---|---|-------|

SILICON STEEL CHIPS

C12X: 50 g CMSI 1163, 1189, 1431-1435: 100 g other CMSI, BS CE: 150 g all others: 100 g

| Number       | Si    | C      | Mn    | P      | S       | Cu    | Ni    | Cr    | Al     | Als    | Co    | Mo     | Ti    | V       | W     | As     | Bt     | Bs     | Bi | Pb | Sb | Sn    |   |
|--------------|-------|--------|-------|--------|---------|-------|-------|-------|--------|--------|-------|--------|-------|---------|-------|--------|--------|--------|----|----|----|-------|---|
| CRM          |       |        |       |        |         |       |       |       |        |        |       |        |       |         |       |        |        |        |    |    |    |       |   |
| NCS HC20211  | 4.38  | 0.034  | 0.127 | 0.007  | 0.019   | 0.118 | 0.415 | 0.164 | 0.0748 | 0.073  | .     | 0.0037 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1233    | 4.36  | 0.034  | 0.127 | 0.0072 | 0.019   | 0.118 | 0.415 | 0.164 | 0.073  | .      | .     | 0.0037 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| ECRM 151-1 * | 3.49  | 0.028  | 0.085 | 0.015  | (0.025) | .     | .     | .     | .      | .      | .     | .      | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1232    | 3.36  | 0.057  | 0.225 | 0.0124 | 0.020   | 0.314 | 0.316 | 0.259 | 0.166  | .      | .     | 0.0036 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| NCS HC20210  | 3.36  | 0.057  | 0.225 | 0.012  | 0.020   | 0.314 | 0.316 | 0.259 | 0.1679 | 0.166  | .     | 0.0036 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1432    | 2.91  | 0.400  | 0.437 | 0.0064 | 0.0029  | 0.64  | 0.064 | 0.159 | .      | 0.113  | .     | 0.012  | .     | .       | 1.18  | .      | .      | .      | .  | .  | .  | .     |   |
| NCS HC20209  | 2.39  | 0.079  | 2.313 | 0.026  | 0.025   | 0.408 | 0.222 | 0.392 | .      | .      | .     | 0.0040 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1431    | 2.15  | 0.051  | 0.600 | 0.0149 | 0.0174  | 0.195 | 0.276 | 0.362 | .      | 0.065  | .     | 0.160  | .     | 0.043   | 0.77  | .      | .      | .      | .  | .  | .  | .     |   |
| IPT 108      | 1.96  | 0.598  | 0.861 | 0.028  | 0.020   | 0.121 | 0.052 | 0.133 | .      | 0.019  | 0.006 | 0.017  | 0.004 | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1435    | 1.74  | 0.666  | 0.725 | 0.0144 | 0.0190  | 0.147 | 0.081 | 0.071 | .      | 0.132  | .     | 0.061  | .     | 0.129   | 0.40  | .      | .      | 0.0013 | .  | .  | .  | .     |   |
| ECRM 186-1C  | 1.72  | 0.610  | 0.870 | 0.022  | 0.035   | 0.281 | 0.190 | 0.218 | 0.014  | .      | .     | 0.048  | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| BCS 405/1    | 1.71  | 0.032  | 1.28  | 0.018  | 0.069   | 0.013 | 0.22  | 0.15  | .      | .      | .     | 0.002  | .     | 0.28    | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1108    | 1.42  | 1.086  | 0.308 | 0.013  | 0.004   | 0.036 | 0.021 | 0.045 | .      | 0.11   | .     | 0.89   | 0.30  | 0.50    | .     | .      | .      | 0.016  | .  | .  | .  | .     |   |
| BCS 405      | 1.38  | 0.058  | 1.28  | 0.017  | 0.060   | 0.015 | 0.12  | 0.21  | .      | .      | .     | 0.017  | .     | 0.32    | .     | .      | .      | .      | .  | .  | .  | .     |   |
| BCS 409/2    | 1.18  | 0.086  | 0.559 | 0.0141 | 0.0179  | 0.205 | 3.02  | 1.318 | 0.094  | .      | .     | 0.599  | .     | 0.008   | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1109    | 1.11  | 0.042  | 0.309 | 0.012  | 0.006   | 0.035 | 0.021 | 0.013 | .      | 0.186  | .     | 0.485  | 0.70  | 0.25    | .     | .      | .      | 0.010  | .  | .  | .  | .     |   |
| CMSI 1433    | 1.69  | 0.599  | 1.14  | 0.0209 | 0.0291  | 0.095 | 0.124 | 1.13  | .      | 0.018  | .     | 0.071  | .     | 0.081   | 0.028 | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1187    | 1.50  | 0.0332 | 0.230 | 0.013  | 0.022   | 0.320 | 0.078 | 0.473 | 0.069  | 0.066  | .     | .      | 0.247 | 0.050   | .     | 0.0067 | 0.0061 | .      | .  | .  | .  | .     |   |
| BCS 409/1    | 1.46  | 0.082  | 0.44  | 0.025  | 0.021   | 0.048 | 3.06  | 0.94  | .      | .      | 0.014 | 0.65   | .     | 0.09    | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1434    | 1.10  | 0.706  | 0.875 | 0.0256 | 0.0374  | 0.303 | 0.393 | 0.760 | .      | 0.158  | .     | 0.273  | .     | 0.168   | 0.176 | .      | .      | 0.0012 | .  | .  | .  | .     |   |
|              |       |        |       |        |         |       |       |       |        |        |       |        |       |         |       |        |        |        |    |    |    |       |   |
| Number       | Si    | C      | Mn    | P      | S       | Cu    | Ni    | Cr    | Al     | Als    | Co    | Mo     | Ti    | V       | W     | As     | Bt     | Bs     | Bi | Pb | Sb | Sn    |   |
| BCS 410/2    | 1.10  | 0.428  | 0.419 | 0.074  | 0.041   | 0.436 | 2.07  | 1.684 | 0.046  | .      | .     | 0.432  | .     | 0.44    | .     | .      | .      | .      | .  | .  | .  | .     | . |
| CMSI 1189    | 1.09  | 0.283  | 0.438 | 0.022  | 0.023   | 0.247 | 0.224 | 0.300 | 0.132  | 0.128  | .     | .      | 0.171 | 0.144   | .     | .      | 0.0045 | 0.0041 | .  | .  | .  | .     | . |
| BCS 409 *    | 1.07  | 0.11   | 0.48  | 0.025  | 0.015   | 0.23  | 3.14  | 1.22  | .      | .      | .     | 0.77   | .     | 0.028   | .     | .      | .      | .      | .  | .  | .  | .     | . |
| CMSI 1102    | 1.07  | 0.056  | 1.20  | 0.127  | 0.093   | 0.073 | 0.66  | 2.88  | .      | 0.40   | .     | .      | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     | . |
| NCS HC28304  | 1.06  | 0.407  | 0.315 | 0.015  | 0.013   | 0.017 | 0.037 | 5.08  | 0.0096 | 0.0056 | .     | 1.20   | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| BCS 404      | 1.04  | 0.67   | 0.52  | 0.050  | 0.018   | 0.31  | 0.46  | 0.68  | .      | .      | .     | 0.33   | .     | 0.100   | .     | .      | .      | .      | .  | .  | .  | .     |   |
| NCS HC29325  | 1.04  | 0.397  | 0.369 | 0.0081 | 0.0017  | 0.113 | 0.058 | 5.19  | .      | 0.011  | 1.32  | 0.0049 | 0.946 | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| CMSI 1234    | 0.998 | 0.162  | 0.346 | 0.036  | 0.030   | 0.213 | 0.103 | 0.471 | 0.208  | .      | .     | 0.0048 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| NCS HC20212  | 0.998 | 0.162  | 0.346 | 0.036  | 0.030   | 0.213 | 0.103 | 0.471 | 0.2090 | 0.208  | .     | 0.0048 | .     | .       | .     | .      | .      | .      | .  | .  | .  | .     |   |
| BAM 128-1    | 0.949 | 0.085  | 0.839 | 0.007  | 0.007   | 0.055 | 0.046 | 0.108 | 0.286  | .      | .     | .      | 0.890 | (0.008) | .     | .      | .      | .      | .  | .  | .  | .     |   |
| BCS 405/2    | 0.947 | 0.044  | 0.903 | 0.0095 | 0.058   | 0.022 | 0.102 | 0.206 | 0.330  | .      | .     | 0.025  | .     | 0.411   | .     | .      | .      | .      | .  | .  | .  | .     |   |
| NCS HC14212  | 0.776 | 0.255  | 1.33  | 0.0129 | 0.0029  | 0.188 | 0.248 | 0.204 | .      | .      | .     | .      | .     | 1.04    | .     | .      | .      | .      | .  | .  | .  | .     |   |
| RM           |       |        |       |        |         |       |       |       |        |        |       |        |       |         |       |        |        |        |    |    |    |       |   |
| BS CE31 *    | 3.67  | 0.074  | 0.19  | 0.0074 | 0.0088  | 0.26  | 0.27  | 0.17  | 0.19   | .      | 0.005 | 0.003  | .     | .       | .     | 0.0052 | .      | .      | .  | .  | .  | .     |   |
| C12X LA90    | 1.07  | 0.47   | 0.58  | 0.074  | 0.065   | 0.51  | 2.04  | 3.10  | 0.05   | .      | 0.30  | 1.10   | .     | 0.39    | .     | .      | .      | .      | .  | .  | .  | 0.007 |   |
| C12X LA20    | 0.98  | 0.24   | 0.55  | 0.026  | 0.042   | 0.44  | 0.73  | 0.81  | 0.03   | .      | .     | 0.10   | .     | 0.09    | .     | .      | .      | .      | .  | .  | .  | .     |   |

\* Clearance Sale Item

## TOOL STEEL CHIPS WITH NITROGEN

JK, JSS, NCS: 150 g all others: 100 g

| Number      | C      | Mn    | P        | S        | Si    | Cu     | Ni       | Cr      | Al      | Co      | Mo     | N      | Nb      | Ti      | V       | W       | As       | B                      | O        | Pb       | Sn      |
|-------------|--------|-------|----------|----------|-------|--------|----------|---------|---------|---------|--------|--------|---------|---------|---------|---------|----------|------------------------|----------|----------|---------|
| CRM         |        |       |          |          |       |        |          |         |         |         |        |        |         |         |         |         |          |                        |          |          |         |
| ECRM 288-1C | 2.08   | 0.292 | 0.024    | (0.0012) | 0.260 | 0.060  | 0.298    | 12.00   | 0.012   | 0.018   | 0.103  | 0.0151 | .       | .       | 0.055   | (0.68)  | (0.0065) | .                      | .        | .        | .       |
| IARM 41C    | 1.55   | 0.28  | 0.022    | 0.001    | 0.39  | 0.034  | 0.102    | 11.7    | 0.012   | 0.019   | 0.81   | 0.0106 | 0.01    | 0.0053  | 0.93    | 0.01    | <0.01    | 0.0002                 | 0.0021   | .        | 0.0041  |
| IARM 41B    | 1.49   | 0.36  | .        | 0.30     | 0.004 | 0.035  | (0.0024) | (12.51) | 0.014   | 0.025   | 0.80   | 0.0128 | .       | 0.76    | (0.022) | 0.095   | .        | .                      | 0.021    | 0.005    | 0.005   |
| IARM 251A   | 1.398  | 0.33  | 0.014    | 0.058    | 0.58  | 0.13   | 0.131    | 4.1     | 0.01    | 0.129   | 5.16   | 0.044  | 0.016   | 0.003   | 3.9     | 5.5     | 0.016    | (0.002)                | (0.01)   | (0.002)  | 0.011   |
| JSS 602-10  | 1.242  | 0.376 | 0.0091   | 0.0089   | 0.218 | 0.0305 | 0.047    | 0.364   | .       | 0.101   | 0.0082 | .      | .       | .       | 0.217   | 3.62    | .        | .                      | .        | .        | .       |
| ECRM 283-1  |        |       |          |          |       |        |          |         |         |         |        |        |         |         |         |         |          |                        |          |          |         |
| JSS 601-10  | 1.129  | 0.217 | 0.022    | 0.029    | 0.345 | .      | .        | 4.15    | .       | 10.27   | 3.41   | 0.033  | .       | .       | 3.28    | 9.66    | .        | 0.0003                 | .        | .        | .       |
| IARM 39B    | 1.143  | 0.441 | 0.0194   | (0.0042) | 0.237 | 0.120  | 0.0580   | 0.462   | .       | .       | 0.106  | 0.0109 | .       | .       | 0.110   | 0.876   | .        | .                      | .        | .        | .       |
| BAM 227-1   | 0.99   | 0.54  | .        | 0.35     | 0.004 | 0.10   | .        | 4.79    | 0.006   | 0.014   | 1.01   | 0.0096 | 0.006   | 0.22    | (0.026) | 0.14    | .        | .                      | 0.017    | 0.003    | 0.003   |
| ECRM 290-1C | 0.950  | 0.236 | 0.016    | 0.022    | 0.272 | 0.124  | 0.114    | 4.25    | .       | .       | 2.64   | 0.040  | .       | .       | 2.44    | 3.03    | .        | .                      | .        | .        | .       |
| JK 12A      | 0.886  | 0.312 | 0.020    | 0.023    | 0.30  | 0.062  | 0.191    | 4.04    | .       | 0.189   | 4.85   | 0.0259 | .       | .       | 1.94    | 6.42    | .        | .                      | .        | 0.0004   | 0.007   |
| JSS 609-10  | 0.882  | 0.307 | 0.0231   | 0.0007   | 0.285 | 0.060  | 0.143    | 4.02    | .       | 4.68    | 4.85   | 0.0212 | .       | .       | 1.92    | 6.11    | .        | .                      | .        | .        | .       |
| JSS 611-10  | 0.874  | 0.305 | 0.0267   | 0.00064  | 0.332 | 0.0479 | 0.116    | 4.09    | .       | 0.535   | 4.89   | 0.0252 | .       | .       | 1.83    | 6.21    | .        | .                      | .        | .        | .       |
| IARM 44B    | 0.84   | 0.27  | 0.014    | 0.006    | 0.39  | 0.072  | 0.18     | 3.86    | .       | 0.41    | 4.79   | 0.0251 | 0.016   | 0.004   | 1.83    | 5.98    | .        | .                      | 0.0028   | (0.0001) | (0.008) |
| IARM 44C *  | 0.83   | 0.30  | 0.027    | 0.004    | 0.31  | 0.12   | 0.13     | 4.06    | 0.055   | 0.25    | 5.0    | 0.033  | 0.012   | .       | 1.92    | 6.0     | 0.01     | * provisional analysis |          |          | 0.010   |
| JSS 607-9   | 0.766  | 0.305 | 0.0163   | 0.0054   | 0.308 | 0.0263 | 0.0603   | 4.00    | .       | 4.63    | 0.278  | 0.0392 | .       | .       | 0.90    | 17.29   | .        | .                      | .        | .        | .       |
| IARM 48B    | 0.74   | 0.28  | 0.020    | 0.023    | 0.28  | 0.07   | 0.080    | 4.14    | (0.006) | (0.040) | 0.093  | 0.0096 | 0.004   | (0.004) | 1.12    | (17.26) | .        | .                      | (0.0125) | .        | (0.009) |
| IARM 43B    | 0.711  | 0.56  | <0.005   | 0.251    | 0.013 | 0.180  | 0.0016   | 0.651   | 0.021   | 0.012   | 0.206  | 0.0093 | 0.004   | 0.0035  | <0.005  | 1.39    | 0.005    | 0.0002                 | 0.008    | 0.013    | 0.0047  |
| IARM 40B    | 0.68   | 1.98  | .        | 0.39     | 0.004 | 0.050  | (0.0014) | 1.04    | (0.006) | 0.015   | 1.22   | 0.0107 | 0.005   | 0.014   | 0.013   | 0.096   | .        | (0.0010)               | 0.012    | 0.003    | 0.003   |
| NCS HC17411 | 0.619  | 0.443 | 0.0174   | 0.0068   | 0.58  | .      | 2.592    | 3.048   | 1.13    | 1.52    | 3.872  | .      | 0.529   | .       | 3.043   | 4.74    | .        | .                      | .        | .        | .       |
| IARM 47B    | 0.59   | 0.79  | (0.0003) | 1.96     | 0.008 | 0.17   | (0.0014) | 0.23    | 0.014   | 0.007   | 0.20   | 0.0092 | (0.002) | 0.17    | (0.016) | 0.090   | .        | (<0.001)               | 0.017    | 0.006    | 0.010   |
| JSS 605-10  | 0.574  | 0.870 | 0.0150   | 0.0126   | 0.111 | 0.162  | 1.500    | 0.876   | .       | 0.368   | 0.0136 | .      | .       | .       | 0.0072  | .       | .        | .                      | .        | .        | .       |
| NCS HC17412 | 0.51   | 0.622 | 0.0188   | 0.0107   | 0.823 | .      | 1.602    | 4.045   | 1.323   | 1.978   | 4.34   | .      | 0.319   | .       | 5.044   | 6.246   | .        | .                      | .        | .        | .       |
| IARM 259A   | 0.479  | 0.399 | 0.020    | 0.0007   | 0.44  | 0.081  | 0.194    | 3.27    | 0.016   | 0.011   | 1.43   | 0.0077 | 0.003   | 0.0026  | 0.256   | 0.035   | 0.006    | 0.0003                 | 0.0014   | <0.0005  | 0.004   |
| IARM 46B    | 0.45   | 0.27  | 0.019    | 0.0040   | 0.89  | 0.147  | 0.108    | 1.09    | 0.011   | 0.013   | 0.222  | 0.0069 | 0.003   | 0.007   | 0.170   | 1.96    | (0.01)   | 0.0003                 | 0.002    | <0.002   | 0.016   |
| NCS HC17413 |        |       |          |          |       |        |          |         |         |         |        |        |         |         |         |         |          |                        |          |          |         |
| IARM 255A   | 0.418  | 0.887 | 0.0208   | 0.0068   | 0.925 | .      | 1.29     | 3.593   | 1.574   | 2.448   | 4.84   | .      | 0.481   | .       | 7.072   | 7.66    | .        | .                      | .        | .        | .       |
| ECRM 276-2C | 0.403  | 0.27  | 0.013    | 0.0012   | 0.93  | 0.049  | 0.083    | 4.84    | 0.01    | 0.009   | 1.33   | 0.0067 | 0.004   | 0.002   | 0.43    | 0.007   | (0.002)  | 0.0004                 | 0.0011   | <0.001   | 0.006   |
| IARM 42B    | 0.399  | 0.365 | 0.0093   | 0.0189   | 1.034 | 0.183  | 0.203    | 4.975   | .       | .       | 1.134  | 0.0116 | .       | .       | 0.296   | .       | .        | .                      | .        | .        | 0.0133  |
| ECRM 271-1C | 0.38   | 0.36  | (0.0003) | 0.99     | 0.005 | 0.089  | 0.0026   | 5.10    | 0.013   | 0.013   | 1.23   | 0.0105 | 0.004   | 0.94    | 0.012   | 0.18    | .        | (0.0005)               | 0.014    | 0.005    | 0.003   |
| IARM 164A   | 0.3698 | 0.437 | 0.0120   | 0.00045  | 0.923 | 0.1371 | 0.1552   | 5.002   | 0.0234  | 0.0139  | 1.247  | 0.0137 | .       | 0.0020  | 0.850   | 0.0054  | 0.0057   | Ca: 0.0009             | .        | .        | 0.0084  |
| JSS 604-9   | 0.362  | 0.346 | 0.0185   | 0.0122   | 1.056 | 0.0630 | 0.177    | 4.90    | .       | 1.079   | 0.0174 | .      | .       | .       | 0.512   | 0.0114  | .        | .                      | .        | .        | .       |
| JSS 603-8   | 0.30   | 0.31  | 0.012    | 0.012    | 0.32  | 0.055  | 0.084    | 2.32    | .       | .       | 0.13   | 0.0250 | .       | .       | 0.46    | 5.47    | .        | .                      | .        | .        | .       |
| IARM 180A   | 0.007  | 0.41  | 0.004    | 0.046    | 0.023 | 0.89   | 1.29     | 0.037   | 0.76    | 0.004   | 0.006  | 0.0096 | (0.005) | 0.002   | 0.76    | 1.48    | (0.004)  | 0.0004                 | 0.0006   | (0.002)  | 0.002   |
| IARM 181A   | 0.007  | 1.76  | 0.004    | 0.095    | 0.026 | 1.45   | 1.40     | 0.044   | 0.87    | (0.004) | 0.009  | 0.0185 | (0.007) | 0.003   | 1.12    | 1.65    | (0.013)  | (0.0002)               | 0.0006   | (0.002)  | 0.002   |
| IARM 165A   | 0.004  | 1.57  | 0.004    | 0.070    | 0.019 | 0.88   | 1.29     | 0.032   | 0.72    | 0.006   | 0.009  | 0.0003 | 0.006   | 0.002   | 0.78    | 1.44    | (0.002)  | (0.0001)               | 0.0005   | (0.004)  | 0.002   |
| IARM 168A   | 0.003  | 1.65  | 0.005    | 0.086    | 0.021 | 1.40   | 1.43     | 0.036   | 0.80    | 0.006   | 0.009  | 0.0004 | 0.007   | 0.002   | 1.13    | 1.57    | (0.003)  | (0.001)                | 0.0004   | (<0.01)  | 0.002   |
| IARM 168A   | 0.003  | 0.12  | 0.030    | 0.064    | 0.46  | 0.009  | 2.32     | 0.004   | 0.19    | 0.003   | 0.69   | 0.0002 | 0.003   | 0.004   | 0.004   | 0.52    | (0.003)  | 0.0004                 | 0.0008   | (<0.01)  | 0.003   |
| RM          |        |       |          |          |       |        |          |         |         |         |        |        |         |         |         |         |          |                        |          |          |         |
| IARM 45A    | 1.39   | 0.88  | (<0.005) | 1.02     | 0.005 | 0.049  | (0.0017) | 0.13    | 0.011   | 0.004   | 0.25   | 0.0079 | 0.002   | 0.005   | .       | 0.11    | (0.003)  | (0.0001)               | 0.014    | 0.012    | 0.003   |
| IARM 43A    | 0.68   | 0.61  | (<0.005) | 0.24     | 0.008 | 0.15   | (0.0026) | 0.66    | 0.030   | 0.016   | 0.20   | 0.0089 | 0.003   | 0.008   | (0.016) | 1.34    | (0.006)  | (0.0002)               | 0.009    | 0.034    | 0.003   |
| IARM 47A    | 0.58   | 0.80  | (<0.005) | 1.92     | 0.031 | 0.25   | (0.0021) | 0.29    | 0.017   | 0.009   | 0.41   | 0.0084 | (0.004) | 0.22    | (0.016) | 0.23    | (0.014)  | (0.0003)               | 0.015    | 0.010    | 0.008   |
| IARM 46A    | 0.49   | 0.48  | (<0.005) | 0.94     | 0.024 | 0.083  | (0.0027) | 1.31    | 0.011   | 0.015   | 0.16   | 0.0144 | 0.004   | 0.16    | 1.84    | 0.30    | (0.009)  | (0.0012)               | 0.023    | 0.012    | 0.004   |

| Number | C | Mn | P | S | Si | Cu | Ni | Cr | Al | Co | Mo | N | Nb | Ti | V | W | As | B | O | Pb | Sn |
|--------|---|----|---|---|----|----|----|----|----|----|----|---|----|----|---|---|----|---|---|----|----|
|--------|---|----|---|---|----|----|----|----|----|----|----|---|----|----|---|---|----|---|---|----|----|

TOOL STEEL CHIPS

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

NCS HC23503: 100 g other NCS, CMSI: 150 g IPT 50: 120 g all others: 100 g

| # | Number      | C       | Mn     | P       | S       | Si     | Cu    | Ni     | Cr    | Al    | Als    | Co    | Mo     | Nb    | Ti     | V     | W     | Sn    |
|---|-------------|---------|--------|---------|---------|--------|-------|--------|-------|-------|--------|-------|--------|-------|--------|-------|-------|-------|
| 1 | CMSI 1406   | 2.00    | 0.294  | 0.049   | 0.0053  | .      | .     | 0.113  | 11.71 | .     | .      | .     | .      | .     | .      | .     | 0.96  | .     |
| 1 | GBW 01369a  | 1.585   | 0.328  | 0.0209  | 0.0157  | 0.231  | 0.073 | 0.083  | 11.44 | .     | .      | .     | 0.430  | .     | .      | 0.217 | .     | .     |
| 1 | CMSI 1403   | 1.308   | 0.186  | 0.0222  | 0.040   | .      | 0.029 | 0.0217 | 0.56  | .     | .      | .     | 0.0175 | .     | .      | .     | 5.03  | .     |
| 1 | IPT 67      | 1.27    | 0.256  | 0.036   | 0.007   | 0.26   | 0.092 | 0.32   | 4.33  | .     | .      | 9.79  | 4.39   | .     | .      | 2.58  | 8.03  | .     |
| 1 | CMSI 1405   | 1.14    | 0.287  | 0.014   | 0.0046  | .      | 0.040 | 0.073  | 0.183 | .     | .      | .     | .      | .     | .      | .     | 2.31  | .     |
| 2 | C14X HS40   | 0.99    | 0.13   | 0.010   | 0.012   | 0.11   | 0.03  | 0.05   | 3.71  | .     | .      | 2.04  | 0.42   | .     | .      | 0.47  | 9.83  | .     |
| 2 | C14X HS80   | 0.97    | 0.29   | 0.020   | 0.022   | 0.13   | 0.09  | 0.17   | 3.58  | .     | .      | 9.04  | 9.47   | .     | .      | 1.20  | 1.81  | .     |
| 1 | NCS HC17405 | 0.941   | 0.441  | 0.023   | 0.028   | 0.521  | .     | 0.095  | 1.99  | .     | .      | .     | 0.122  | .     | .      | 0.18  | 19.22 | .     |
| 1 | IPT 50      | 0.916   | 0.280  | 0.031   | 0.015   | 0.326  | 0.091 | 0.33   | 4.49  | .     | .      | 0.260 | 5.54   | .     | .      | 2.00  | 6.40  | .     |
| 2 | C14X HS20   | 0.90    | 0.38   | 0.037   | 0.040   | 0.41   | 0.04  | 0.07   | 3.79  | .     | .      | 5.02  | 0.86   | .     | .      | 1.01  | 18.11 | .     |
| 1 | ECRM 254-1  | 0.88    | 0.30   | 0.023   | 0.029   | 0.19   | 0.09  | 0.12   | 5.12  | .     | .      | 0.32  | 4.92   | .     | .      | 1.94  | 6.97  | 0.019 |
| 1 | CMSI 1401   | 0.855   | 0.275  | 0.0261  | 0.011   | 0.232  | 0.041 | 0.046  | 4.08  | .     | .      | .     | 4.84   | .     | .      | 2.02  | 5.99  | .     |
| 1 | BCS 484     | 0.85    | 0.21   | 0.030   | 0.024   | 0.20   | .     | .      | 5.17  | .     | .      | 10.2  | 1.07   | .     | .      | 0.93  | 22.4  | .     |
| 1 | NCS HC28402 | 0.847   | 0.296  | 0.023   | 0.012   | 0.190  | 0.122 | 0.096  | 3.99  | .     | 0.0020 | 0.023 | 5.06   | .     | 0.0013 | 1.93  | 6.14  | .     |
| 2 | C14X HS30   | 0.84    | 0.59   | 0.019   | 0.020   | 0.58   | 0.04  | 0.33   | 4.65  | .     | .      | 10.1  | 1.06   | .     | .      | 1.17  | 19.1  | .     |
| 1 | ECRM 251-1  | 0.84    | 0.27   | 0.024   | 0.025   | 0.21   | 0.08  | 0.15   | 5.35  | .     | .      | 5.70  | 0.53   | .     | .      | 1.59  | 19.9  | 0.025 |
| 1 | NCS HC21401 | 0.828   | 0.283  | 0.028   | 0.0072  | 0.226  | 0.140 | 0.083  | 4.08  | .     | 0.013  | 0.018 | 3.13   | .     | 0.0044 | 1.33  | 9.23  | 0.017 |
| 2 | C14X HS10   | 0.79    | 0.29   | 0.020   | 0.022   | 0.195  | 0.05  | 0.10   | 3.93  | .     | .      | 0.51  | 1.11   | .     | .      | 0.90  | 16.8  | .     |
| 1 | NCS HC17406 | 0.78    | 0.427  | 0.024   | 0.020   | 0.230  | .     | 0.134  | 3.64  | .     | .      | .     | 0.176  | .     | .      | 0.44  | 18.72 | .     |
| 1 | CMSI 1404   | 0.762   | 0.280  | 0.0241  | 0.026   | .      | 0.038 | 0.040  | 4.03  | .     | .      | .     | 0.245  | .     | .      | 1.30  | 18.16 | .     |
| 1 | NCS HC17407 | 0.710   | 0.268  | 0.029   | 0.0064  | 0.183  | .     | 0.187  | 4.29  | .     | .      | .     | 0.266  | .     | .      | 1.05  | 17.64 | .     |
| 1 | BCS 482     | 0.70    | 0.28   | 0.021   | 0.025   | 0.13   | .     | .      | 4.09  | .     | .      | 0.24  | 0.27   | .     | .      | 0.98  | 18.1  | .     |
| 2 | C14X HS60   | 0.70    | 0.17   | 0.029   | 0.032   | 0.16   | 0.08  | 0.06   | 3.94  | .     | .      | 0.28  | 5.47   | .     | .      | 1.95  | 6.63  | .     |
| 1 | BCS 481     | 0.69    | 0.29   | 0.021   | 0.027   | 0.14   | .     | .      | 3.56  | .     | .      | 0.21  | 0.22   | .     | .      | 0.52  | 14.2  | .     |
| 1 | BCS 483     | 0.67    | 0.29   | 0.019   | 0.025   | 0.11   | .     | .      | 3.21  | .     | .      | 1.94  | 0.17   | .     | .      | 0.54  | 10.8  | .     |
| 1 | BCS 483/1   | 0.65    | 0.22   | 0.023   | 0.023   | 0.16   | .     | (0.08) | 2.90  | .     | .      | 2.06  | 0.18   | .     | .      | 0.22  | 9.28  | .     |
| 2 | C14X HS50   | 0.59    | 0.29   | 0.017   | 0.022   | 0.30   | 0.13  | 0.14   | 3.40  | .     | .      | 8.02  | 3.54   | .     | .      | 1.37  | 6.0   | .     |
| 1 | NCS HC17408 | 0.577   | 0.233  | 0.015   | 0.0043  | 0.383  | .     | 0.231  | 2.70  | .     | .      | .     | 0.330  | .     | .      | 0.81  | 16.24 | .     |
| 1 | IPT 145     | 0.558   | 0.716  | 0.016   | 0.011   | 0.259  | 0.051 | 1.61   | 1.14  | 0.023 | 0.021  | 0.024 | 0.494  | .     | .      | 0.094 | .     | .     |
| 1 | IPT 117     | 0.515   | 0.557  | 0.019   | 0.011   | 0.349  | 0.070 | 3.01   | 1.03  | .     | 0.026  | 0.014 | 0.292  | .     | .      | 0.015 | 0.060 | .     |
| 1 | CMSI 1182   | 0.503   | 0.326  | 0.0212  | 0.015   | 0.592  | 0.028 | 0.140  | 1.14  | .     | .      | .     | .      | .     | .      | .     | 2.22  | .     |
| 1 | NCS HC17409 | 0.493   | 0.343  | 0.304   | 0.0048  | 0.493  | .     | 0.278  | 4.78  | .     | .      | .     | 0.411  | .     | .      | 1.49  | 14.96 | .     |
| 1 | IPT 114     | 0.388   | 0.361  | 0.021   | 0.0023  | 1.02   | 0.064 | 0.165  | 5.20  | .     | 0.028  | 0.018 | 1.29   | .     | .      | 0.89  | 0.174 | .     |
| 1 | CMSI 1402   | 0.359   | 0.298  | 0.0211  | 0.021   | .      | 0.030 | 0.0208 | 2.48  | .     | .      | .     | 0.055  | .     | .      | 0.27  | 8.39  | .     |
| 1 | IRSID 112-1 | 0.348   | 0.191  | .       | .       | 1.00   | 0.115 | 0.234  | 4.78  | .     | .      | .     | 1.21   | .     | .      | 0.604 | 1.78  | .     |
| 1 | NCS HC17414 | 0.322   | 2.719  | 0.0228  | 0.0177  | 1.16   | .     | 0.862  | 4.43  | 1.955 | .      | 2.939 | 6.16   | 0.497 | .      | 1.083 | 9.22  | .     |
| 1 | CMSI 1254   | 0.177   | 0.509  | 0.021   | 0.005   | 0.27   | 0.083 | 4.06   | 1.51  | .     | .      | .     | .      | .     | .      | .     | 1.34  | .     |
| 1 | BCS 422     | (0.036) | (0.09) | (0.015) | (0.025) | (0.06) | .     | .      | .     | .     | .      | .     | .      | .     | .      | .     | 1.28  | .     |
| 1 | BCS 423     | (0.030) | (0.07) | (0.017) | (0.027) | (0.05) | .     | .      | .     | .     | .      | .     | .      | .     | .      | .     | 2.06  | .     |
| 1 | BCS 424     | (0.024) | (0.09) | (0.02)  | (0.024) | (0.05) | .     | .      | .     | .     | .      | .     | .      | .     | .      | .     | 3.02  | .     |
| # | Number      | C       | Mn     | P       | S       | Si     | Cu    | Ni     | Cr    | Al    | Als    | Co    | Mo     | Nb    | Ti     | V     | W     | Sn    |





**STAINLESS STEEL CHIPS AND POWDER WITH NITROGEN**

|   |               |        |       |        |          |       |        |        |        |         |         |         |          |          |         |        |         |          |     |        |          | C13X NSA, NSB: 40 g chips |          |  |  | NILAB: 150 g powder     |  |  |  |
|---|---------------|--------|-------|--------|----------|-------|--------|--------|--------|---------|---------|---------|----------|----------|---------|--------|---------|----------|-----|--------|----------|---------------------------|----------|--|--|-------------------------|--|--|--|
| # = Class, where 1 = CRM and 2 = RM               |               |        |       |        |          |       |        |        |        |         |         |         |          |          |         |        |         |          |     |        |          | JK, JSS: 150 g chips      |          |  |  | all others: 100 g chips |  |  |  |
| analysis listed in mass % except * which is mg/kg |               |        |       |        |          |       |        |        |        |         |         |         |          |          |         |        |         |          |     |        |          |                           |          |  |  |                         |  |  |  |
| #   | Number        | C      | Mn    | P      | S        | Si    | Cu     | Ni     | Cr     | Al      | Co      | Mo      | N        | Nb       | Ti      | V      | As      | B        | Ca* | O      | Pb*      | Sn                        | W        |  |  |                         |  |  |  |
| 1   | C13X 180030   | 0.203  | 0.773 | 0.054  | 0.042    | 1.008 | 0.074  | 10.35  | 19.98  | .       | 0.120   | 0.397   | 0.046    | 1.12     | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 2   | C13X NSB30    | 0.178  | 0.5   | .      | 0.009    | 0.63  | .      | 9.92   | 16.8   | .       | .       | 0.51    | 0.264    | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 2   | C13X PH70     | 0.16   | 1.44  | 0.017  | 0.029    | 1.28  | 0.82   | 5.65   | 14.1   | .       | .       | 2.56    | 0.094    | 0.28     | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 289A     | 0.126  | 1.67  | 0.006  | 0.0019   | 0.58  | 0.016  | 7.12   | 17.0   | 0.01    | 0.054   | (0.005) | 0.0032   | 0.008    | 0.028   | 0.01   | .       | (0.0003) | .   | 0.0104 | .        | (0.002)                   | 0.01     |  |  |                         |  |  |  |
| 2   | C13X NSA20    | 0.094  | 0.51  | .      | 0.010    | 0.506 | .      | 9.97   | 16.89  | .       | .       | 1.74    | 0.126    | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 152B     | 0.075  | 0.76  | 0.0230 | 0.0019   | 0.361 | 0.31   | 7.22   | 16.94  | 1.19    | 0.17    | 0.51    | 0.026    | 0.033    | 0.115   | 0.091  | .       | 0.002    | .   | 0.0011 | .        | 0.0081                    | 0.05     |  |  |                         |  |  |  |
| 1   | IARM 241C     | 0.069  | 1.50  | 0.043  | 0.030    | 0.630 | 0.52   | 8.05   | 17.80  | 0.003   | 0.058   | 0.117   | 0.0478   | 0.003    | 0.002   | 0.039  | .       | 0.0005   | .   | 0.007  | .        | 0.0057                    | 0.01     |  |  |                         |  |  |  |
| 1   | BAM 237-1     | 0.068  | 1.443 | 0.032  | 0.012    | 0.482 | 0.123  | 10.32  | 17.24  | .       | 0.221   | 0.306   | 0.035    | 0.660    | .       | 0.057  | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 1C       | 0.068  | 1.87  | 0.032  | 0.378    | 0.634 | 0.51   | 8.64   | 17.35  | 0.002   | 0.309   | 0.583   | 0.0344   | 0.056    | 0.002   | 0.107  | .       | (0.0004) | .   | 0.0049 | .        | 0.010                     | 0.057    |  |  |                         |  |  |  |
| 1   | IARM 3C       | 0.066  | 1.573 | 0.023  | 0.027    | 0.27  | 0.130  | 14.88  | 22.28  | 0.004   | 0.078   | 0.195   | 0.037    | 0.013    | 0.004   | 0.116  | .       | 0.0003   | .   | 0.015  | .        | 0.003                     | 0.032    |  |  |                         |  |  |  |
| 1   | BCS 465/1     | 0.066  | 1.380 | 0.021  | 0.012    | 0.405 | 0.098  | 9.24   | 17.31  | 0.026   | 0.053   | 0.092   | 0.010    | .        | 0.40    | 0.102  | .       | 0.0006   | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 4C       | 0.064  | 1.69  | 0.029  | 0.0017   | 0.454 | 0.230  | 19.3   | 23.95  | 0.01    | 0.098   | 0.224   | 0.039    | 0.013    | 0.003   | 0.078  | .       | 0.0003   | .   | 0.0054 | .        | 0.007                     | 0.024    |  |  |                         |  |  |  |
| 1   | IARM 1D       | 0.061  | 1.98  | 0.025  | 0.34     | 0.22  | 0.51   | 9.50   | 18.24  | .       | 0.208   | 0.130   | 0.004    | <0.005   | (0.002) | 0.101  | .       | <0.002   | .   | 0.007  | .        | 0.006                     | 0.015    |  |  |                         |  |  |  |
| 1   | IARM 8C       | 0.060  | 1.50  | 0.030  | 0.027    | 0.43  | 0.46   | 9.15   | 17.53  | 0.003   | 0.146   | 0.70    | 0.054    | 0.67     | 0.002   | 0.047  | .       | (0.0008) | .   | 0.0054 | .        | 0.011                     | 0.140    |  |  |                         |  |  |  |
| 1   | IARM 241A     | 0.059  | 1.43  | 0.025  | 0.020    | 0.43  | 0.142  | 8.08   | 18.21  | 0.004   | 0.083   | 0.076   | 0.051    | 0.004    | 0.002   | 0.065  | .       | 0.0003   | .   | 0.0050 | .        | 0.005                     | 0.014    |  |  |                         |  |  |  |
| 1   | NCS HC20317   | 0.057  | 0.629 | 0.030  | 0.0046   | 0.517 | 0.142  | 6.95   | 15.06  | 0.865   | 0.098   | 2.26    | 0.038    | .        | 0.052   | 0.022  | 0.0094  | .        | .   | .      | .        | 0.021                     | 0.028    |  |  |                         |  |  |  |
| 1   | JSS 653-14    | 0.0564 | 1.575 | 0.0307 | 0.00094  | 0.621 | 0.201  | 13.74  | 22.36  | (0.005) | 0.193   | 0.146   | (0.039)  | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 8B       | 0.054  | 1.43  | 0.025  | 0.024    | 0.48  | 0.26   | 9.06   | 17.61  | 0.004   | 0.221   | 0.50    | 0.0324   | 0.63     | 0.003   | 0.071  | .       | 0.0030   | .   | 0.0056 | .        | 0.010                     | 0.031    |  |  |                         |  |  |  |
| 1   | IARM 8D       | 0.054  | 1.76  | 0.029  | 0.027    | 0.36  | 0.472  | 9.19   | 17.30  | 0.004   | 0.141   | 0.437   | 0.0151   | 0.72     | 0.003   | 0.062  | .       | 0.0005   | .   | 0.0043 | .        | 0.007                     | 0.079    |  |  |                         |  |  |  |
| 1   | IARM 8E       | 0.054  | 1.67  | 0.027  | 0.024    | 0.62  | 0.267  | 9.46   | 17.63  | (0.003) | 0.143   | 0.29    | 0.041    | 0.64     | (0.002) | 0.071  | .       | 0.0024   | .   | 0.007  | .        | 0.008                     | 0.055    |  |  |                         |  |  |  |
| 1   | IPT 98 **     | 0.050  | 1.88  | 0.042  | 0.016    | 0.26  | 0.292  | 11.01  | 16.75  | 0.073   | 0.125   | 1.92    | 0.0112   | .        | 0.41    | 0.053  | 0       | .        | .   | .      | .        | 0.019                     | 0.053    |  |  |                         |  |  |  |
| 1   | ECRM 281-1    | 0.048  | 0.786 | 0.012  | 0.016    | 0.929 | 0.076  | 9.37   | 18.17  | .       | 0.023   | .       | 0.023    | .        | 0.216   | .      | .       | 0.0012   | .   | .      | 5        | .                         | .        |  |  |                         |  |  |  |
| 1   | IPT 24A       | 0.048  | 1.53  | 0.035  | 0.020    | 0.510 | 0.32   | 11.12  | 17.37  | .       | (0.16)  | 2.47    | (0.036)  | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | JK 27A C      | 0.0477 | 1.59  | 0.022  | 0.0168   | 0.411 | 0.197  | 12.04  | 16.76  | 0.0169  | 0.089   | 2.53    | 0.0629   | (0.01)   | .       | 0.0041 | .       | 0.0018   | 33  | .      | 1.6      | 0.0039                    | .        |  |  |                         |  |  |  |
| 1   | CMSI 1336     | 0.046  | 1.30  | 0.024  | 0.011    | 0.574 | 0.197  | 12.14  | 17.03  | 0.062   | 0.056   | 2.73    | (0.023)  | .        | 0.350   | 0.029  | 0.0096  | .        | .   | .      | .        | 0.016                     | 0.013    |  |  |                         |  |  |  |
| 1   | JSS 651-14    | 0.046  | 1.19  | 0.027  | 0.0058   | 0.67  | 0.12   | 9.03   | 18.26  | (0.002) | 0.17    | 0.11    | (0.0426) | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | JSS 655-10    | 0.045  | 0.96  | 0.024  | (0.0005) | 0.63  | 0.045  | 9.75   | 17.53  | (0.003) | (0.073) | 0.033   | 0.0072   | 0.49     | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | NILAB 500HAC  | 0.041  | 1.541 | 0.024  | 0.012    | .     | 0.182  | 11.00  | 16.93  | .       | 0.139   | 2.73    | 0.1154   | 0.023    | .       | 0.074  | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 253A *** | 0.041  | 1.50  | 0.140  | 0.0089   | 0.50  | 0.223  | 9.17   | 17.90  | 0.003   | 0.088   | 0.348   | 0.0373   | 0.016    | 0.002   | 0.106  | .       | 0.0003   | .   | 0.009  | .        | 0.01                      | 0.10     |  |  |                         |  |  |  |
| 1   | IARM 2F       | 0.041  | 1.48  | 0.043  | 0.028    | 0.27  | 0.40   | 8.09   | 18.37  | 0.003   | 0.070   | 0.20    | 0.057    | 0.003    | 0.001   | 0.036  | .       | 0.0004   | .   | 0.0087 | .        | 0.008                     | 0.021    |  |  |                         |  |  |  |
| 1   | IARM 6F       | 0.041  | 1.38  | 0.029  | 0.0006   | 0.37  | 0.41   | 9.15   | 17.13  | 0.033   | 0.150   | 0.331   | 0.011    | 0.013    | 0.45    | 0.090  | .       | 0.0003   | .   | 0.001  | .        | 0.014                     | 0.034    |  |  |                         |  |  |  |
| 1   | IARM 6G       | 0.040  | 1.39  | 0.030  | 0.0006   | 0.37  | 0.41   | 9.14   | 17.15  | 0.030   | 0.150   | 0.330   | 0.011    | 0.013    | 0.440   | 0.089  | .       | 0.0004   | .   | 0.0017 | .        | 0.014                     | 0.033    |  |  |                         |  |  |  |
| 1   | IARM 21B      | 0.038  | 0.059 | 0.006  | 0.003    | 0.047 | 0.032  | 8.17   | 12.32  | 1.04    | 0.020   | 2.11    | 0.0039   | 0.008    | 0.012   | 0.011  | .       | .        | .   | 0.0010 | .        | 0.002                     | 0.01     |  |  |                         |  |  |  |
| 1   | NCS HC20318   | 0.037  | 1.33  | 0.029  | 0.012    | 0.666 | 0.171  | 11.69  | 17.18  | 0.144   | 0.086   | 2.07    | 0.018    | .        | 0.515   | 0.026  | .       | 0.010    | .   | .      | .        | 0.018                     | 0.025    |  |  |                         |  |  |  |
| 1   | ECRM 292-1C   | 0.0367 | 1.744 | 0.0175 | 0.0055   | 0.402 | 0.0391 | 10.09  | 18.00  | (0.002) | 0.0255  | 0.0464  | 0.0640   | 0.571    | .       | .      | (0.008) | .        | (6) | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | JSS 652-14    | 0.0358 | 1.177 | 0.0315 | 0.00135  | 0.624 | 0.177  | 10.60  | 16.88  | 0.0030  | 0.143   | 2.06    | 0.0191   | .        | .       | .      | .       | .        | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 21C      | 0.035  | 0.051 | 0.007  | 0.0038   | 0.042 | 0.047  | 8.18   | 12.39  | 1.07    | 0.021   | 2.11    | 0.0045   | 0.007    | 0.012   | 0.013  | .       | 0.0004   | .   | 0.0004 | .        | 0.005                     | (0.01)   |  |  |                         |  |  |  |
| 1   | IARM 241B     | 0.023  | 1.76  | 0.025  | 0.022    | 0.53  | 0.389  | 8.12   | 18.46  | 0.005   | 0.121   | 0.369   | 0.065    | 0.007    | 0.042   | 0.057  | .       | 0.0007   | .   | 0.008  | .        | 0.022                     | 0.037    |  |  |                         |  |  |  |
| 1   | ECRM 297-1C   | 0.0223 | 0.897 | 0.0137 | 0.0101   | 0.344 | 0.204  | 12.33  | 18.37  | 0.0195  | 0.0413  | 0.290   | 0.0152   | (0.0089) | 0.0072  | 0.0535 | 0.0040  | 1.146    | (2) | .      | .        | .                         | (0.0057) |  |  |                         |  |  |  |
| 1   | IARM 162B     | 0.022  | 1.76  | 0.029  | 0.025    | 0.635 | 0.81   | 10.25  | 18.35  | 0.003   | 0.30    | 0.482   | 0.0241   | 0.032    | 0.002   | 0.117  | .       | 0.003    | .   | 0.004  | .        | 0.009                     | 0.10     |  |  |                         |  |  |  |
| 1   | IARM 5D       | 0.021  | 1.78  | 0.040  | 0.020    | 0.458 | 0.168  | 10.38  | 16.56  | 0.005   | 0.143   | 2.11    | 0.056    | (0.004)  | 0.008   | 0.029  | .       | (0.0005) | .   | 0.0097 | .        | 0.004                     | 0.016    |  |  |                         |  |  |  |
| 1   | ECRM 284-2C   | 0.0201 | 1.745 | 0.0258 | 0.0237   | 0.537 | 0.1831 | 10.72  | 16.811 | 0.0027  | 0.0525  | 2.111   | 0.0151   | .        | 0.191   | 0.0425 | 0.0063  | 0.0026   | .   | 0.0099 | .        | 0.0047                    | .        |  |  |                         |  |  |  |
| 1   | BCS 463/1     | 0.019  | 1.400 | 0.0025 | 0.019    | 0.270 | 0.276  | 10.20  | 18.46  | .       | 0.116   | 0.265   | 0.063    | .        | .       | .      | .       | 0.0022   | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | ECRM 287-1C   | 0.016  | 1.48  | 0.027  | 0.0014   | 0.569 | 0.203  | 10.35  | 18.61  | .       | 0.148   | 0.247   | 0.019    | .        | .       | .      | .       | 0.924    | .   | .      | .        | .                         | .        |  |  |                         |  |  |  |
| 1   | IARM 5E       | 0.016  | 1.49  | 0.031  | 0.024    | 0.25  | 0.42   | 10.64  | 16.92  | (0.003) | 0.159   | 2.15    | 0.043    | 0.011    | (0.001) | 0.065  | .       | 0.0021   | .   | 0.006  | .        | 0.011                     | 0.044    |  |  |                         |  |  |  |
| 1   | IARM 162A     | 0.015  | 1.69  | 0.023  | 0.024    | 0.36  | 0.34   | 8.56   | 18.31  | 0.003   | 0.084   | 0.27    | 0.077    | 0.012    | 0.002   | 0.072  | .       | .        | .   | 0.0039 | .        | 0.012                     | 0.026    |  |  |                         |  |  |  |
| 1   | BCS 466/2     | 0.0141 | 1.314 | 0.0105 | 0.0009   | 0.480 | 0.0278 | 10.20  | 17.84  | 0.0018  | (0.02)  | 2.772   | 0.0505   | (0.001)  | (0.002) | 0.0346 | 0.0020  | 0.0039   | .   | .      | (0.0001) | .                         | .        |  |  |                         |  |  |  |
| 1   | ECRM 231-2C   | 0.0140 | 1.263 | 0.0179 | 0.0250   | 0.368 | 0.0941 | 10.105 | 18.071 | 0.0032  | 0.0402  | 0.301   | 0.0444   | .        | 0.0007  | 0.0708 | 0.0048  | 0.0020   | 7.4 | .      | (0.7)    | (0.0043)                  | 0.0141   |  |  |                         |  |  |  |
| 1   | IARM 163B     | 0.0138 | 1.36  | 0.027  | 0.025    | 0.516 | 0.475  | 11.14  | 16.78  | 0.005   | 0.128   | 2.04    | 0.046    | 0.007    | 0.005   | 0.075  | .       | 0.0026   | .   | 0.0043 | .        | 0.006                     | 0.036    |  |  |                         |  |  |  |
| 1   | IARM 163C     | 0.013  | 1.60  | 0.029  | 0.026    | 0.37  | 0.43   | 10.36  | 17.16  | 0.004   | 0.178   | 2.03    | 0.071    | 0.013    | <0.005  | 0.085  | 0.046   | 0.0005   | .   | 0.0046 | .        | 0.013                     | .        |  |  |                         |  |  |  |

| # | Number | C | Mn | P | S | Si | Cu | Ni | Cr | Al | Co | Mo | N | Nb | Ti | V | As | B | Ca* | O | Pb* | Sn | W |
|---|--------|---|----|---|---|----|----|----|----|----|----|----|---|----|----|---|----|---|-----|---|-----|----|---|
|---|--------|---|----|---|---|----|----|----|----|----|----|----|---|----|----|---|----|---|-----|---|-----|----|---|

\* ECRM 272-1C also contains Sb: 0.0007, Zn: 0.0032      \*\* IPT 98 also contains 0.070 soluble Aluminum      \*\*\* IARM 253A also contains Se: 0.21

STAINLESS STEEL CHIPS

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

| # | Number      | C      | Mn    | P      | S      | Si    | Cu     | Ni     | Cr     | Al      | Co      | Mo     | Nb     | Ti    | V      | W | As    | B             | Ce    | Pb       | Sn | Units      |
|---|-------------|--------|-------|--------|--------|-------|--------|--------|--------|---------|---------|--------|--------|-------|--------|---|-------|---------------|-------|----------|----|------------|
| 1 | ECRM 278-1  | 0.903  | 0.405 | 0.0154 | 0.0052 | 0.336 | 0.077  | 0.236  | 18.11  | .       | .       | 1.040  | .      | .     | 0.077  | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | IRSID 201-1 | 0.291  | 0.363 | .      | .      | 0.843 | 0.099  | 0.202  | 12.33  | .       | .       | 0.050  | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 339     | 0.29   | 0.41  | 0.022  | 0.022  | 0.36  | (0.08) | 0.37   | 12.40  | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 469     | 0.279  | 0.598 | 0.015  | 0.020  | 0.421 | (0.02) | 0.246  | 11.93  | .       | .       | .      | .      | .     | (0.02) | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 472     | 0.227  | 1.02  | 0.032  | 0.029  | 1.05  | (0.02) | 1.95   | 15.82  | .       | .       | 0.661  | (0.02) | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | IPT 26      | 0.201  | 0.713 | 0.022  | 0.012  | 0.306 | 0.029  | 0.413  | 13.69  | .       | .       | 0.070  | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 150240 | 0.20   | 0.66  | 0.042  | 0.035  | 0.77  | 0.36   | 3.00   | 14.9   | .       | 0.10    | 0.26   | 0.17   | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | CMSI 1310   | 0.193  | 1.59  | 0.0123 | 0.0093 | 0.334 | 0.045  | 9.02   | 18.53  | 0.025   | .       | .      | .      | 0.123 | .      | . | .     | .             | .     | .        | .  | 150 g      |
| 1 | BCS 342     | 0.18   | 0.91  | 0.030  | 0.026  | 0.92  | (0.08) | 2.16   | 16.15  | .       | .       | 0.69   | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 340     | 0.18   | 0.38  | 0.024  | 0.020  | 0.35  | (0.06) | 0.40   | 16.35  | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 470     | 0.153  | 0.235 | 0.024  | 0.035  | 0.335 | (0.02) | 0.369  | 17.68  | .       | .       | .      | .      | .     | (0.02) | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 468/1   | 0.143  | 1.70  | 0.014  | 0.020  | 1.41  | .      | 8.90   | 17.96  | .       | 0.018   | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 147750 | 0.13   | 1.47  | 0.060  | 0.074  | 0.59  | 0.22   | 1.79   | 17.84  | .       | 0.16    | 0.51   | 0.72   | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 170020 | 0.11   | 1.09  | 0.038  | 0.024  | 0.48  | 0.06   | 8.12   | 17.7   | .       | 0.08    | 0.21   | 0.46   | .     | .      | . | .     | 0.016         | .     | .        | .  | 100 g      |
| 1 | CMSI 1312   | 0.101  | 0.788 | 0.038  | 0.0096 | 0.602 | 0.065  | 11.00  | 17.57  | 0.035   | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 150 g      |
| 1 | BCS 341     | 0.100  | 0.43  | 0.016  | 0.024  | 0.31  | (0.10) | 0.56   | 24.00  | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 125340 | 0.10   | 0.71  | 0.033  | 0.017  | 0.78  | 0.10   | 8.12   | 17.90  | 0.02    | 0.04    | 2.02   | .      | 0.35  | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 471     | 0.095  | 0.417 | 0.018  | 0.023  | 0.326 | (0.02) | 0.96   | 23.85  | .       | .       | .      | .      | .     | (0.03) | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 462     | 0.092  | 0.74  | 0.010  | 0.018  | 0.46  | .      | 12.55  | 12.35  | .       | .       | .      | .      | .     | .      | . | 0.007 | .             | .     | 0.0005   | .  | 100 g      |
| 1 | CMSI 1311   | 0.091  | 1.18  | 0.0216 | 0.0178 | 0.446 | 0.046  | 9.94   | 18.22  | 0.035   | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 150 g      |
| 1 | ECRM 252-1  | 0.090  | 0.83  | 0.017  | .      | 0.50  | 0.12   | 13.1   | 17.4   | (0.016) | 0.050   | 0.11   | 0.91   | .     | .      | . | 0.016 | sol.Ca:0.0017 | .     | Ta:0.006 | .  | 100 g last |
| 2 | C13X 190030 | 0.09   | 1.60  | 0.063  | 0.029  | 0.59  | 0.08   | 13.1   | 18.9   | .       | .       | 2.50   | 0.11   | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 180040 | 0.09   | 1.53  | 0.077  | 0.017  | 1.30  | 0.02   | 11.98  | 21.84  | .       | 0.16    | 0.60   | 0.78   | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 463     | 0.088  | 0.77  | 0.015  | 0.017  | 0.51  | .      | 9.65   | 18.30  | .       | .       | .      | .      | .     | .      | . | .     | (0.0004)      | .     | .        | .  | 100 g      |
| 1 | ECRM 279-2  | 0.088  | 0.258 | .      | .      | 0.516 | 0.107  | 1.603  | 15.642 | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | NM 202      | 0.087  | 1.34  | 0.027  | 0.014  | 0.573 | .      | 8.75   | 19.13  | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | ECRM 282-1  | 0.086  | 1.64  | 0.019  | 0.0042 | 0.734 | 0.109  | 10.86  | 16.72  | .       | .       | 2.19   | .      | 0.488 | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 2 | C13X 190020 | 0.07   | 1.05  | 0.031  | 0.053  | 0.76  | 0.105  | 9.18   | 17.1   | .       | .       | 1.99   | 0.07   | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 332     | 0.063  | 0.80  | 0.015  | 0.020  | 0.44  | (0.10) | 12.45  | 12.80  | .       | (0.037) | .      | .      | .     | (0.02) | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 333     | 0.066  | 0.79  | 0.016  | 0.020  | 0.45  | .      | 9.49   | 18.7   | .       | .       | .      | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | IRSID 202-1 | 0.055  | .     | .      | .      | 0.68  | .      | 9.8    | 16.    | .       | .       | 2.30   | .      | 0.54  | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | BCS 462/1   | 0.0345 | 0.722 | 0.0053 | 0.0041 | 0.463 | 0.0112 | 12.85  | 11.8   | .       | .       | 0.0304 | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | CMSI 1301   | 0.030  | 0.41  | 0.024  | 0.012  | 0.32  | .      | 6.16   | 15.00  | 0.37    | .       | 2.06   | 0.56   | .     | .      | . | .     | .             | .     | .        | .  | 150 g      |
| 1 | CMSI 1322   | 0.025  | 1.04  | 0.035  | 0.026  | 0.613 | 0.070  | 8.89   | 18.33  | .       | .       | 0.039  | .      | 0.21  | .      | . | .     | .             | .     | .        | .  | 150 g      |
| 1 | BCS 461/1   | 0.0103 | 0.686 | 0.0053 | 0.0051 | 0.374 | 0.0091 | 6.124  | 14.727 | .       | (0.004) | 0.0138 | .      | .     | .      | . | .     | .             | .     | .        | .  | 100 g      |
| 1 | JK 25 *     | .      | (1.7) | .      | .      | .     | .      | (11.3) | (22.3) | .       | .       | (0.1)  | .      | .     | .      | . | .     | .             | 0.096 | .        | .  | 150 g      |

\* BCS 333 and JK 25 are both Clearance Sale Items.

## HIGH ALLOY STEEL CHIPS AND POWDER

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

23X: 50 g chips

CMSI, JSS, JK, NCS HC20505: 150 g chips

NILAB: 150 g powder

all others: 100 g chips

| # | Number        | C      | Mn     | P      | S       | Si    | Cu     | Ni     | Cr     | Al      | Co     | Mo     | N        | Nb      | Ti      | V       | W       | As      | B        | O        | Pb | Sn      | Other      |
|---|---------------|--------|--------|--------|---------|-------|--------|--------|--------|---------|--------|--------|----------|---------|---------|---------|---------|---------|----------|----------|----|---------|------------|
| 1 | NCS HC20505   | 0.73   | 0.26   | 0.009  | 0.004   | 0.25  | .      | .      | .      | .       | .      | 3.98   | .        | .       | .       | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | IARM 205C     | 0.231  | 0.74   | 0.017  | 0.0034  | 0.39  | 0.109  | 0.68   | 12.14  | (0.003) | 0.058  | 1.00   | 0.040    | 0.010   | (0.002) | 0.21    | 1.03    | 0.004   | 0.0003   | 0.0041   | .  | 0.004   | .          |
| 1 | IARM 205B     | 0.220  | 0.68   | 0.014  | 0.001   | 0.37  | 0.149  | 0.702  | 11.72  | 0.009   | 0.025  | 0.97   | 0.049    | 0.018   | 0.003   | 0.262   | 1.1     | 0.005   | 0.0003   | 0.0016   | .  | 0.006   | .          |
| 1 | IARM 20B      | 0.18   | 0.35   | 0.019  | 0.004   | 0.40  | 0.069  | 1.94   | 12.42  | 0.006   | 0.030  | 0.32   | 0.0434   | 0.010   | 0.004   | 0.17    | 3.52    | .       | .        | 0.0056   | .  | 0.005   | .          |
| 1 | IARM 20C      | 0.18   | 0.30   | 0.018  | 0.007   | 0.35  | 0.060  | 1.93   | 12.15  | (0.004) | 0.031  | 0.12   | 0.0222   | 0.010   | (0.003) | 0.086   | 2.59    | .       | .        | 0.0068   | .  | 0.004   | .          |
| 1 | BCS 473       | 0.172  | 0.494  | 0.019  | 0.030   | 0.604 | (0.03) | (0.06) | 9.06   | .       | .      | 0.95   | .        | .       | .       | (0.02)  | .       | .       | .        | .        | .  | .       | .          |
| 1 | BAM 327-2     | 0.152  | 1.289  | 0.0228 | 0.0046  | 2.052 | 0.060  | 19.72  | 24.35  | 0.070   | 0.159  | 0.174  | 0.059    | .       | .       | 0.044   | .       | .       | .        | .        | .  | .       | .          |
| 2 | C13X 150230   | 0.15   | 1.56   | 0.020  | 0.020   | 0.23  | 0.08   | 1.49   | 10.59  | .       | 0.21   | 1.08   | .        | 1.15    | .       | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | NCS HC23502   | 0.13   | 0.79   | 0.024  | 0.0145  | 0.40  | .      | 1.55   | 11.18  | .       | 0.48   | .      | .        | .       | 0.25    | .       | .       | .       | .        | .        | .  | .       | .          |
| 2 | C23X DS10     | 0.13   | 1.65   | .      | .       | 2.38  | 0.04   | 34.6   | 17.7   | 0.04    | 0.99   | 0.04   | .        | .       | 0.04    | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | CMSI 1323     | 0.125  | 1.62   | 0.030  | 0.031   | 0.834 | .      | 35.92  | 15.39  | .       | .      | .      | .        | .       | 1.09    | .       | 2.89    | .       | .        | .        | .  | .       | .          |
| 1 | CMSI 1306     | 0.122  | 0.756  | 0.0297 | 0.008   | 0.360 | .      | .      | 25.06  | .       | .      | 2.49   | .        | .       | 1.25    | .       | .       | .       | .        | .        | .  | .       | .          |
| 2 | C23X 80010    | 0.11   | 1.05   | .      | .       | 0.22  | 0.07   | 30.1   | 22.9   | 0.38    | 0.98   | 0.52   | .        | .       | 0.44    | .       | .       | .       | .        | .        | .  | .       | .          |
| 2 | C13X PH10     | 0.107  | 1.49   | 0.053  | 0.031   | 0.236 | 3.11   | 5.21   | 16.17  | .       | 0.004  | 0.172  | 0.238    | 0.071   | .       | (0.006) | .       | 0.003   | .        | .        | .  | .       | .          |
| 1 | IARM 234B     | 0.103  | 1.35   | 0.004  | 0.0011  | 0.54  | 3.01   | 8.05   | 17.99  | 0.29    | 0.20   | 0.004  | 0.067    | 0.094   | 0.002   | (0.003) | 0.014   | .       | 0.0005   | 0.0005   | .  | 0.002   | .          |
| 1 | ECRM 286-1    | 0.100  | 1.92   | 0.026  | 0.280   | .     | .      | 8.55   | 18.13  | .       | 0.150  | 0.329  | 0.043    | .       | .       | .       | .       | .       | .        | .        | .  | 0.0084  | Sb: 0.0014 |
| 1 | CMSI 1302     | 0.089  | 0.92   | 0.023  | 0.015   | 0.46  | 0.084  | 0.538  | 10.49  | .       | 0.79   | 0.018  | .        | .       | .       | 0.216   | .       | .       | 0.009    | .        | .  | .       | .          |
| 1 | BCS 464/1     | 0.086  | 0.791  | 0.020  | 0.028   | 0.57  | .      | 20.05  | 25.39  | .       | 0.054  | .      | .        | .       | .       | .       | .       | (0.003) | .        | 0.004    | .  | 0.0004  | .          |
| 1 | BCS 467/1     | 0.082  | 0.788  | 0.018  | 0.019   | 0.52  | .      | 9.21   | 18.09  | .       | .      | .      | .        | 0.99    | .       | .       | .       | 0.004   | .        | .        | .  | 0.004   | .          |
| 2 | C13X PH20     | 0.08   | 1.24   | 0.058  | 0.045   | 0.47  | 3.97   | 3.6    | 16.88  | .       | .      | 1.00   | 0.035    | 0.17    | .       | .       | .       | .       | .        | .        | .  | 0.17    | .          |
| 2 | C13X 142110   | 0.08   | 0.70   | 0.006  | 0.016   | 1.72  | 0.31   | 12.4   | 26.05  | .       | 0.08   | 0.30   | .        | 0.18    | .       | .       | 3.29    | .       | .        | .        | .  | .       | .          |
| 1 | CMSI 1388     | 0.065  | 0.57   | 0.0045 | 0.012   | 0.577 | .      | 37.51  | 19.10  | 0.402   | .      | 2.22   | .        | .       | 0.98    | .       | 0.63    | .       | .        | .        | .  | .       | .          |
| 1 | IARM 7B       | 0.062  | 1.47   | 0.018  | (0.001) | 1.38  | 0.21   | 35.84  | 19.32  | 0.023   | 0.069  | 0.19   | 0.0130   | 0.023   | (0.005) | 0.048   | (0.031) | .       | (0.002)  | 0.0026   | .  | 0.004   | .          |
| 2 | IARM 24A      | 0.055  | 0.76   | 0.01   | 0.001   | 0.27  | 0.08   | 36.07  | 0.17   | (0.002) | 0.056  | 0.01   | (0.0026) | (0.01)  | <0.005  | 0.024   | (0.035) | .       | .        | (0.009)  | .  | (0.002) | .          |
| 1 | CMSI 1347     | 0.054  | 0.60   | 0.0076 | 0.0074  | 0.53  | 3.20   | 3.96   | 16.79  | .       | .      | .      | .        | 0.40    | .       | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | IARM 24B      | 0.053  | 0.82   | 0.009  | 0.0010  | 0.28  | 0.052  | 35.86  | 0.121  | 0.002   | 0.036  | 0.011  | 0.0017   | <0.01   | 0.002   | <0.005  | <0.04   | <0.005  | (0.001)  | 0.003    | .  | 0.0018  | Se: 0.19   |
| 1 | BCS 475       | 0.050  | 0.89   | 0.037  | 0.008   | 0.21  | 1.94   | 5.66   | 14.14  | 0.013   | 0.22   | 1.59   | .        | 0.22    | .       | .       | .       | .       | .        | .        | .  | 0.015   | .          |
| 1 | IARM 26B      | 0.050  | 0.19   | 0.013  | 0.002   | 0.16  | 0.038  | 25.06  | 14.76  | 0.25    | 0.24   | 1.24   | 0.0064   | 0.021   | 2.03    | 0.28    | 0.068   | .       | 0.0046   | 0.0032   | .  | 0.003   | .          |
| 2 | C13X 125370   | 0.05   | 0.91   | 0.097  | 0.030   | 0.99  | 0.05   | 9.98   | 19.8   | 0.06    | 0.11   | 2.99   | .        | .       | 0.54    | .       | .       | .       | .        | .        | .  | .       | .          |
| 2 | C13X 125380   | 0.05   | 0.61   | 0.042  | 0.039   | 0.52  | 2.97   | 6.03   | 25.6   | .       | .      | 2.02   | .        | .       | .       | .       | .       | .       | .        | .        | .  | .       | .          |
| # | Number        | C      | Mn     | P      | S       | Si    | Cu     | Ni     | Cr     | Al      | Co     | Mo     | N        | Nb      | Ti      | V       | W       | As      | B        | O        | Pb | Sn      | Other      |
| 2 | C23X 80030    | 0.05   | 0.42   | .      | .       | 0.87  | 0.53   | 34.7   | 18.92  | 0.06    | 0.11   | 0.14   | .        | .       | 0.10    | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | ECRM 289-1C   | 0.0489 | 1.016  | 0.0114 | 0.0027  | 0.531 | .      | 24.68  | 14.63  | 0.199   | 0.065  | 1.102  | .        | .       | 2.01    | 0.260   | .       | .       | 0.0044   | .        | .  | .       | 0.111      |
| 2 | C13X PH40     | 0.047  | 0.87   | 0.033  | 0.051   | 0.75  | 5.55   | 4.07   | 15.00  | .       | .      | 0.26   | 0.092    | 0.39    | .       | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | IARM 15B      | 0.047  | 0.39   | 0.013  | 0.001   | 0.33  | 1.53   | 6.94   | 14.53  | 0.006   | 0.24   | 0.82   | 0.0355   | 0.65    | 0.005   | 0.033   | 0.12    | .       | .        | 0.0039   | .  | 0.009   | .          |
| 1 | IARM 22B      | 0.045  | 0.53   | 0.022  | 0.001   | 0.41  | 3.25   | 4.81   | 14.29  | 0.004   | 0.08   | 0.35   | 0.012    | 0.301   | 0.003   | 0.054   | 0.028   | .       | (0.0007) | 0.001    | .  | 0.010   | .          |
| 2 | C23X DS30     | 0.04   | 0.67   | .      | .       | 1.43  | 0.62   | 39.66  | 19.87  | 0.01    | 0.11   | 0.62   | .        | .       | 0.34    | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | IARM 23B      | 0.034  | 0.81   | 0.022  | 0.022   | 0.40  | 3.67   | 4.10   | 15.21  | 0.003   | 0.038  | 0.19   | 0.0334   | 0.22    | 0.002   | 0.059   | 0.020   | .       | 0.0007   | 0.0035   | .  | 0.009   | .          |
| 1 | IARM 23C      | 0.034  | 0.77   | 0.024  | 0.026   | 0.45  | 3.69   | 4.33   | 15.12  | 0.004   | 0.065  | 0.31   | 0.032    | 0.235   | 0.001   | 0.066   | 0.05    | .       | 0.001    | 0.007    | .  | 0.0081  | .          |
| 1 | ECRM 273-1    | 0.0336 | 0.785  | 0.0131 | 0.0004  | 0.378 | 3.046  | 4.85   | 14.747 | .       | 0.0391 | 0.2462 | 0.0444   | 0.221   | .       | 0.0512  | .       | 0.0030  | .        | .        | .  | 0.0021  | .          |
| 1 | CMSI 1320     | 0.032  | 0.578  | 0.013  | 0.0036  | 0.238 | 0.030  | 22.43  | 4.04   | 0.0024  | 0.011  | 0.0019 | (0.011)  | .       | 0.0018  | 0.0047  | (0.001) | 0.0026  | .        | .        | .  | 0.0022  | .          |
| 2 | C13X 170050   | 0.030  | 0.40   | 0.015  | 0.052   | 1.64  | 0.11   | 20.0   | 24.72  | .       | 0.03   | 0.48   | .        | 0.12    | .       | .       | .       | .       | 0.002    | .        | .  | .       | .          |
| 1 | CMSI 1345     | 0.029  | 0.96   | 0.017  | 0.007   | 0.76  | .      | 14.62  | 17.39  | .       | .      | 3.64   | .        | .       | 0.32    | .       | .       | .       | .        | .        | .  | .       | .          |
| 1 | IARM 239A     | 0.028  | 1.01   | 0.023  | 0.0015  | 0.40  | 1.63   | 6.07   | 25.74  | 0.005   | 0.037  | 3.14   | 0.253    | 0.010   | 0.003   | 0.05    | 0.027   | .       | 0.0030   | 0.017    | .  | <0.01   | .          |
| 1 | IARM 26C      | 0.028  | 0.25   | 0.017  | 0.0004  | 0.08  | 0.144  | 25.05  | 13.7   | 0.12    | 0.052  | 1.09   | 0.0045   | (0.002) | 1.87    | 0.238   | 0.01    | 0.004   | 0.0074   | 0.002    | .  | 0.011   | .          |
| 1 | IARM 153A     | 0.024  | 1.61   | 0.03   | 0.002   | 0.33  | 0.23   | 14.11  | 18.13  | 0.009   | 0.16   | 2.99   | 0.0496   | 0.022   | 0.002   | 0.065   | 0.027   | .       | .        | (0.0040) | .  | 0.008   | .          |
| 1 | IARM 212B     | 0.023  | 1.30   | 0.023  | 0.0005  | 0.34  | 0.207  | 5.61   | 22.25  | 0.006   | 0.071  | 3.25   | 0.17     | 0.005   | 0.0031  | 0.065   | 0.019   | .       | 0.0014   | 0.004    | .  | 0.006   | .          |
| 1 | IARM 302A **  | 0.023  | 0.93   | 0.024  | 0.0008  | 0.55  | 0.69   | 17.7   | 20.4   | 0.015   | 0.069  | 6.15   | 0.183    | (0.01)  | (0.003) | 0.05    | (0.02)  | .       | 0.0027   | (0.003)  | .  | 0.008   | .          |
| 2 | IARM 157A     | 0.023  | 0.35   | 0.014  | 0.001   | 0.39  | 0.14   | 23.8   | 20.7   | 0.021   | 0.045  | 6.18   | 0.20     | 0.019   | (0.004) | 0.044   | 0.023   | .       | .        | .        | .  | <0.01   | .          |
| 1 | BCS 474       | 0.022  | 1.70   | 0.008  | 0.020   | 0.17  | 0.35   | 14.74  | 19.06  | .       | (0.02) | 3.55   | .        | .       | .       | 0.30    | .       | 0.030   | .        | .        | .  | .       | .          |
| 1 | ECRM 295-1C * | 0.0166 | 1.758  | 0.0167 | 0.0004  | 0.418 | 1.481  | 24.40  | 19.51  | 0.0203  | 0.0450 | 3.996  | 0.0615   | .       | .       | 0.0453  | .       | 0.0041  | 0.0018   | .        | .  | 0.0025  | *          |
| 1 | ECRM 299-1C   | 0.0154 | 0.2678 | 0.0152 | 0.00022 | 0.299 | 0.0382 | 0.172  | 22.32  | 5.33    | 0.0187 | 0.0186 | 0.0198   | .       | 0.1289  | 0.0329  | .       | 0.0054  | 0.0002   | .        | .  | .       | Zr: 0.1775 |
| 1 | IARM 153B     | 0.015  | 1.58   | 0.031  | 0.0082  | 0.28  | 0.408  | 13.19  | 18.13  | 0.006   | 0.115  | 3.12   | 0.0158   | 0.008   | 0.002   | 0.031   | 0.020   | .       | 0.0022   | 0.0052   | .  | 0.014   | .          |
| 1 | IARM 212A     | 0.015  | 1.43   | 0.025  | 0.002   | 0.41  | 0.21   | 5.69   | 22.27  | (0.002) | 0.13   | 3.08   | 0.14     | 0.012   | 0.003   | 0.079   | 0.027   | .       | (0.001)  | 0.0057   | .  | 0.008   | .          |
| 1 | ECRM 298-     |        |        |        |         |       |        |        |        |         |        |        |          |         |         |         |         |         |          |          |    |         |            |

## CRM CAST IRON CHIPS

| Number       | C     | Mn    | P     | S     | Si    | Units |
|--------------|-------|-------|-------|-------|-------|-------|
| NCS HC16023  | 3.8   | 0.929 | 0.171 | 0.016 | 1.42  | 150 g |
| NCS HC11003  | 3.77  | 0.659 | 0.230 | 0.129 | 1.47  | 100 g |
| NCS HC37035  | 3.75  | 0.730 | 0.152 | 0.068 | 2.15  | 100 g |
| NCS HC37012  | 3.75  | 0.730 | 0.152 | 0.068 | 2.15  | 100 g |
| NCS HC37034  | 3.73  | 0.565 | 0.117 | 0.067 | 2.58  | 100 g |
| NCS HC37011  | 3.73  | 0.565 | 0.117 | 0.067 | 2.58  | 100 g |
| NCS HC37010  | 3.63  | 0.762 | 0.187 | 0.070 | 2.82  | 100 g |
| NCS HC16024  | 3.59  | 0.514 | 0.315 | 0.033 | 1.96  | 150 g |
| NCS HC16025  | 3.46  | 0.67  | 0.081 | 0.058 | 2.61  | 150 g |
| NM 18        | 3.36  | 0.61  | 0.18  | 0.069 | 1.82  | 100 g |
| NCS HC11003a | 3.36  | 0.561 | 0.166 | 0.176 | 1.39  | 100 g |
| NCS HC11003b | 3.36  | 0.386 | 0.135 | 0.154 | 1.82  | 100 g |
| NCS HC16026  | 3.22  | 0.726 | 0.085 | 0.059 | 2.25  | 150 g |
| NCS HC39005  | 3.18  | 0.76  | 0.122 | 0.073 | 1.57  | 100 g |
| NCS HC11006  | 3.11  | 0.850 | 0.270 | 0.130 | 1.37  | 100 g |
| NCS HC16016  | 3.04  | 0.646 | 0.032 | 0.102 | 0.850 | 150 g |
| NCS HC13016  | 2.99  | 1.30  | 0.278 | 0.100 | 1.29  | 150 g |
| NCS HC15009  | 2.96  | 0.70  | 0.085 | 0.050 | 2.31  | 100 g |
| NCS HC39003  | 2.95  | 0.26  | 0.142 | 0.085 | 1.49  | 100 g |
| NCS HC39001  | 2.85  | 0.38  | 0.081 | 0.096 | 2.48  | 100 g |
| NCS HC16022  | 2.83  | 0.721 | 0.094 | 0.067 | 2.19  | 150 g |
| NCS HC39002  | 2.81  | 0.57  | 0.062 | 0.134 | 1.71  | 100 g |
| NCS HC15010  | 2.79  | 0.89  | 0.085 | 0.066 | 1.98  | 100 g |
| NCS HC39004  | 2.78  | 0.78  | 0.066 | 0.082 | 2.17  | 100 g |
| NCS HC11004  | 2.72  | 0.359 | 0.124 | 0.115 | 2.56  | 100 g |
| NCS HC18002  | 2.67  | 1.36  | 0.051 | 0.031 | 2.94  | 150 g |
| NCS HC39010  | 2.65  | 0.331 | 0.113 | 0.134 | 1.29  | 100 g |
| NCS HC39008  | 2.59  | 0.859 | 0.187 | 0.093 | 2.17  | 100 g |
| NCS HC15011  | 2.58  | 1.00  | 0.087 | 0.068 | 2.76  | 100 g |
| NCS HC15008  | 2.56  | 0.50  | 0.101 | 0.074 | 1.38  | 100 g |
| NCS HC18001  | 2.54  | 1.82  | 0.110 | 0.054 | 1.74  | 150 g |
| NCS HC13015  | 2.51  | 0.62  | 0.104 | 0.020 | 4.08  | 150 g |
| CTIF FG20    | 2.487 | 0.571 | 1.440 | 0.109 | 1.726 | 100 g |
| NCS HC39009  | 2.47  | 1.56  | 0.318 | 0.057 | 3.33  | 100 g |
| CTIF FG10    | 2.322 | 1.098 | 0.111 | 0.016 | 2.467 | 100 g |
| NCS HC11005  | 2.19  | 0.219 | 0.047 | 0.048 | 3.07  | 100 g |
| Number       | C     | Mn    | P     | S     | Si    | Units |

## CAST IRON CHIPS WITH GRAPHITIC CARBON

IPT: 80 g all others: 100 g

| Number       | C      | C.Grph | Mn    | P     | S     | Si   | Cu     | Ni                        | Cr    | Mo      | Ti    | V     | As      | Sn    | Tl                       |
|--------------|--------|--------|-------|-------|-------|------|--------|---------------------------|-------|---------|-------|-------|---------|-------|--------------------------|
| IPT 75A      | 3.4    | 2.7    | 0.722 | 0.250 | 0.033 | 1.98 | 0.433  | 0.425                     | 0.487 | 0.438   | 0.022 | 0.030 | .       | .     | .                        |
| IPT 37B      | 3.37   | 2.85   | 0.737 | 0.148 | 0.069 | 1.66 | 0.052  | 0.074                     | 0.088 | .       | .     | .     | .       | .     | 0.034                    |
| IPT 69       | 3.34   | 2.50   | 0.715 | 0.267 | 0.018 | 2.07 | 0.47   | 0.272                     | 0.353 | (0.004) | .     | .     | .       | .     | 0.019                    |
| NM 73 **     | 3.07   | 2.55   | 0.82  | 0.22  | 0.014 | 1.21 | .      | ** Combined Carbon: 0.52% | .     | .       | .     | .     | .       | .     | .                        |
| BAM 430-1    | 2.60   | 2.34   | 0.684 | 1.76  | 0.024 | 2.17 | 0.044  | .                         | .     | .       | .     | .     | .       | .     | .                        |
| ECRM 483-1   | 2.46   | 1.65   | 0.596 | 0.615 | 0.103 | 1.75 | .      | .                         | 0.039 | .       | .     | .     | .       | 0.130 | .                        |
| ECRM 454-1 * | (2.53) | (1.96) | 1.16  | 0.046 | 0.068 | 2.00 | (0.07) | (0.21)                    | .     | .       | .     | .     | (0.025) | .     | 0.052                    |
| ECRM 453-1   | (2.44) | (2.37) | 0.72  | 1.63  | 0.049 | 3.17 | 0.10   | 0.068                     | 0.053 | .       | .     | 0.050 | 0.019   | .     | (0.040) * Clearance Sale |

CRM CAST IRON CHIPS WITH MAGNESIUM AND RARE EARTHS

unit sizes have been abbreviated as follows: A = 80 g, B = 100 g, and C = 150 g

| Number      | C      | Mg     | T.RE   | Mn     | P      | S      | Si    | Cu       | Ni     | Cr     | Al     | Als   | Co     | Mo      | Ti    | V      | As    | Ce    | La      | Sn     | Units | Other     |
|-------------|--------|--------|--------|--------|--------|--------|-------|----------|--------|--------|--------|-------|--------|---------|-------|--------|-------|-------|---------|--------|-------|-----------|
| ECRM 481-1  | 3.91   | 0.051  | .      | 0.448  | 0.019  | 0.004  | 2.29  | 0.150    | 1.19   | 0.063  | 0.023  | .     | .      | 0.011   | .     | .      | 0.010 | .     | .       | .      | B     |           |
| GBW 01119a  | 3.67   | 0.023  | 0.0187 | 0.497  | 0.084  | 0.0053 | 2.673 | 0.033    | 0.011  | 0.0115 | .      | .     | 0.0065 | 0.0013  | 0.068 | 0.0205 | .     | .     | .       | .      | A     |           |
| NCS HC19012 | 3.19   | 0.034  | 0.032  | 0.54   | 0.063  | 0.014  | 2.20  | 0.194    | 0.026  | 0.377  | .      | .     | .      | 0.075   | 0.186 | 0.380  | .     | .     | .       | .      | C     |           |
| NCS HC37019 | 3.06   | 0.054  | 0.049  | 6.72   | 0.11   | 0.0041 | 5.80  | .        | .      | .      | .      | .     | .      | .       | .     | .      | .     | .     | .       | .      | B     |           |
| BS CE207 *  | 3.05   | 0.003  | .      | 1.20   | 0.090  | 0.016  | 2.07  | 0.222    | 0.048  | 0.039  | 0.005  | .     | 0.031  | (0.001) | 0.079 | 0.034  | 0.004 | 0.016 | 0.004   | .      | C     |           |
| ECRM 480-1  | 3.029  | 0.0172 | .      | 0.1514 | 0.0021 | 0.0086 | 2.407 | (0.0052) | 0.4826 | .      | 0.0163 | .     | .      | .       | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC28054 | 3.01   | 0.047  | .      | 0.645  | 0.188  | 0.011  | 2.03  | .        | 1.19   | 0.619  | .      | .     | .      | 0.355   | .     | .      | .     | .     | .       | .      | B     | Nb: 0.095 |
| NCS HC19011 | 3.00   | 0.032  | 0.032  | 1.05   | 0.139  | 0.021  | 2.37  | 0.041    | 0.027  | 0.312  | .      | .     | .      | 0.0018  | 0.087 | 0.305  | .     | .     | .       | .      | C     |           |
| NCS HC37007 | 2.95   | 0.015  | 0.010  | 0.238  | 0.041  | 0.012  | 2.06  | 0.783    | .      | .      | .      | .     | .      | 0.405   | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37020 | 2.88   | 0.068  | 0.047  | 6.40   | 0.11   | 0.0035 | 3.75  | .        | .      | .      | .      | .     | .      | .       | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37021 | 2.79   | 0.028  | 0.045  | 8.77   | 0.10   | 0.0060 | 6.58  | .        | .      | .      | .      | .     | .      | .       | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37018 | 2.78   | 0.049  | 0.041  | 6.80   | 0.12   | 0.0027 | 5.96  | .        | .      | .      | .      | .     | .      | .       | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC19017 | 2.77   | 0.070  | 0.070  | 0.570  | 0.015  | 0.014  | 2.52  | 0.046    | 0.031  | 0.042  | .      | .     | 0.037  | .       | 0.072 | 0.356  | .     | .     | .       | .      | C     |           |
| NCS HC11015 | 2.74   | 0.012  | 0.036  | 0.473  | 0.022  | 0.0009 | 2.32  | 0.031    | 0.627  | 0.040  | .      | 0.021 | 0.011  | 0.0016  | 0.015 | 0.031  | 0.011 | 0.019 | 0.013   | 0.0037 | A     | N: 0.0047 |
| NCS HC19018 | 2.70   | 0.083  | 0.083  | 0.625  | 0.024  | 0.011  | 3.10  | 0.049    | 0.031  | 0.043  | .      | .     | 0.035  | .       | 0.125 | 0.405  | .     | .     | .       | .      | C     |           |
| NCS HC19010 | 2.69   | 0.028  | 0.040  | 0.79   | 0.029  | 0.023  | 2.92  | 0.042    | 0.025  | 0.227  | .      | .     | .      | 0.0016  | 0.109 | 0.236  | .     | .     | .       | .      | C     |           |
| BS CE206 *  | 2.64   | 0.0006 | .      | 0.99   | 0.145  | 0.018  | 2.76  | 0.45     | 0.048  | 0.068  | 0.004  | .     | 0.029  | 0.007   | 0.078 | 0.038  | 0.004 | 0.011 | 0.004   | .      | C     |           |
| NCS HC37008 | 2.59   | 0.014  | 0.011  | 0.373  | 0.042  | 0.012  | 3.08  | 0.288    | .      | .      | .      | .     | .      | 0.514   | .     | .      | .     | .     | .       | .      | B     |           |
| CKD 230 *   | 2.55   | 0.040  | .      | 0.31   | 0.049  | 0.024  | 1.04  | 1.05     | 1.11   | 0.09   | .      | 0.01  | 0.01   | 0.05    | 0.01  | 0.02   | 0.005 | 0.01  | (0.005) | 0.010  | B     | Sb: 0.006 |
| BS CE209 *  | (2.47) | 0.0013 | .      | 0.39   | 0.167  | 0.027  | 2.13  | 0.211    | 0.045  | 0.010  | 0.006  | .     | 0.030  | (0.001) | 0.062 | 0.030  | 0.003 | 0.026 | 0.008   | .      | C     |           |
| BS CE208 *  | 2.41   | 0.0008 | .      | 0.34   | 0.118  | 0.041  | 1.63  | 0.212    | 0.047  | 0.007  | 0.003  | .     | 0.031  | (0.001) | 0.048 | 0.024  | 0.004 | 0.018 | 0.007   | .      | C     |           |
| NCS HC19016 | 2.21   | 0.099  | 0.099  | 0.420  | 0.014  | 0.012  | 3.78  | 0.047    | 0.032  | 0.040  | .      | .     | 0.037  | .       | 0.066 | 0.310  | .     | .     | .       | .      | C     |           |
| NCS HC37006 | 2.12   | 0.056  | 0.080  | 0.531  | 0.036  | 0.0062 | 2.23  | 0.617    | .      | .      | .      | .     | .      | 2.295   | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37004 | 2.10   | 0.036  | 0.034  | 0.704  | 0.055  | 0.015  | 2.74  | 0.451    | .      | .      | .      | .     | .      | 0.205   | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37005 | 1.92   | 0.073  | 0.059  | 0.955  | 0.041  | 0.0064 | 3.36  | 0.181    | .      | .      | .      | .     | .      | 0.128   | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC37009 | 1.92   | 0.046  | 0.043  | 1.17   | 0.046  | 0.012  | 1.69  | 0.073    | .      | .      | .      | .     | .      | 0.055   | .     | .      | .     | .     | .       | .      | B     |           |
| NCS HC28041 | 1.59   | .      | 0.019  | 0.44   | 0.067  | 0.004  | 2.13  | 0.024    | .      | 0.052  | .      | .     | .      | .       | .     | .      | .     | .     | .       | .      | C     |           |
| NCS HC28040 | .      | .      | 0.058  | 0.77   | 0.058  | .      | 3.04  | 0.024    | 0.013  | 0.030  | .      | .     | 0.0049 | 0.0026  | 0.076 | 0.011  | .     | .     | .       | .      | C     |           |

\* Clearance Sale Item

## ALLOYED CAST IRON

| Number      | C     | Mn    | P      | S      | Si    | Cu       | Ni     | Cr    | Als  | Co    | Mo     | Ti     | V     | W     | As     | B     | Bi     | Pb    | Sb      | Sn    | Units | Other      |
|-------------|-------|-------|--------|--------|-------|----------|--------|-------|------|-------|--------|--------|-------|-------|--------|-------|--------|-------|---------|-------|-------|------------|
| CRM         |       |       |        |        |       |          |        |       |      |       |        |        |       |       |        |       |        |       |         |       |       |            |
| CMSI 1571   | 3.95  | 0.27  | 0.130  | 0.233  | 1.30  | 0.011    | 0.029  | 4.31  | .    | .     | 0.36   | 0.016  | 0.012 | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| NCS HC37002 | 3.42  | 0.71  | 0.058  | 0.064  | 1.05  | 0.90     | 0.23   | 8.93  | .    | .     | 1.74   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| NCS HC37016 | 3.42  | 0.71  | 0.058  | 0.064  | 1.05  | 0.90     | 0.23   | 8.93  | .    | .     | 1.74   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 80 g  |            |
| NCS HC37001 | 3.40  | 0.99  | 0.060  | 0.054  | 1.35  | 1.22     | 0.63   | 13.54 | .    | .     | 1.03   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| NCS HC37015 | 3.40  | 0.89  | 0.060  | 0.054  | 1.35  | 1.22     | 0.63   | 13.45 | .    | .     | 1.03   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 80 g  |            |
| NCS HC13010 | 3.35  | 0.699 | 0.147  | 0.045  | 2.44  | 0.018    | 0.300  | 0.96  | .    | .     | 2.39   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 150 g |            |
| NCS HC13011 | 3.23  | 1.20  | 0.310  | 0.045  | 4.30  | 0.243    | 0.919  | 1.36  | .    | .     | 0.639  | .      | .     | .     | .      | .     | .      | .     | .       | .     | 150 g |            |
| CKD 227 *   | 3.2   | 0.95  | 0.66   | 0.037  | 1.67  | 0.33     | 0.05   | 0.68  | 0.04 | 0.03  | 0.60   | 0.07   | 0.11  | 0.06  | 0.01   | 0.007 | 0.0005 | 0.001 | 0.03    | 0.07  | 100 g | Zn: 0.01   |
| NCS HC28034 | 3.15  | 0.795 | 0.321  | 0.082  | 1.67  | 1.04     | .      | 0.464 | .    | .     | 0.515  | 0.053  | .     | .     | .      | .     | .      | .     | .       | .     | 150 g |            |
| NCS HC37003 | 2.95  | 1.72  | 0.062  | 0.034  | 1.32  | 1.06     | 1.05   | 15.39 | .    | .     | 1.12   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| NCS HC37017 | 2.95  | 1.72  | 0.062  | 0.034  | 1.32  | 1.06     | 1.05   | 15.39 | .    | .     | 1.12   | .      | .     | .     | .      | .     | .      | .     | .       | .     | 80 g  |            |
| ECRM 479-1  | 2.86  | 0.136 | 0.0764 | 0.0893 | 2.018 | (0.0065) | 1.0123 | 1.001 | .    | .     | 0.1959 | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g | Al: 0.0143 |
| CMSI 1569   | 2.86  | 1.07  | 0.058  | 0.028  | 0.36  | 0.42     | 0.25   | 22.52 | .    | .     | 1.14   | 0.005  | 0.039 | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| ECRM 482-2  | 2.599 | 0.728 | 0.0974 | 0.0491 | 1.815 | 1.231    | 2.284  | 0.675 | .    | .     | 0.454  | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| CMSI 1568   | 2.46  | 1.63  | 0.383  | 0.013  | 0.32  | 0.73     | 1.20   | 12.95 | .    | .     | 0.76   | 0.0089 | 0.026 | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| CMSI 1570   | 2.31  | 0.83  | 0.064  | 0.043  | 0.59  | 0.36     | 0.49   | 26.50 | .    | .     | 2.71   | 0.0051 | 0.039 | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| CMSI 1308   | 2.223 | 0.142 | 0.0226 | 0.0094 | 0.171 | 0.41     | 0.095  | 12.18 | .    | .     | 0.0067 | .      | 0.030 | 0.028 | .      | .     | .      | .     | .       | .     | 150 g |            |
| ECRM 451-2  | 2.059 | 1.079 | 0.0593 | 0.0315 | 2.092 | 6.26     | 14.01  | 1.097 | .    | .     | .      | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| CTIF FA10   | 1.976 | 1.063 | 0.045  | .      | 1.480 | 0.492    | 20.05  | 1.986 | .    | .     | .      | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| CKD 228 *   | 1.95  | 1.27  | 0.30   | 0.145  | 2.51  | 0.56     | 0.31   | 0.31  | 0.01 | 0.015 | 1.00   | 0.03   | 0.005 | 0.04  | 0.035  | 0.005 | 0.005  | 0.005 | 0.020   | 0.050 | 100 g | Zr: 0.015  |
| CTIF FA20   | 0.643 | 0.368 | 0.045  | .      | 1.519 | .        | .      | 28.30 | .    | .     | .      | .      | .     | .     | .      | .     | .      | .     | .       | .     | 100 g |            |
| RM          |       |       |        |        |       |          |        |       |      |       |        |        |       |       |        |       |        |       |         |       |       |            |
| BS CE 204 * | 3.10  | 1.26  | 0.080  | 0.040  | 1.62  | .        | .      | .     | .    | .     | .      | .      | .     | .     | .      | .     | .      | .     | .       | .     | 150 g |            |
| Cl1X 152940 | 2.15  | 0.52  | 0.081  | 0.072  | 0.49  | 0.174    | 4.20   | 31.02 | .    | 1.05  | 0.278  | .      | 0.024 | 0.301 | .      | .     | .      | 0.023 | .       | 0.072 | 100 g |            |
| BS CE 216 * | .     | 0.80  | 0.193  | 0.043  | 2.60  | 0.68     | 0.24   | 0.41  | .    | 0.014 | 0.68   | 0.097  | 0.032 | .     | 0.0070 | .     | .      | .     | 0.00043 | .     | 150 g |            |
| BS CE 217 * | .     | 1.07  | 0.356  | 0.029  | 3.15  | 0.13     | 0.002  | 1.08  | .    | 0.014 | 0.002  | 0.093  | 0.036 | .     | .      | .     | .      | .     | 0.00041 | .     | 150 g |            |
| BS CE 219 * | .     | 1.23  | 0.505  | 0.038  | 2.47  | 0.415    | 0.228  | 0.31  | .    | 0.014 | 0.283  | 0.080  | 0.034 | .     | .      | .     | .      | .     | 0.00050 | .     | 150 g |            |
| Number      | C     | Mn    | P      | S      | Si    | Cu       | Ni     | Cr    | Als  | Co    | Mo     | Ti     | V     | W     | As     | B     | Bi     | Pb    | Sb      | Sn    | Units | Other      |

\* Clearance Sale Item

CAST IRON CHIPS WITH CARBON OVER 3%

unit sizes have been abbreviated so that: A = CRM, 100g and B = CRM, 150g and C = RM, 50g

| Number       | C      | Mn     | P      | S      | Si      | Cu     | Ni     | Cr     | Co     | Mo     | N      | Ti     | V      | As       | B      | Cd | Ga        | Pb      | Sb      | Sn      | Tl    | Units |
|--------------|--------|--------|--------|--------|---------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|----|-----------|---------|---------|---------|-------|-------|
| DH E2512     | 4.738  | 0.758  | 0.081  | 0.103  | 1.865   | 0.106  | 0.026  | 0.08   | 0.016  | 0.002  | .      | 0.036  | 0.015  | 0.012    | .      | .  | Als:0.054 | .       | .       | .       | .     | C     |
| DH E2511     | 4.714  | 0.765  | 0.082  | 0.103  | 1.851   | 0.106  | 0.026  | 0.08   | 0.016  | 0.002  | .      | 0.036  | 0.015  | 0.012    | .      | .  | Al:0.054  | .       | .       | .       | .     | C     |
| JSS 102-8    | 4.71   | 0.326  | 0.103  | 0.0353 | 0.257   | .      | .      | .      | .      | .      | 0.0030 | 0.0255 | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| JSS 110-12   | 4.18   | 0.392  | 0.0902 | 0.0251 | 1.70    | 0.003  | 0.0117 | 0.0162 | .      | .      | 0.0044 | 0.0324 | 0.0100 | 0.0022   | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC16027  | 4.06   | 0.094  | 0.038  | 0.029  | 0.725   | 0.0023 | 0.0023 | 0.010  | .      | 0.0027 | .      | 0.026  | 0.0064 | 0.0011   | .      | .  | .         | <0.0002 | 0.00013 | 0.00014 | .     | A     |
| ECRM 478-2   | 4.003  | 0.321  | 0.201  | 0.0460 | 2.411   | 0.1276 | 0.151  | 0.251  | .      | .      | 0.0023 | 0.0328 | 0.0113 | (0.0018) | 0.0006 | .  | .         | .       | .       | .       | .     | A     |
| NCS HC16028  | 4.00   | 0.634  | 0.046  | 0.0073 | 1.55    | 0.0051 | 0.0045 | 0.036  | .      | 0.0089 | .      | 0.084  | 0.018  | 0.0012   | .      | .  | .         | <0.0002 | 0.00016 | 0.00018 | .     | A     |
| ECRM 488-2   | 3.956  | 0.201  | 0.0111 | 0.1173 | 0.374   | 0.0256 | 0.1247 | 0.303  | .      | .      | 0.0052 | 0.0636 | 0.0545 | .        | .      | .  | .         | .       | .       | 0.0013  | .     | A     |
| NCS HC28051  | 3.94   | 0.513  | 0.067  | 0.029  | 1.30    | 0.052  | 0.014  | 0.0086 | .      | .      | .      | 0.088  | 0.052  | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| CMSI 1510A   | 3.91   | 0.117  | 0.327  | 0.0457 | 0.826   | 0.018  | .      | .      | .      | .      | .      | 0.025  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| GBW 01110b   | 3.90   | 0.414  | 0.044  | 0.044  | 0.93    | 0.010  | .      | .      | .      | .      | .      | 0.024  | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC16012  | 3.89   | 0.65   | 0.058  | 0.028  | 1.58    | 0.0029 | 0.0058 | 0.0081 | .      | 0.0066 | .      | 0.042  | .      | 0.0010   | .      | .  | .         | <0.0002 | 0.00016 | 0.00015 | .     | B     |
| CMSI 1508A   | 3.58   | 1.66   | 0.039  | 0.044  | 1.59    | 0.024  | .      | .      | .      | .      | .      | 0.030  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28015  | 3.58   | 0.97   | 0.080  | 0.014  | 3.02    | 0.091  | 0.0125 | 0.0075 | .      | .      | .      | 0.047  | 0.007  | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| ECRM 487-2 * | 3.5730 | 0.0491 | 0.0065 | 0.0031 | 0.0898  | 0.0136 | 0.0219 | 0.0248 | 0.0151 | 0.0034 | 0.004  | 0.0022 | 0.0117 | 0.0045   | .      | .  | .         | .       | .       | .       | .     | A     |
| CTIF FB20-2  | 3.557  | (0.39) | (0.07) | 0.0614 | (0.935) | .      | .      | (0.10) | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| CTIF FB20-1  | 3.552  | (0.39) | (0.07) | 0.059  | (0.935) | .      | .      | (0.10) | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1503B   | 3.53   | 1.10   | 0.066  | 0.048  | 1.83    | 0.258  | .      | .      | .      | .      | .      | 0.025  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| CMSI 1572    | 3.46   | 1.05   | 0.252  | 0.062  | 3.15    | 0.263  | 0.132  | 0.202  | .      | 0.047  | .      | 0.047  | 0.007  | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| GBW 01108b   | 3.45   | 1.84   | 0.046  | 0.018  | 1.44    | 0.015  | .      | .      | .      | .      | .      | 0.019  | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1505A   | 3.41   | 0.463  | 0.193  | 0.0081 | 3.82    | 0.109  | .      | .      | .      | .      | .      | 0.151  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC11010  | 3.41   | 0.46   | 0.569  | 0.067  | 0.716   | 0.017  | .      | 0.17   | .      | .      | .      | 0.015  | 0.0039 | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| ECRM 476-3   | 3.390  | 0.987  | 0.0908 | 0.0493 | 1.813   | 0.2445 | 0.0549 | 0.0648 | .      | .      | 0.0038 | 0.0222 | 0.0115 | 0.0145   | .      | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1504B   | 3.39   | 0.94   | 0.113  | 0.016  | 2.41    | 0.202  | .      | .      | .      | .      | .      | 0.058  | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC28022  | 3.33   | 0.798  | 0.811  | 0.086  | 1.73    | 0.170  | .      | 0.064  | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| Number       | C      | Mn     | P      | S      | Si      | Cu     | Ni     | Cr     | Co     | Mo     | N      | Ti     | V      | As       | B      | Cd | Ga        | Pb      | Sb      | Sn      | Tl    | Units |
| NCS HC28037  | 3.32   | 0.485  | 0.526  | 0.084  | 0.855   | 0.092  | 0.528  | 0.256  | .      | 0.302  | .      | 0.041  | 0.026  | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| ECRM 485-2   | 3.308  | 0.190  | 0.610  | 0.165  | 0.508   | 0.0303 | 0.0742 | 0.0845 | .      | .      | 0.0058 | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC28036  | 3.27   | 0.60   | 0.775  | 0.089  | 1.67    | 0.784  | .      | .      | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| CMSI 1505B   | 3.27   | 0.42   | 0.219  | 0.0046 | 3.87    | 0.123  | .      | .      | .      | .      | .      | 0.107  | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| ECRM 487-1   | 3.27   | 0.094  | 0.0020 | 0.0007 | 0.0060  | .      | 0.040  | 0.063  | .      | .      | 0.0042 | 0.011  | .      | 0.0088   | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC11009  | 3.26   | 1.98   | 0.385  | 0.081  | 1.18    | 0.020  | .      | 0.373  | .      | .      | .      | 0.024  | 0.0074 | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| ECRM 492-1   | 3.258  | .      | .      | 0.0854 | .       | .      | .      | .      | .      | .      | 0.0048 | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC28009  | 3.24   | 0.380  | 0.352  | 0.159  | 1.89    | 0.077  | 0.018  | 0.025  | .      | .      | .      | 0.055  | .      | 0.0070   | .      | .  | .         | 0.00001 | 0.00085 | 0.0023  | .     | B     |
| NCS HC28030  | 3.23   | 0.736  | 0.109  | 0.124  | 1.28    | 0.12   | .      | 0.12   | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| ECRM 484-1   | 3.20   | 0.395  | 0.121  | 0.230  | 0.717   | .      | .      | 0.155  | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1501A   | 3.20   | 1.05   | 0.066  | 0.060  | 1.25    | 0.033  | .      | .      | .      | .      | .      | 0.011  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28032  | 3.19   | 0.955  | 0.107  | 0.108  | 1.295   | 0.745  | .      | 0.54   | .      | 0.303  | .      | 0.040  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| CMSI 1530    | 3.16   | 0.335  | 0.066  | 0.103  | 0.461   | 0.065  | 0.027  | 0.030  | 0.033  | .      | .      | .      | 0.56   | .        | .      | .  | 0.0078    | .       | .       | .       | 0.225 | A     |
| NCS HC28035  | 3.15   | 0.685  | 0.49   | 0.076  | 1.44    | 0.915  | .      | .      | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC30002  | 3.12   | 0.687  | 0.100  | 0.023  | 0.96    | 0.29   | .      | .      | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| NCS HC28028  | 3.11   | 0.605  | 0.250  | 0.088  | 1.71    | 1.03   | .      | 0.280  | .      | .      | .      | 0.0494 | 0.023  | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28023  | 3.08   | 0.704  | 0.847  | 0.13   | 1.61    | 0.294  | .      | 0.094  | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28017  | 3.08   | 0.665  | 0.106  | 0.122  | 1.49    | 0.100  | 0.023  | 0.035  | 0.0110 | 0.0029 | .      | 0.043  | 0.020  | 0.016    | .      | .  | .         | 0.00002 | 0.00255 | 0.0028  | .     | B     |
| NCS HC28007  | 3.06   | 0.770  | 0.069  | 0.094  | 1.36    | 0.068  | 0.042  | 0.033  | .      | .      | .      | 0.032  | .      | 0.0060   | .      | .  | .         | 0.00002 | 0.00089 | 0.0019  | .     | B     |
| NCS HC13009  | 3.06   | 1.08   | 0.162  | 0.112  | 2.17    | 0.016  | 0.0069 | 0.045  | .      | 0.0036 | .      | 0.035  | 0.0053 | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28012  | 3.06   | 0.77   | 0.071  | 0.094  | 1.36    | 0.068  | 0.0415 | 0.0325 | .      | .      | .      | 0.032  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC28011  | 3.05   | 0.570  | 0.298  | 0.079  | 2.67    | 0.194  | 0.018  | 0.022  | .      | .      | .      | 0.079  | .      | 0.045    | .      | .  | .         | 0.00002 | 0.0044  | 0.0023  | .     | B     |
| NCS HC28014  | 3.05   | 0.57   | 0.300  | 0.079  | 2.67    | 0.194  | 0.018  | 0.022  | .      | .      | .      | .      | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| GBW 01101B   | 3.04   | 1.22   | 0.072  | 0.052  | 1.34    | 0.025  | .      | .      | .      | .      | .      | 0.008  | .      | .        | .      | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1501B   | 3.04   | 1.22   | 0.072  | 0.052  | 1.34    | 0.025  | .      | .      | .      | .      | .      | 0.008  | .      | .        | .      | .  | .         | .       | .       | .       | .     | B     |
| NCS HC39012  | 3.03   | 0.68   | 0.128  | 0.064  | 2.08    | .      | .      | .      | .      | .      | .      | .      | .      | .        | 0.125  | .  | .         | .       | .       | .       | .     | A     |
| NCS HC39014  | 3.03   | 0.36   | 0.100  | 0.054  | 1.95    | .      | .      | .      | .      | .      | .      | .      | .      | .        | 0.049  | .  | .         | .       | .       | .       | .     | A     |
| CMSI 1533    | 3.00   | 0.869  | 0.048  | 0.145  | 1.42    | 0.066  | 0.027  | 0.033  | 0.033  | .      | .      | .      | 0.29   | .        | .      | .  | 0.0077    | .       | .       | .       | 0.254 | A     |
| Number       | C      | Mn     | P      | S      | Si      | Cu     | Ni     | Cr     | Co     | Mo     | N      | Ti     | V      | As       | B      | Cd | Ga        | Pb      | Sb      | Sn      | Tl    | Units |

\* ERM 487-2 also contains: Al: 0.079, As: 0.0063, Te: 0.0064, and Zn: 0.0012

CAST IRON CHIPS WITH CARBON UNDER 3%

analysis listed in mass % except \* which is mg/kg

unit sizes have been abbreviated as follows: A = 80 g, B = 100 g, C = 150 g, and D = 200 g

| Number      | C     | Mn      | P      | S      | Si    | Cu     | Ni     | Cr     | Al    | Als  | Co    | Mo      | N        | Ti     | V      | As     | B      | Bi* | Ga* | Pb* | Sb* | Sn     | Tl    | Units |
|-------------|-------|---------|--------|--------|-------|--------|--------|--------|-------|------|-------|---------|----------|--------|--------|--------|--------|-----|-----|-----|-----|--------|-------|-------|
| CRM         |       |         |        |        |       |        |        |        |       |      |       |         |          |        |        |        |        |     |     |     |     |        |       |       |
| NCS HC28025 | 2.98  | 0.698   | 1.80   | 0.087  | 1.80  | 0.201  | .      | 0.081  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC39011 | 2.96  | 0.57    | 0.082  | 0.058  | 1.67  | .      | .      | 0.058  | .     | .    | .     | .       | .        | .      | .      | .      | 0.061  | .   | .   | .   | .   | .      | .     | B     |
| NCS HC28031 | 2.95  | 0.595   | 0.065  | 0.107  | 1.75  | 0.642  | .      | 0.23   | .     | .    | .     | 0.155   | .        | 0.030  | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC28026 | 2.90  | 0.702   | 1.91   | 0.124  | 1.81  | 0.245  | .      | 0.086  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| ECRM 489-1  | 2.860 | (0.510) | 0.815  | 0.155  | 1.524 | 0.274  | .      | .      | .     | .    | .     | .       | (0.0056) | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC39013 | 2.86  | 0.56    | 0.106  | 0.052  | 2.35  | .      | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | 0.0101 | .   | .   | .   | .   | .      | .     | B     |
| JSS 120-1   | 2.85  | 0.70    | 0.053  | 0.0095 | 1.32  | 0.29   | 0.12   | 0.28   | .     | .    | .     | (0.007) | 0.0058   | 0.006  | 0.007  | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC28029 | 2.85  | 0.85    | 0.086  | 0.0995 | 1.91  | 0.865  | .      | 0.316  | .     | .    | .     | .       | .        | 0.033  | 0.017  | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| CMSI 1507A  | 2.840 | 1.02    | 0.056  | 0.064  | 1.06  | 0.044  | .      | .      | .     | .    | .     | .       | .        | 0.0104 | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| CMSI 1506A  | 2.809 | 1.48    | 0.039  | 0.062  | 0.856 | 0.045  | .      | .      | .     | .    | .     | .       | .        | 0.0118 | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC14004 | 2.78  | 0.900   | 0.064  | 0.047  | 0.419 | 0.028  | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| ECRM 428-2  | 2.747 | 0.750   | 0.0691 | 0.1105 | 1.751 | 0.0996 | 0.0358 | 0.0366 | .     | .    | .     | .       | .        | 0.0311 | 0.0120 | 0.0156 | .      | .   | .   | .   | .   | .      | .     | B     |
| GBW 01106b  | 2.71  | 0.98    | 0.077  | 0.089  | 1.14  | 0.036  | .      | .      | .     | .    | .     | .       | .        | 0.007  | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC11007 | 2.70  | 1.66    | 0.201  | 0.102  | 1.72  | 0.031  | .      | 0.589  | .     | .    | .     | .       | .        | 0.014  | 0.0067 | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC28010 | 2.65  | 0.575   | 0.446  | 0.097  | 2.29  | 0.086  | 0.067  | 0.041  | .     | .    | .     | .       | .        | 0.041  | .      | 0.0099 | .      | .   | .   | 0.2 | 18  | 0.0042 | .     | C     |
| NCS HC28013 | 2.65  | 0.575   | 0.450  | 0.098  | 2.29  | 0.086  | 0.0675 | 0.041  | .     | .    | .     | .       | .        | 0.041  | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC41010 | 2.64  | 0.540   | 0.086  | 0.029  | 1.49  | 0.056  | 0.030  | 0.086  | .     | .    | .     | 0.021   | .        | 0.024  | 0.011  | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC41011 | 2.64  | 0.725   | 0.177  | 0.033  | 2.23  | 0.146  | 0.035  | 0.151  | .     | .    | .     | 0.105   | .        | 0.031  | 0.014  | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| NCS HC30003 | 2.62  | 1.68    | 0.120  | 0.032  | 1.64  | 0.52   | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC41012 | 2.52  | 1.24    | 0.635  | 0.032  | 3.86  | 0.114  | 0.037  | 0.115  | 0.017 | .    | .     | .       | .        | 0.071  | 0.033  | .      | .      | .   | .   | 8   | 11  | .      | .     | C     |
| NCS HC41013 | 2.46  | 0.93    | 0.41   | 0.041  | 2.66  | 0.132  | 0.036  | 0.105  | 0.026 | .    | .     | .       | .        | 0.061  | 0.024  | .      | .      | .   | .   | 8   | 11  | .      | .     | C     |
| CMSI 1534   | 2.38  | 1.28    | 0.069  | 0.077  | 2.12  | 0.070  | 0.028  | 0.030  | .     | .    | 0.034 | .       | .        | 0.030  | 0.40   | .      | .      | .   | 73  | .   | .   | .      | 0.314 | B     |
| GBW 01102b  | 2.38  | 0.700   | 0.082  | 0.034  | 0.48  | 0.026  | .      | .      | .     | .    | .     | .       | .        | 0.006  | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| CMSI 1502B  | 2.38  | 0.700   | 0.082  | 0.034  | 0.48  | 0.026  | .      | .      | .     | .    | .     | .       | .        | 0.006  | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| GBW 01109b  | 2.31  | 0.509   | 0.025  | 0.100  | 0.28  | 0.038  | .      | .      | .     | .    | .     | .       | .        | 0.030  | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| Number      | C     | Mn      | P      | S      | Si    | Cu     | Ni     | Cr     | Al    | Als  | Co    | Mo      | N        | Ti     | V      | As     | B      | Bi* | Ga* | Pb* | Sb* | Sn     | Tl    | Units |
| NCS HC37032 | 2.28  | 0.358   | 0.086  | 0.161  | 1.34  | 0.041  | .      | 0.028  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37043 | 2.28  | 0.358   | 0.086  | 0.161  | 1.34  | 0.041  | .      | 0.028  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC30001 | 2.26  | 1.28    | 0.178  | 0.025  | 2.21  | 1.01   | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37014 | 2.25  | 0.537   | 0.241  | 0.088  | 1.03  | .      | .      | 0.163  | .     | .    | .     | .       | .        | .      | .      | .      | .      | 9.3 | .   | .   | .   | .      | .     | B     |
| NCS HC37030 | 2.22  | 0.869   | 0.339  | 0.101  | 2.20  | 0.501  | .      | 0.142  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37041 | 2.22  | 0.869   | 0.339  | 0.101  | 2.20  | 0.501  | .      | 0.142  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| ECRM 486-1  | 2.21  | 0.841   | 1.00   | 0.023  | 2.43  | 0.548  | 0.057  | 0.104  | .     | .    | .     | .       | .        | .      | 0.020  | .      | .      | .   | .   | .   | .   | .      | 0.074 | B     |
| CMSI 1509A  | 2.202 | 0.528   | 0.0226 | 0.080  | 0.378 | 0.063  | .      | .      | .     | .    | .     | .       | .        | 0.0094 | .      | .      | .      | .   | .   | .   | .   | .      | .     | C     |
| BCS 170/4 * | 2.15  | 0.78    | 0.70   | 0.080  | 2.45  | 0.60   | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37029 | 2.15  | 1.08    | 0.451  | 0.068  | 2.69  | 0.752  | .      | 0.221  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37040 | 2.15  | 1.08    | 0.451  | 0.068  | 2.69  | 0.752  | .      | 0.221  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| CTIF FB20   | 2.114 | 0.464   | 0.039  | 0.128  | 1.012 | .      | .      | 0.035  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37013 | 2.11  | 0.353   | 0.167  | 0.139  | 1.70  | .      | .      | 0.119  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37028 | 2.04  | 1.34    | 0.479  | 0.038  | 3.37  | 0.642  | .      | 0.197  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37031 | 2.04  | 1.67    | 0.226  | 0.103  | 1.86  | 0.176  | .      | 0.054  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37039 | 2.04  | 1.34    | 0.479  | 0.038  | 3.37  | 0.642  | .      | 0.197  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37042 | 2.04  | 0.670   | 0.226  | 0.103  | 1.86  | 0.176  | .      | 0.054  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC14003 | 2.03  | 0.402   | 0.077  | 0.042  | 1.50  | 0.085  | .      | .      | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37038 | 2.01  | 0.677   | 0.057  | 0.115  | 1.44  | .      | .      | 0.113  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC11008 | 1.90  | 1.96    | 0.060  | 0.097  | 2.72  | 0.041  | .      | 0.766  | .     | .    | .     | .       | .        | 0.013  | 0.0075 | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37037 | 1.90  | 0.780   | 0.110  | 0.055  | 2.34  | .      | .      | 0.025  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| NCS HC37036 | 1.67  | 1.05    | 0.085  | 0.024  | 1.90  | .      | .      | 0.055  | .     | .    | .     | .       | .        | .      | .      | .      | .      | .   | .   | .   | .   | .      | .     | B     |
| RM          |       |         |        |        |       |        |        |        |       |      |       |         |          |        |        |        |        |     |     |     |     |        |       |       |
| CKD 215 *   | 2.46  | 0.76    | 0.087  | 0.17   | 3.08  | 0.43   | 0.081  | 0.15   | .     | 0.01 | .     | 0.05    | .        | 0.04   | 0.05   | 0.02   | .      | .   | .   | .   | .   | 0.048  | .     | D     |
| Number      | C     | Mn      | P      | S      | Si    | Cu     | Ni     | Cr     | Al    | Als  | Co    | Mo      | N        | Ti     | V      | As     | B      | Bi* | Ga* | Pb* | Sb* | Sn     | Tl    | Units |

\* Clearance Sale Item