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## CRM NICKEL SET

available in SET/5 only rods 6 mm Ø x 100 mm

| Number  | Co    | Cu     | Fe    | Mg     | Mn     | Ni  | Si     |
|---------|-------|--------|-------|--------|--------|-----|--------|
| IMN 6-1 | 0.045 | 0.21   | 0.096 | 0.22   | 0.0063 | Rem | 0.0043 |
| IMN 6-2 | 0.091 | 0.26   | 0.33  | 0.0061 | 0.18   | Rem | 0.0074 |
| IMN 6-3 | 0.19  | 0.044  | 0.050 | 0.012  | 0.015  | Rem | 0.18   |
| IMN 6-4 | 0.40  | 0.10   | 0.023 | 0.075  | 0.074  | Rem | 0.06   |
| IMN 6-5 | 0.71  | 0.0094 | 0.011 | 0.0014 | 0.0018 | Rem | 0.0012 |

## CRM ISO 17025 NICKEL

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

BS 200A: 38 mm Ø x 19+ mm

others: 38 mm Ø x 15 mm

| Number   | Al     | As     | B      | Bi*   | C      | Ca      | Co     | Cr     | Cu     | Fe    | Mg     | Mn    | Mo     | N        | Nb     | Ni    |
|----------|--------|--------|--------|-------|--------|---------|--------|--------|--------|-------|--------|-------|--------|----------|--------|-------|
| BS 200-1 | 0.0048 | 0.0010 | 0.0033 | .     | 0.0413 | 0.0024  | 0.089  | 0.0011 | 0.0077 | 0.046 | 0.0307 | 0.111 | 0.0004 | (0.0002) | 0.0004 | 99.60 |
| BS 200A  | 0.0281 | 0.0015 | 0.0044 | .     | 0.078  | 0.0003  | 0.0564 | 0.0006 | 0.0038 | 0.074 | 0.0131 | 0.151 | 0.0004 | 0.0004   | 0.0004 | 99.54 |
| BS 200-3 | 0.0068 | 0.0015 | 0.0037 | (0.2) | 0.0145 | 0.0003  | 0.103  | 0.0091 | 0.108  | 0.138 | 0.0240 | 0.157 | 0.0004 | (0.0002) | 0.0004 | 99.4  |
| BS 200-2 | 0.0041 | 0.0012 | 0.0031 | .     | 0.050  | 0.0004  | 0.104  | 0.0094 | 0.053  | 0.115 | 0.0368 | 0.244 | 0.0005 | 0.0003   | 0.0009 | 99.31 |
| BS 200-4 | 0.0057 | 0.0014 | 0.0037 | .     | 0.107  | 0.00028 | 0.0911 | 0.132  | 0.0482 | 0.297 | 0.0312 | 0.310 | 0.0013 | 0.00031  | 0.0010 | 98.9  |

  

| Number   | O      | P      | Pb        | S      | Sb*   | Si     | Sn       | Ta       | Te*   | Ti     | V      | W        | Zn* | Zr                   |
|----------|--------|--------|-----------|--------|-------|--------|----------|----------|-------|--------|--------|----------|-----|----------------------|
| BS 200-1 | 0.0015 | 0.0009 | 0.0010    | 0.0011 | (0.2) | 0.037  | (0.0001) | (0.0004) | .     | 0.0209 | 0.0008 | 0.00016  | .   | (0.0002)             |
| BS 200A  | 0.0013 | 0.0007 | (0.00005) | 0.0037 | (0.2) | 0.0051 | (0.0001) | (0.0003) | .     | 0.0427 | 0.0006 | 0.0005   | .   | (0.0004) also as XRF |
| BS 200-3 | 0.0026 | 0.0015 | 0.0008    | 0.0032 | (0.4) | 0.0110 | 0.0003   | (0.0001) | (0.4) | 0.0235 | 0.0009 | (0.0004) | (2) | (0.0003)             |
| BS 200-2 | 0.0025 | 0.0020 | 0.0006    | 0.0068 | (0.4) | 0.060  | (0.0002) | (0.0002) | .     | 0.0197 | 0.0014 | (0.0003) | .   | (0.0003)             |
| BS 200-4 | 0.0015 | 0.0023 | 0.00087   | 0.0076 | 0.4   | 0.101  | 0.0020   | 0.0003   | .     | 0.0191 | 0.0024 | 0.00095  | .   | (0.0004)             |

## NICKEL

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

\* center of IARM 189A has a few mm crack, not intended for XRF

31 mm Ø x 2 or 18 mm

| # | Number      | Ag      | Al      | As      | Bi       | C      | Cd         | Co      | Cr       | Cu      | Fe      | Mn      | N     | Ni   | O |
|---|-------------|---------|---------|---------|----------|--------|------------|---------|----------|---------|---------|---------|-------|------|---|
| 1 | IARM 50C    | .       | (0.004) | .       | B:0.0027 | 0.015  | .          | (0.011) | (0.005)  | 0.028   | 0.084   | 0.22    | trace | 99.4 | . |
| 2 | IARM 190A   | 0.00109 | 0.0050  | 0.0028  | 0.00111  | 0.0022 | 0.0005     | 0.0008  | (0.0001) | 0.0017  | 0.0099  | 0.00018 | trace | Rem  | . |
| 2 | IARM 189A * | 0.00024 | 0.0044  | 0.00007 | 0.00026  | 0.0023 | 0.00008    | 0.00031 | (0.0010) | 0.00090 | 0.0038  | 0.00019 | trace | Rem  | . |
| 2 | IARM 188A   | 0.00011 | 0.0024  | 0.00007 | 0.00009  | 0.0022 | 0.00002    | 0.00017 | (0.0006) | 0.00018 | 0.0019  | 0.00023 | trace | Rem  | . |
| 2 | IARM 191A   | 0.00001 | 0.00015 | 0.0013  | <0.00001 | 0.0014 | <0.0001    | 0.0545  | 0.00021  | 0.00042 | 0.00079 | 0.00031 | trace | Rem  | . |
| 2 | IARM 187A   | 0.00001 | 0.0011  | 0.00001 | <0.00001 | 0.0013 | (<0.00001) | 0.00010 | (0.0003) | 0.00022 | 0.0019  | 0.00030 | trace | Rem  | . |

  

| Number      | P        | Pb       | S       | Sb       | Se       | Si       | Sn      | Te       | Ti        | Tl        | V | W        | Zn       | Zr |
|-------------|----------|----------|---------|----------|----------|----------|---------|----------|-----------|-----------|---|----------|----------|----|
| IARM 50C    | (0.0014) | .        | 0.0012  | .        | .        | 0.031    | .       | .        | 0.026     | .         | . | Mg:0.005 | .        | .  |
| IARM 190A   | 0.0034   | 0.00093  | 0.00033 | 0.0011   | 0.00065  | 0.0028   | 0.00062 | 0.00089  | (0.0006)  | 0.00058   | . | .        | 0.00081  | .  |
| IARM 189A * | 0.00037  | 0.00029  | 0.00018 | 0.00039  | 0.00021  | 0.0019   | 0.00022 | 0.00017  | (0.0003)  | 0.00023   | . | .        | 0.00028  | .  |
| IARM 188A   | 0.00014  | 0.00010  | 0.00018 | 0.00011  | 0.00007  | 0.0018   | 0.00011 | 0.00008  | (0.0002)  | (0.00009) | . | .        | 0.00023  | .  |
| IARM 191A   | <0.00010 | 0.00003  | 0.00021 | <0.00005 | 0.00019  | (0.0005) | 0.00004 | <0.00001 | (<0.0001) | <0.00002  | . | .        | 0.00019  | .  |
| IARM 187A   | <0.00010 | 0.000015 | 0.00019 | <0.00005 | <0.00001 | (0.0018) | 0.00004 | <0.00001 | (0.0003)  | <0.00002  | . | .        | <0.00005 | .  |

## RM NICKEL

cast typical analysis 40 mm Ø x 15 mm

| Number     | Al   | Co   | Cr   | Cu   | Fe   | Mg   | Mn   | Si   | Ti   |
|------------|------|------|------|------|------|------|------|------|------|
| 21X 17520H | 0.04 | 0.48 | 0.10 | 0.09 | 0.25 | 0.06 | 0.18 | 0.20 | 0.08 |

## CRM Co/Cr NICKEL ALLOY TYPE IN 100

wrought analysis listed in mass %

| Number  | Co    | Cr   | Al    | Mo   | Ti  | V    | B     | C      | Zr    | Units           |
|---------|-------|------|-------|------|-----|------|-------|--------|-------|-----------------|
| SS 346A | (15)  | (10) | (5.5) | (3)  | (5) | (1)  | .     | (0.15) | .     | 38 mm Ø x 13 mm |
| SS 345  | 14.70 | 9.93 | 5.58  | 3.01 | (5) | 1.00 | 0.019 | 0.153  | 0.044 | 35 mm Ø x 13 mm |

continued analysis listed in mg/kg

| Number  | Ag   | As  | Bi   | Ca   | Cd   | Ga   | In   | Mg  | Pb  | Sb | Se   | Sn | Te   | Tl   | Zn   |
|---------|------|-----|------|------|------|------|------|-----|-----|----|------|----|------|------|------|
| SS 346A | 42   | 51  | 10   | (20) | 0.4  | (50) | (20) | 130 | 22  | 45 | 6    | 93 | 9    | (2)  | 29   |
| SS 345  | <0.2 | (2) | <0.2 | (<5) | <0.1 | 8    | .    | 5   | 0.2 | <2 | <0.5 | 6  | <0.2 | <0.2 | <0.5 |

## CRM CHROMIUM NICKEL ALLOY

219X: ~40 mm Ø x ~15 mm

IARM: 31 mm Ø x 2 or 18 mm

VS: ~40 mm Ø x ~ 28 mm

| Number      | Cr   | Al    | C      | Co     | Cu      | Fe    | Mn    | Mo      | N       | Nb     | Ni    | P       | S       | Si    | Ti    | V        |
|-------------|------|-------|--------|--------|---------|-------|-------|---------|---------|--------|-------|---------|---------|-------|-------|----------|
| 219X 20500C | 51.0 | .     | 0.0212 | 0.0110 | 0.0101  | 1.515 | 0.299 | 0.0103  | 0.199   | 0.0117 | 45.46 | 0.0048  | 0.0137  | 1.288 | .     | W:0.0086 |
| IARM 372A   | 28.3 | 3.28  | 0.030  | 0.009  | (0.004) | 3.12  | 0.285 | (0.006) | (0.011) | 0.71   | 63.6  | (0.003) | 0.0016  | 0.020 | 0.486 | (0.008)  |
| VS NG4/3    | 18.5 | 0.38  | 0.011  | .      | 0.043   | 0.93  | 0.40  | 0.120   | .       | 0.62   | .     | (0.004) | 0.0017  | 0.38  | 0.86  | 0.019    |
| VS NG3/3    | 17.8 | 0.116 | 0.009  | .      | 0.094   | 1.86  | 0.28  | 0.100   | .       | (0.1)  | .     | (0.004) | 0.0020  | 1.00  | 1.18  | 0.059    |
| VS NG1/3    | 17.3 | 1.76  | 0.051  | .      | 0.068   | 1.32  | 1.23  | 0.16    | .       | 0.41   | .     | (0.004) | 0.0014  | 0.25  | 0.31  | 0.46     |
| VS NG5/3    | 17.3 | 0.93  | 0.013  | .      | 0.243   | 2.10  | 0.23  | 0.36    | .       | (0.1)  | .     | (0.004) | 0.0016  | 0.65  | 0.46  | 0.30     |
| VS NG2/3    | 17.0 | 0.106 | 0.040  | .      | 0.148   | 0.42  | 2.22  | 0.120   | .       | (0.1)  | .     | (0.004) | 0.0021  | (0.3) | 1.84  | 0.11     |
| VS NG6/3    | 15.4 | 0.30  | 0.026  | .      | 0.092   | 2.77  | 0.23  | 2.00    | .       | 1.53   | .     | (0.004) | (0.002) | 0.25  | 0.47  | 0.97     |
| VS NG7/3    | 15.3 | 0.14  | 0.027  | .      | 0.151   | 3.40  | 0.42  | 0.90    | .       | 1.08   | .     | (0.004) | 0.0022  | 0.37  | 0.214 | 1.66     |

## Co/Cr and Cr/Co NICKEL ALLOYS

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

\* Provisional Analysis

| # | Number         | Cr     | Co     | Al      | Fe      | Mo    | Ta       | Ti     | W       | C        | Cu       | Mn       | P        | S        | Si      | V       |
|---|----------------|--------|--------|---------|---------|-------|----------|--------|---------|----------|----------|----------|----------|----------|---------|---------|
| 1 | IARM 358A      | 24.6   | 20.1   | 1.33    | 0.122   | 0.310 | .        | 1.36   | (0.002) | 0.026    | (0.005)  | 0.259    | (0.004)  | 0.0018   | 0.145   | 0.009   |
| 1 | IMZ 186        | 23.14  | Rem    | 0.28    | 0.10    | .     | 3.78     | 0.19   | 7.17    | 0.59     | .        | .        | .        | .        | .       | .       |
| 2 | BS 617         | 22.44  | 12.42  | 1.20    | 1.76    | 9.64  | .        | 0.28   | 0.06    | 0.079    | 0.062    | 0.057    | 0.007    | <0.001   | 0.14    | 0.022   |
| 1 | IARM 272A      | 21.98  | 12.89  | 1.16    | 1.10    | 9.34  | (0.01)   | 0.50   | 0.061   | 0.082    | 0.015    | 0.067    | (0.003)  | 0.0002   | 0.07    | (0.005) |
| 2 | 27X 14184F     | 21.8   | 10.5   | 0.02    | 0.40    | 10.7  | .        | 0.02   | .       | .        | 0.09     | 0.40     | .        | .        | 0.41    | .       |
| 2 | 27X 14188D     | 21.17  | 10.4   | <0.01   | 0.44    | 10.3  | .        | 0.03   | .       | .        | (0.003)  | 0.30     | .        | .        | 0.33    | .       |
| 1 | SRM 1775       | 20.472 | 33.352 | (0.024) | 0.91    | 9.508 | .        | 0.730  | (0.02)  | (0.0051) | (0.0046) | 0.0121   | (0.0006) | 0.0013   | (0.02)  | 0.0095  |
| 2 | 27X 14387E     | 20.2   | 10.0   | <0.005  | 1.11    | 10.8  | .        | <0.005 | .       | .        | 0.27     | 0.51     | .        | .        | 0.28    | .       |
| 2 | 22X 904C       | 19.9   | 16.9   | 1.29    | 0.25    | 0.21  | .        | 2.26   | .       | 0.08     | 0.10     | 0.50     | .        | .        | 0.52    | .       |
| 1 | 24X 07001B     | 19.52  | 13.31  | 1.384   | 0.997   | 4.29  | .        | 3.10   | .       | 0.0357   | 0.0115   | 0.0311   | 0.0033   | (0.0007) | 0.064   | .       |
| 1 | <b>BS 199B</b> | 19.46  | 12.41  | 1.37    | 1.17    | 3.87  | (0.001)  | 3.00   | 0.048   | 0.041    | 0.015    | 0.0240   | 0.0031   | 0.0005   | 0.034   | 0.071   |
| 1 | SRM 1243       | 19.05  | 12.39  | 1.23    | 0.776   | 4.226 | (0.0003) | 3.054  | 0.0139  | 0.024    | (0.0063) | 0.00730  | 0.00317  | 0.00217  | 0.0192  | 0.1043  |
| 2 | 22X 902B       | 18.80  | 17.08  | 1.31    | 0.61    | 0.22  | .        | 2.26   | .       | 0.15     | 0.13     | 0.51     | .        | .        | 0.50    | .       |
| 1 | IARM 325A      | 18.52  | 10.46  | 1.56    | 0.07    | 9.98  | (0.003)  | 3.16   | (0.03)  | 0.067    | (0.003)  | (0.004)  | (0.003)  | 0.0003   | 0.012   | 0.01    |
| 1 | IARM 287A      | 18.47  | 16.99  | 3.02    | 0.086   | 3.51  | 0.010    | 3.02   | 0.013   | 0.079    | (0.001)  | (0.002)  | (0.001)  | 0.0008   | 0.02    | (0.004) |
| 1 | 24X 7201A      | 16.01  | 14.79  | 2.44    | 0.09    | 3.01  | .        | 5.10   | 1.32    | 0.0322   | .        | 0.0022   | (0.0024) | 0.0024   | 0.036   | .       |
| 1 | IMZ 183        | 15.87  | 8.32   | 3.51    | (0.046) | 1.81  | 1.87     | 3.34   | 2.66    | 0.100    | .        | .        | .        | .        | .       | .       |
| 2 | 22X 1052C      | 15.7   | 18.6   | 4.08    | 0.65    | 4.48  | .        | 1.09   | .       | 0.19     | 0.13     | 0.26     | .        | .        | 0.51    | .       |
| 1 | IARM 277A      | 14.35  | 14.5   | 4.38    | 0.16    | 4.22  | (0.02)   | 3.40   | 0.047   | 0.080    | 0.004    | 0.01     | 0.002    | 0.0010   | 0.037   | 0.011   |
| 1 | IMZ 184        | 14.16  | 14.32  | 4.37    | .       | 4.30  | .        | 3.43   | .       | 0.086    | .        | .        | (0.001)  | .        | (0.018) | .       |
| 1 | IMZ 185        | 9.91   | 4.47   | 5.56    | (0.022) | 3.92  | .        | 2.73   | 5.12    | 0.152    | .        | .        | .        | .        | .       | .       |
| 1 | IMZ 187        | 8.78   | 9.70   | 4.90    | 0.053   | 1.82  | 3.79     | 2.31   | 6.93    | 0.109    | (0.001)  | (0.0005) | (0.0006) | (0.0002) | (0.011) | .       |
| 1 | IMZ 182        | 8.63   | 13.52  | 5.69    | (0.04)  | 3.10  | .        | 4.69   | .       | 0.169    | .        | .        | .        | .        | .       | 0.81    |
| 1 | IMZ 202        | 8.39   | 10.02  | 5.67    | (0.024) | 0.63  | 3.25     | 1.01   | 10.04   | 0.152    | .        | .        | .        | .        | (0.016) | .       |
| 1 | IARM 333A *    | 8.32   | 9.4    | 5.53    | 0.036   | 0.49  | 3.15     | 0.73   | 9.7     | 0.072    | (0.01)   | (0.005)  | (0.004)  | 0.0004   | 0.08    | (0.002) |
| 2 | 210X 11979G    | 8.07   | 14.32  | 3.76    | 0.56    | 3.28  | .        | 5.22   | .       | 0.025    | 0.07     | 0.13     | .        | .        | 0.30    | 0.82    |
| 1 | IARM 283A      | 8.05   | 9.8    | 6.05    | 0.044   | 5.94  | 4.3      | 0.98   | 0.056   | 0.114    | (0.01)   | (0.001)  | 0.003    | 0.0006   | 0.019   | 0.0058  |
| 1 | IMZ 180        | 7.98   | 9.95   | 6.00    | 0.073   | 5.96  | 4.26     | 1.02   | (0.048) | 0.107    | .        | .        | (0.003)  | .        | (0.026) | .       |

| # | Number | Cr | Co | Al | Fe | Mo | Ta | Ti | W | C | Cu | Mn | P | S | Si | V |
|---|--------|----|----|----|----|----|----|----|---|---|----|----|---|---|----|---|
|---|--------|----|----|----|----|----|----|----|---|---|----|----|---|---|----|---|

note: IMZ samples are "slice of pie" shaped 1/4 sections of large cylinders

| Number         | B        | Hf   | Mg      | N       | Nb      | Ni     | O       | Pb       | Sn        | Zr      | Units                    |
|----------------|----------|------|---------|---------|---------|--------|---------|----------|-----------|---------|--------------------------|
| IARM 358A      | (0.0011) | .    | 0.0019  | 0.0045  | 1.51    | 50.3   | (0.001) | .        | .         | 0.022   | 31 mm Ø x 2 or 18 mm     |
| IMZ 186        | (0.007)  | .    | .       | .       | .       | 10.22  | .       | .        | .         | 0.40    | 1/4 of 78 mm Ø x 30 mm   |
| BS 617         | 0.0020   | .    | (0.02)  | 0.0070  | 0.123   | (51.6) | .       | 0.0001   | .         | .       | 1/4 of 100 mm Ø x ~15 mm |
| IARM 272A      | 0.003    | .    | (0.002) | 0.0049  | 0.015   | 52.68  | 0.0007  | .        | (0.0003)  | (0.002) | 31 mm Ø x 2 or 18 mm     |
| 27X 14184F     | .        | .    | .       | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm          |
| 27X 14188D     | .        | .    | .       | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm          |
| SRM 1775       | 0.0097   | .    | .       | (0.002) | (0.03)  | 34.911 | .       | .        | .         | .       | 35 mm Ø x 12 mm          |
| 27X 14387E     | .        | .    | .       | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm          |
| 22X 904C       | .        | .    | 0.005   | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm          |
| 24X 07001B     | 0.0060   | .    | .       | .       | 0.0314  | 57.2   | .       | .        | .         | 0.0563  | ~32 mm Ø x ~12 mm        |
| <b>BS 199B</b> | 0.0053   | .    | 0.0032  | 0.0038  | 0.069   | 58.4   | 0.0006  | .        | 0.0006    | 0.045   | 38 mm Ø x ~7 or 19+ mm   |
| SRM 1243       | 0.00494  | .    | .       | .       | 0.0286  | 58.782 | .       | .        | .         | 0.053   | 34 mm Ø x 19 mm          |
| 22X 902B       | .        | .    | 0.02    | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm last     |
| IARM 325A      | 0.0082   | .    | 0.0044  | 0.0016  | (0.007) | 56.1   | 0.0005  | .        | (0.0002)  | (0.002) | 31 mm Ø x 2 or 18 mm     |
| IARM 287A      | 0.009    | .    | 0.0023  | 0.0007  | 0.022   | 54.8   | 0.0005  | (0.0001) | 0.0002    | 0.008   | 31 mm Ø x 2 or 18 mm     |
| 24X 7201A      | 0.0242   | .    | .       | 0.005   | .       | 57.10  | .       | .        | .         | 0.0433  | 40 mm Ø x 13 mm          |
| IMZ 183        | (0.010)  | .    | .       | .       | 0.92    | .      | .       | .        | .         | 0.030   | 1/4 of 70 mm Ø x 40 mm   |
| 22X 1052C      | .        | .    | 0.002   | .       | .       | .      | .       | .        | .         | .       | 40 mm Ø x 15 mm          |
| IARM 277A      | 0.015    | .    | 0.0021  | 0.0017  | 0.034   | 58.9   | 0.0005  | .        | <0.003    | 0.010   | 31 mm Ø x 2 or 18 mm     |
| IMZ 184        | 0.016    | .    | .       | .       | (0.032) | .      | .       | .        | .         | (0.012) | 1/4 of 80 mm Ø x 30 mm   |
| IMZ 185        | 0.015    | .    | (0.002) | .       | .       | .      | .       | .        | .         | (0.014) | 1/4 of 64 mm Ø x 45 mm   |
| IMZ 187        | 0.0159   | 1.50 | .       | .       | 0.004   | 60.11  | .       | .        | .         | 0.029   | 1/4 of 90 mm Ø x 20 mm   |
| IMZ 182        | 0.013    | .    | .       | .       | .       | .      | .       | .        | .         | 0.031   | 1/4 of 64 mm Ø x 45 mm   |
| IMZ 202        | 0.0152   | 1.42 | .       | .       | (0.028) | (59.7) | .       | .        | .         | 0.031   | 1/4 of 90 mm Ø x 20 mm   |
| IARM 333A *    | 0.015    | 1.4  | 0.0013  | 0.0013  | (0.005) | 61.1   | 0.0004  | .        | Re:(0.01) | 0.009   | 31 mm Ø x 2 mm           |
| 210X 11979G    | .        | .    | .       | .       | .       | .      | .       | .        | .         | 0.04    | 40 mm Ø x 15 mm          |
| IARM 283A      | 0.014    | .    | 0.0033  | 0.0003  | 0.020   | 64.4   | 0.0004  | .        | (0.0002)  | 0.053   | 31 mm Ø x 2 or 18 mm     |
| IMZ 180        | (0.017)  | .    | .       | .       | 0.024   | .      | .       | .        | .         | 0.075   | 1/4 of 80 mm Ø x 30 mm   |

| Number | B | Hf | Mg | N | Nb | Ni | O | Pb | Sn | Zr | Units |
|--------|---|----|----|---|----|----|---|----|----|----|-------|
|--------|---|----|----|---|----|----|---|----|----|----|-------|

**Cr/Al NICKEL ALLOY**

## = class, where 1 = CRM and 2 = RM IMZ: 1/4 section of 90 mm Ø x 20 mm HRT: 27 mm Ø x 20 mm SS: 50 mm Ø x 13 mm

| # | Number     | Cr    | Al   | Co      | Fe    | Mo   | Nb   | Si      | Ti   | B      | C     | Mn   | N      | Ni    | P     | S        | Zr    |
|---|------------|-------|------|---------|-------|------|------|---------|------|--------|-------|------|--------|-------|-------|----------|-------|
| 2 | HRT NI2017 | 19.34 | 1.43 | 0.018   | 0.59  | .    | 0.34 | 0.17    | 2.66 | 0.0036 | 0.047 | 0.39 | 0.0091 | 74.93 | 0.003 | 0.002    | .     |
| 1 | SS 350     | 13.50 | 6.00 | 0.30    | 1.50  | 4.30 | 2.00 | 0.10    | 0.80 | 0.013  | .     | 0.03 | .      | .     | .     | .        | .     |
| 1 | IMZ 203    | 11.80 | 6.13 | (0.024) | 0.032 | 4.32 | 2.04 | (0.019) | 0.62 | 0.0077 | 0.061 | .    | .      | .     | .     | (0.0006) | 0.059 |

**Cr/Fe NICKEL ALLOY**

# = class, where 1 = CRM and 2 = RM underlined BS samples are ISO 17025 Accredited \* Provisional Analysis

| # | Number         | Cr    | Fe     | Ni    | Al     | C       | Co     | Cu     | Mn    | Mo    | Nb      | P       | S        | Si     | Ti     | V       | W        |
|---|----------------|-------|--------|-------|--------|---------|--------|--------|-------|-------|---------|---------|----------|--------|--------|---------|----------|
| 1 | IARM 357A      | 27.0  | 34.3   | 31.9  | 0.09   | 0.0199  | 0.17   | 0.81   | 1.63  | 3.48  | 0.089   | 0.013   | 0.0021   | 0.458  | 0.079  | 0.091   | 0.108    |
| 1 | IARM 282A      | 24.6  | 35.7   | 37.1  | 0.085  | 0.054   | 0.12   | 0.0615 | 0.81  | 0.210 | 0.57    | 0.016   | 0.0003   | 0.63   | 0.019  | 0.052   | 0.043    |
| 1 | SRM 1247       | 23.4  | 26.5   | 43.5  | 0.060  | 0.021   | 0.089  | 1.75   | 0.38  | 2.73  | (0.46)  | 0.018   | 0.002    | 0.32   | 0.75   | (0.048) | (0.005)  |
| 1 | <u>BS 825F</u> | 23.2  | 30.7   | 38.9  | 0.081  | 0.012   | 0.064  | 1.78   | 0.521 | 3.19  | (0.02)  | 0.018   | (0.005)  | 0.59   | 0.91   | 0.086   | 0.015    |
| 2 | HRT NI2013     | 22.03 | 31.86  | 38.65 | 0.10   | (0.018) | .      | 1.92   | 0.72  | 3.15  | .       | (0.013) | (0.004)  | 0.30   | 1.00   | .       | .        |
| 1 | 219X 08825A    | 21.94 | 31.82  | 39.12 | 0.149  | 0.016   | 0.0646 | 1.87   | 0.499 | 3.01  | (0.007) | 0.0189  | (0.0007) | 0.232  | 1.192  | 0.038   | .        |
| 1 | <u>BS 825E</u> | 21.87 | 31.45  | 39.92 | 0.080  | 0.010   | 0.26   | 1.72   | 0.51  | 2.74  | 0.19    | 0.015   | 0.0010   | 0.24   | 0.82   | 0.049   | 0.166    |
| 1 | <u>BS 800A</u> | 21.09 | 42.7   | 33.3  | 0.362  | 0.075   | 0.069  | 0.244  | 0.883 | 0.117 | 0.021   | 0.013   | (0.0007) | 0.361  | 0.526  | 0.058   | (0.030)  |
| 2 | BS 925         | 20.82 | 26.92  | 43.53 | 0.17   | 0.011   | 0.34   | 1.74   | 0.50  | 3.00  | 0.23    | 0.016   | 0.0020   | 0.11   | 2.20   | 0.03    | 0.47     |
| 1 | IARM 328B      | 20.5  | 15.0   | 53.7  | 0.116  | 0.010   | 0.063  | 2.0    | 0.077 | 3.12  | 3.99    | (0.005) | (0.0006) | (0.05) | 1.53   | (0.014) | (0.04)   |
| 1 | <u>BS 189A</u> | 20.4  | [48.1] | 23.8  | 0.0129 | 0.0147  | 0.100  | 0.184  | 0.639 | 6.04  | (0.13)  | 0.019   | (0.001)  | 0.30   | 0.0065 | 0.054   | 0.037    |
| 1 | IARM 347A      | 20.14 | 47.4   | 24.88 | 0.016  | 0.023   | 0.083  | 1.34   | 1.24  | 4.16  | (0.01)  | 0.023   | 0.0009   | 0.56   | 0.007  | 0.078   | 0.020    |
| 1 | SRM 1246       | 20.1  | 46.2   | 30.8  | 0.30   | 0.082   | 0.076  | 0.49   | 0.91  | 0.36  | (0.09)  | 0.018   | 0.001    | 0.18   | 0.32   | (0.040) | (<0.004) |
| 1 | IARM 25D       | 20.0  | 38.7   | 32.6  | 0.015  | 0.028   | 0.14   | 3.46   | 1.14  | 2.1   | 0.66    | 0.019   | 0.0013   | 0.70   | 0.009  | 0.089   | 0.13     |
| 1 | <u>BS 187D</u> | 19.91 | [39.6] | 32.3  | 0.0164 | 0.0337  | 0.089  | 3.52   | 0.938 | 2.17  | 0.621   | 0.0155  | 0.0021   | 0.669  | 0.0027 | 0.073   | 0.086    |
| 1 | <u>BS 800</u>  | 19.90 | 46.0   | 31.29 | 0.279  | 0.073   | 0.054  | 0.323  | 0.789 | 0.195 | 0.0183  | 0.0161  | 0.00036  | 0.560  | 0.469  | 0.071   | 0.0056   |
| 1 | 23X 08811A*    | 19.7  | 45.7   | 31.3  | 0.45   | 0.066   | 0.082  | 0.24   | 1.0   | 0.24  | 0.01    | 0.023   | <0.001   | 0.27   | 0.52   | 0.062   | 0.028    |
| 1 | IARM 58B       | 19.6  | 47.7   | 30.7  | 0.45   | 0.073   | 0.02   | 0.011  | 0.51  | 0.01  | 0.01    | 0.010   | 0.001    | 0.282  | 0.50   | 0.035   | 0.01     |
| 1 | IARM 7C        | 18.4  | 43.5   | 34.9  | 0.017  | 0.064   | 0.041  | 0.031  | 1.32  | 0.095 | 0.189   | 0.014   | 0.0004   | 1.21   | 0.022  | 0.060   | (0.02)   |
| 1 | SS 387/1       | 11.35 | 38.4   | 41.2  | 0.24   | 0.033   | 0.020  | 0.0076 | 0.025 | 5.83  | .       | 0.0033  | 0.0028   | 0.06   | 3.00   | .       | .        |

| Number         | As       | B        | Ca         | Ga      | Mg       | N       | O        | Pb        | Sb       | Sn       | Ta      | Zr       | Type    | Units   | mmØ x mmH |
|----------------|----------|----------|------------|---------|----------|---------|----------|-----------|----------|----------|---------|----------|---------|---------|-----------|
| IARM 357A      | .        | (0.0014) | .          | .       | (0.005)  | (0.011) | (0.005)  | .         | .        | .        | .       | .        | 028     | 31 x 2  | or 18     |
| IARM 282A      | (0.003)  | 0.005    | <0.003     | .       | (0.004)  | 0.207   | 0.0023   | (0.001)   | (0.0004) | (0.003)  | (0.005) | (0.002)  | HR-120  | 38 x 2  | or 18     |
| SRM 1247       | (0.003)  | 0.002    | .          | (0.011) | .        | (0.017) | (0.005)  | (<0.0001) | .        | .        | (0.001) | .        | 825     | 35 x 19 |           |
| <u>BS 825F</u> | (0.004)  | 0.0023   | (0.001)    | .       | 0.0013   | 0.0085  | 0.0009   | (0.0008)  | .        | (0.0036) | .       | (0.002)  | 825     | 30 x 20 |           |
| HRT NI2013     | .        | .        | .          | .       | .        | .       | .        | .         | .        | .        | .       | .        | 825     | 30 x 20 |           |
| 219X 08825A    | .        | 0.0028   | .          | .       | (0.003)  | .       | .        | .         | .        | .        | .       | 0.0021   | 825     | ~40 x   | ~15       |
| <u>BS 825E</u> | .        | 0.0025   | (0.0004)   | .       | .        | 0.0105  | (0.004)  | .         | .        | .        | .       | .        | 825     | 38 x    | ~7        |
| <u>BS 800A</u> | (0.002)  | 0.0018   | (0.000006) | .       | 0.0022   | 0.0126  | 0.0014   | (0.001)   | (0.0005) | 0.0041   | (0.005) | (0.002)  | 800     | 38 x    | ~7 or 19+ |
| BS 925         | .        | 0.002    | .          | .       | .        | 0.0042  | (0.0075) | .         | .        | (0.002)  | .       | .        | 925     | 38 x    | ~7 or 19+ |
| IARM 328B      | .        | (0.0010) | .          | .       | .        | (0.006) | .        | .         | .        | .        | .       | .        | 945X    | 31 x 2  | or 18     |
| <u>BS 189A</u> | 0.0039   | (0.0002) | (0.0004)   | .       | .        | 0.198   | 0.0024   | .         | .        | 0.0035   | .       | (0.001)  | AL6XN   | 38 x    | ~7 or 19+ |
| IARM 347A      | 0.006    | 0.0020   | 0.0029     | .       | 0.0008   | 0.062   | 0.0026   | 0.0003    | 0.0013   | 0.011    | (0.005) | (0.002)  | 904L    | 31 x 2  | or 18     |
| SRM 1246       | (0.004)  | <0.001   | .          | (0.004) | .        | (0.018) | (0.003)  | (<0.0001) | .        | .        | (0.001) | .        | 800     | 35 x 19 |           |
| IARM 25D       | .        | 0.0036   | .          | .       | 0.0016   | 0.034   | (0.005)  | .         | .        | 0.008    | .       | .        | 20      | 31 x 2  | or 18     |
| <u>BS 187D</u> | (0.0035) | 0.0026   | 0.0063     | .       | (0.0009) | 0.046   | 0.0026   | 0.0019    | (0.0011) | 0.0085   | 0.0008  | (0.0012) | 20      | 38 x    | ~7 or 19+ |
| <u>BS 800</u>  | 0.0036   | 0.0032   | 0.00030    | last    | (0.002)  | 0.0112  | (0.0009) | 0.00004   | 0.00046  | 0.0026   | (0.001) | 0.0018   | 800     | 44 x    | ~12 or 19 |
| 23X 08811A *   | .        | 0.005    | .          | .       | 0.005    | 0.010   | .        | .         | .        | 0.005    | .       | .        | Incoloy | ~40 x   | ~15       |
| IARM 58B       | .        | (0.0003) | .          | .       | (0.001)  | 0.010   | 0.001    | (0.0001)  | .        | (0.002)  | .       | <0.005   | 800     | 31 x 2  | or 18     |
| IARM 7C        | .        | 0.0027   | .          | .       | 0.0015   | 0.034   | 0.0021   | (0.001)   | .        | 0.0020   | (0.002) | (0.001)  | 330     | 31 x 2  | or 18     |
| SS 387/1       | .        | 0.017    | .          | .       | .        | .       | .        | .         | .        | .        | .       | .        | 901     | 41 x    | 13        |

**RM Cr/Fe NICKEL ALLOY TYPE 'NIMONIC 75 AND 80A'**

22X: cast, 40 mm Ø x 15 mm CT: 30-35 mm Ø x ~19 mm

| Number     | Cr    | Fe   | Al   | Mn    | Si    | Ti   | C     | Co    | Cu    | Mo    | V     | Ni    |
|------------|-------|------|------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| 22X 801D   | 20.75 | 0.57 | 1.33 | 0.56  | 0.51  | 2.19 | 0.14  | 0.25  | 0.22  | 0.25  | .     | .     |
| CT ISO122A | 19.89 | 1.42 | 1.71 | 0.007 | 0.012 | 2.49 | 0.061 | 0.007 | 0.007 | 0.015 | 0.118 | 74.07 |
| 22X 804D   | 19.72 | 0.66 | 1.33 | 0.54  | 0.56  | 2.34 | 0.07  | 0.20  | 0.21  | 0.09  | .     | .     |
| 22X 806D   | 19.66 | 0.18 | 1.35 | 0.09  | 0.10  | 2.48 | 0.007 | 0.03  | 0.004 | 0.01  | .     | .     |

| Number     | Ag      | As    | B      | Bi       | Nb   | P     | Pb     | S      | Sn     | W     | Zr    |
|------------|---------|-------|--------|----------|------|-------|--------|--------|--------|-------|-------|
| 22X 801D   | .       | 0.03  | .      | .        | .    | .     | .      | .      | .      | .     | .     |
| CT ISO122A | <0.0001 | .     | 0.0036 | <0.00001 | 0.01 | 0.001 | 0.0001 | <0.001 | 0.0007 | <0.01 | 0.073 |
| 22X 804D   | .       | 0.004 | .      | .        | .    | .     | .      | .      | .      | 0.02  | 0.004 |
| 22X 806D   | .       | .     | 0.004  | .        | .    | .     | 0.007  | .      | .      | .     | .     |

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## RM Cr/Fe TYPE 'RA 333' NICKEL ALLOYS

| Number  | Cr    | Fe    | Al   | Co   | Cu    | Mn   | Mo   | Nb     | Si   | W    | Ni    |
|---------|-------|-------|------|------|-------|------|------|--------|------|------|-------|
| BS 197B | 25.73 | 16.24 | 0.11 | 3.22 | 0.030 | 1.58 | 3.27 | (0.02) | 0.92 | 2.91 | 45.6  |
| BS 197A | 25.11 | 18.07 | 0.18 | 3.06 | 0.12  | 1.56 | 2.99 | 0.20   | 0.96 | 2.79 | 44.44 |

| Number  | B      | C     | Mg    | N       | P     | Pb       | S      | Sn      | Ti    | V     | Units                          |
|---------|--------|-------|-------|---------|-------|----------|--------|---------|-------|-------|--------------------------------|
| BS 197B | 0.0018 | 0.049 | 0.013 | (0.049) | 0.011 | .        | 0.0008 | (0.002) | 0.091 | 0.053 | wrought 38 mm Ø x ~7 or 19+ mm |
| BS 197A | 0.0019 | 0.050 | .     | (0.052) | 0.021 | (0.0002) | <0.001 | .       | 0.017 | 0.051 | wrought 38 mm Ø x ~7 or 19+ mm |

## Cr/Fe NICKEL ALLOY TYPE 600, 602, and 690

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

| # | Number         | Cr    | Fe   | Al    | B      | C      | Co     | Cu     | Mg     | Mn    | Mo      | N      | Nb      | Ni     | Si    | Ti    | V      |
|---|----------------|-------|------|-------|--------|--------|--------|--------|--------|-------|---------|--------|---------|--------|-------|-------|--------|
| 1 | BS 690B *      | 29.6  | 10.1 | 0.17  | <0.005 | 0.03   | 0.003  | 0.011  | 0.004  | 0.11  | <0.005  | 0.027  | 0.004   | [59.6] | 0.21  | 0.21  | 0.01   |
| 1 | <b>BS 690A</b> | 29.5  | 9.08 | 0.209 | 0.0003 | 0.0321 | 0.0056 | 0.0072 | 0.0058 | 0.214 | 0.0025  | 0.0069 | 0.0039  | 60.5   | 0.036 | 0.340 | 0.0095 |
| 1 | IARM 338A      | 25.0  | 9.74 | 2.13  | 0.0049 | 0.168  | 0.035  | 0.0059 | 0.0058 | 0.052 | 0.0017  | 0.0276 | (0.004) | 62.3   | 0.020 | 0.130 | 0.0026 |
| 2 | 28X 6005E      | 16.93 | 6.98 | 0.06  | .      | .      | 0.62   | 0.39   | 0.002  | 0.39  | .       | .      | .       | 0.60   | 0.28  | .     | .      |
| 2 | 28X 6001G      | 16.38 | 6.33 | 0.02  | .      | .      | 1.02   | 0.83   | 0.01   | 0.12  | .       | .      | .       | 0.95   | 0.58  | .     | .      |
| 2 | BS 600-2       | 16.36 | 6.80 | 0.16  | 0.0098 | 0.071  | 0.10   | 0.089  | 0.012  | 0.31  | 0.007   | 0.030  | (0.02)  | 75.34  | 0.23  | 0.37  | 0.028  |
| 2 | 28X 6002F      | 16.23 | 8.24 | 0.18  | .      | .      | 0.22   | 0.02   | 0.004  | 0.65  | .       | .      | .       | 0.25   | 0.12  | .     | .      |
| 2 | 28X 6004E      | 16.21 | 7.17 | 0.05  | .      | .      | 0.77   | 0.42   | 0.008  | 0.38  | .       | .      | .       | 0.65   | 0.27  | .     | .      |
| 1 | IARM 53F       | 16.0  | 9.5  | 0.170 | 0.0026 | 0.078  | 0.056  | 0.077  | 0.016  | 0.260 | 0.084   | .      | 0.088   | 72.7   | 0.170 | 0.255 | 0.024  |
| 1 | SRM 1244       | 15.7  | 9.6  | 0.26  | <0.005 | 0.062  | 0.058  | 0.26   | .      | 0.29  | 0.20    | .      | .       | 73.2   | 0.12  | 0.25  | .      |
| 2 | BS 600-5       | 15.59 | 8.36 | 0.19  | 0.0018 | 0.047  | 0.029  | 0.10   | 0.004  | 0.21  | 0.049   | 0.011  | (0.03)  | 74.83  | 0.26  | 0.23  | 0.054  |
| 2 | 28X 6003E      | 15.56 | 7.1  | 0.025 | .      | .      | 0.62   | 0.42   | 0.01   | 0.47  | .       | .      | .       | 0.74   | 0.22  | .     | .      |
| 2 | BS 600-6       | 14.86 | 7.33 | 0.288 | 0.0028 | 0.083  | 0.066  | 0.24   | 0.022  | 0.21  | 0.12    | 0.0078 | 0.14    | 76.0   | 0.31  | 0.24  | 0.023  |
| 2 | BS 600-3       | 14.77 | 8.88 | 0.09  | 0.0082 | 0.020  | 0.10   | 0.24   | 0.012  | 0.28  | 0.007   | 0.0081 | (0.02)  | 75.05  | 0.19  | 0.20  | 0.020  |
| 2 | BS 600-4       | 14.72 | 8.40 | 0.06  | 0.0060 | 0.034  | 0.09   | 0.08   | 0.020  | 0.20  | (0.002) | 0.021  | (0.015) | 75.88  | 0.22  | 0.20  | 0.023  |

| Number         | As       | Ca      | O      | P       | Pb       | S        | Sb        | Sn       | Ta                     | W      | Zr     | Units                               |
|----------------|----------|---------|--------|---------|----------|----------|-----------|----------|------------------------|--------|--------|-------------------------------------|
| BS 690B *      | <0.005   | <0.005  | <0.005 | 0.003   | .        | <0.005   | .         | <0.005   | * Provisional Analysis |        |        | 51 mm Ø x ~7 or 19+ mm              |
| <b>BS 690A</b> | (0.0004) | 0.0009  | 0.0009 | 0.0052  | (0.0001) | 0.0004   | (0.0002)  | (0.0003) | (0.0011)               | 0.0011 | 0.0018 | 38 mm Ø x ~7 or 19+ mm <b>17025</b> |
| IARM 338A      | (0.0001) | (0.002) | 0.0010 | (0.003) | 0.00007  | 0.0008   | (0.00009) | 0.00037  | (0.002)                | .      | 0.081  | 31 mm Ø x 2 or 18 mm Y: (0.06)      |
| 28X 6005E      | .        | .       | .      | .       | .        | .        | .         | .        | .                      | .      | .      | 40 mm Ø x 15 mm                     |
| 28X 6001G      | .        | .       | .      | .       | .        | .        | .         | .        | .                      | .      | .      | 40 mm Ø x 15 mm                     |
| BS 600-2       | .        | .       | .      | 0.006   | .        | 0.004    | .         | .        | .                      | .      | .      | 38 mm Ø x 20 mm                     |
| 28X 6002F      | .        | .       | .      | .       | .        | .        | .         | .        | .                      | .      | .      | 40 mm Ø x 15 mm                     |
| 28X 6004E      | .        | .       | .      | .       | .        | .        | .         | .        | .                      | .      | .      | 40 mm Ø x 15 mm                     |
| IARM 53F       | .        | .       | .      | 0.0070  | .        | (0.0022) | .         | (0.002)  | (0.004)                | 0.014  | .      | 31 mm Ø x 2 or 18 mm                |
| SRM 1244       | .        | .       | .      | 0.010   | .        | 0.003    | .         | .        | .                      | .      | .      | 35 mm Ø x 19 mm                     |
| BS 600-5       | .        | .       | 0.002  | 0.005   | .        | <0.002   | .         | .        | .                      | .      | .      | 38 mm Ø x ~7 or 19+ mm              |
| 28X 6003E      | .        | .       | .      | .       | .        | .        | .         | .        | .                      | .      | .      | 40 mm Ø x 15 mm                     |
| BS 600-6       | .        | .       | .      | 0.007   | .        | 0.001    | .         | .        | .                      | .      | .      | 38 mm Ø x ~7 or 19+ mm              |
| BS 600-3       | .        | .       | .      | 0.008   | .        | 0.005    | .         | .        | .                      | .      | .      | 38 mm Ø x 20 mm                     |
| BS 600-4       | .        | .       | .      | 0.007   | .        | 0.004    | .         | .        | .                      | .      | .      | 38 mm Ø x 20 mm                     |

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## Cr/Fe NICKEL ALLOY TYPE 718

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

| # | Number         | Cr     | Fe     | Nb    | Mo    | Ti    | Al     | B        | C        | Co      | Cu     | Mn      | P        | S         | Si      | Ni    |
|---|----------------|--------|--------|-------|-------|-------|--------|----------|----------|---------|--------|---------|----------|-----------|---------|-------|
| 1 | 28X 7182P      | 19.22  | 18.04  | 4.54  | 2.59  | 0.691 | (0.31) | 0.0042   | 0.0840   | 0.515   | 0.125  | 0.420   | 0.0110   | 0.0125    | 0.706   | 52.6  |
| 1 | SS 351/1       | 19.14  | 17.20  | 5.31  | 3.04  | 0.938 | 0.554  | 0.0035   | 0.0255   | 0.145   | 0.0222 | 0.0562  | 0.0045   | 0.00037   | 0.080   | 53.35 |
| 1 | 28X 07718A     | 18.62  | 19.55  | 5.05  | 3.01  | 0.945 | 0.544  | 0.0034   | 0.026    | 0.172   | 0.038  | 0.055   | 0.0063   | 0.0015    | 0.076   | 51.99 |
| 1 | NCS HS41746    | 18.56  | 18.54  | 5.15  | 3.28  | 1.03  | 0.635  | 0.0025   | 0.027    | 0.111   | 0.023  | 0.057   | 0.0033   | 0.0005    | 0.080   | 52.27 |
| 1 | SRM 1249       | 18.472 | 17.693 | 5.196 | 3.112 | 0.959 | 0.5682 | (0.0023) | (0.0380) | 0.3371  | 0.1402 | (0.108) | (0.0134) | (0.00064) | (0.120) | 53.29 |
| 1 | 28X 7181J      | 18.42  | 18.98  | 4.88  | 3.25  | 0.125 | 0.070  | 0.0021   | 0.0198   | (0.014) | 0.042  | 0.150   | 0.0146   | 0.0089    | 0.811   | 53.10 |
| 1 | <b>BS 718D</b> | 18.32  | 18.51  | 5.16  | 3.00  | 0.93  | 0.631  | 0.0041   | 0.037    | 0.368   | 0.071  | 0.100   | 0.0083   | 0.0004    | 0.072   | 52.5  |
| 1 | SS 351         | 18.12  | 18.26  | 5.20  | 3.06  | 1.06  | 0.55   | 0.0051   | 0.025    | 0.136   | 0.016  | 0.037   | (0.006)  | 0.0006    | 0.14    | 53.1  |
| 1 | IARM 56H       | 17.9   | 18.6   | 5.20  | 2.90  | 0.97  | 0.507  | 0.0045   | 0.0243   | 0.048   | 0.012  | 0.039   | (0.005)  | 0.0005    | 0.055   | 53.8  |

| Number         | As     | Mg       | N       | O        | Pb         | Sn       | Ta       | V        | W        | Zr       | Units                                 |
|----------------|--------|----------|---------|----------|------------|----------|----------|----------|----------|----------|---------------------------------------|
| 28X 7182P      | .      | .        | 0.064   | .        | .          | .        | 0.025    | 0.095    | .        | .        | cast ~40 mm Ø x ~15 mm                |
| SS 351/1       | .      | 0.0016   | 0.0077  | .        | Sb:0.00024 | 0.00033  | 0.0033   | 0.0181   | 0.0209   | 0.0017   | wrought 41 mm Ø x 13 mm               |
| 28X 07718A     | .      | .        | 0.0056  | .        | .          | .        | .        | .        | .        | .        | wrought 38 mm Ø x ~15 mm.             |
| NCS HS41746    | .      | .        | .       | .        | .          | .        | (0.008)  | .        | .        | .        | 40 mm Ø x 30 mm                       |
| SRM 1249       | .      | (0.0012) | (0.007) | .        | (0.00001)  | (0.0024) | (0.0027) | (0.0338) | (0.0846) | (0.0029) | 41 mm Ø x 19 mm                       |
| 28X 7181J      | .      | .        | 0.038   | .        | .          | .        | .        | .        | .        | .        | cast ~40 mm Ø x ~15 mm last           |
| <b>BS 718D</b> | 0.0011 | 0.0038   | 0.0084  | 0.0015   | (0.00006)  | 0.0020   | (0.0022) | 0.038    | 0.049    | (0.002)  | wrought 38 mm Ø x 19+ mm <b>17025</b> |
| SS 351         | .      | .        | .       | .        | .          | .        | .        | .        | .        | .        | wrought 41 mm Ø x 13 mm               |
| IARM 56H       | .      | 0.0011   | 0.0066  | (0.0003) | .          | (0.0003) | (0.006)  | 0.026    | (0.010)  | (0.0004) | 31 mm Ø x 2 or 18 mm                  |

**Need a larger size?**  
**Most BS items are**  
**available in any height.**

## Cr/Fe NICKEL ALLOY TYPE 750

# = class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties, sale price

| # | Number         | Cr    | Fe   | Ti   | Al   | C     | Co      | Cu      | Mn    | Mo    | Nb   | Ni   | P       | S        | Si    | Ta      |
|---|----------------|-------|------|------|------|-------|---------|---------|-------|-------|------|------|---------|----------|-------|---------|
| 1 | <b>BS 750C</b> | 15.92 | 8.36 | 2.61 | 0.91 | 0.041 | 0.036   | 0.012   | 0.056 | 0.070 | 0.83 | 71.0 | 0.0059  | (0.0004) | 0.071 | (0.006) |
| 1 | <b>BS 750D</b> | 15.50 | 8.42 | 2.53 | 0.70 | 0.039 | (0.023) | (0.026) | 0.188 | 0.026 | 0.89 | 71.3 | (0.005) | 0.0005   | 0.188 | (0.007) |
| 3 | HT 8211X       | 15.48 | 6.81 | 2.33 | 0.68 | 0.052 | 0.10    | 0.090   | 0.53  | .     | 0.45 | .    | .       | 0.004    | 0.36  | 0.22    |
| 3 | HT 8209X       | 15.38 | 7.01 | 2.74 | 0.88 | 0.044 | 0.15    | 0.051   | 0.67  | .     | 0.52 | .    | .       | 0.003    | 0.31  | 0.23    |
| 1 | IARM 57E       | 15.3  | 8.01 | 2.54 | 0.74 | 0.060 | 0.021   | (0.010) | 0.079 | 0.014 | 1.00 | 72.1 | (0.005) | (0.0009) | 0.052 | .       |

| Number         | As       | B      | Ca       | Mg       | N      | O        | Pb       | Sb        | Sn     | V       | W        | Zr    | Units                          |
|----------------|----------|--------|----------|----------|--------|----------|----------|-----------|--------|---------|----------|-------|--------------------------------|
| <b>BS 750C</b> | (0.0009) | 0.0028 | (0.0006) | 0.0022   | 0.0031 | (0.0014) | (0.0001) | (0.00007) | 0.0012 | 0.132   | (0.0028) | 0.022 | 38 mm Ø x ~7 or 19+ mm wrought |
| <b>BS 750D</b> | 0.0006   | 0.0024 | .        | 0.0051   | 0.0041 | 0.0019   | .        | .         | 0.0008 | (0.028) | (0.005)  | 0.014 | 38 mm Ø x ~7 or 19+ mm wrought |
| HT 8211X       | .        | .      | .        | .        | .      | .        | .        | .         | .      | .       | .        | .     | 25 mm Ø x 50 mm wrought        |
| HT 8209X       | .        | .      | .        | .        | .      | .        | .        | .         | .      | .       | .        | .     | 25 mm Ø x 50 mm wrought        |
| IARM 57E       | .        | 0.008  | .        | (0.0013) | .      | .        | .        | .         | .      | 0.021   | (0.009)  | 0.037 | 31 mm Ø x 2 or 18 mm           |

Cr/Mo NICKEL ALLOY AND TYPES 625 and 725

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

\* Provisional Analysis

| # | Number         | Cr    | Mo    | Fe      | Nb      | Si      | Ti      | W      | Al    | B        | C       | Co      | Cu     | Mn       | P        | S        | Ni    |
|---|----------------|-------|-------|---------|---------|---------|---------|--------|-------|----------|---------|---------|--------|----------|----------|----------|-------|
| 1 | <b>BS 625E</b> | 22.44 | 8.77  | 3.81    | 3.56    | 0.065   | 0.27    | 0.016  | 0.214 | 0.0022   | 0.049   | 0.031   | 0.024  | 0.050    | 0.004    | 0.0005   | 60.7  |
| 1 | <b>BS H6B</b>  | 22.3  | 14.05 | 3.45    | (0.1)   | (0.035) | 0.050   | 3.20   | 0.23  | 0.0016   | (0.008) | 0.079   | 0.035  | 0.226    | 0.0054   | 0.0005   | 55.9  |
| 1 | <b>BS 625D</b> | 22.33 | 8.74  | 3.81    | 3.54    | 0.072   | 0.276   | 0.014  | 0.21  | 0.0019   | 0.048   | 0.041   | 0.019  | 0.069    | 0.0039   | 0.0004   | 60.9  |
| 1 | 28X 06625A     | 21.94 | 9.15  | 0.917   | 3.52    | 0.273   | 0.238   | .      | 0.184 | 0.0009   | 0.020   | 0.031   | 0.0288 | 0.090    | (0.0022) | 0.0037   | 63.49 |
| 1 | ECRM 377-2     | 21.72 | 8.94  | 3.77    | 3.50    | 0.077   | 0.264   | .      | 0.232 | (0.0006) | 0.0202  | 0.0348  | 0.0104 | 0.0225   | 0.0036   | 0.0006   | 61.45 |
| 1 | ECRM 377-1     | 21.72 | 8.94  | 3.77    | 3.50    | 0.077   | 0.255   | .      | 0.216 | (0.0006) | 0.0202  | 0.0348  | 0.0110 | 0.0225   | 0.0036   | 0.0006   | 61.45 |
| 1 | 28X 6256A      | 21.29 | 8.81  | (0.034) | 3.75    | 0.041   | 0.266   | .      | 0.301 | .        | 0.0173  | .       | 0.018  | (0.0004) | 0.0033   | (0.0016) | 65.4  |
| 1 | IARM 54H *     | 21.95 | 8.68  | 4.05    | 3.51    | 0.144   | 0.286   | <0.08  | 0.31  | (0.002)  | 0.018   | 0.099   | (0.10) | 0.105    | 0.0060   | (0.0010) | 60.7  |
| 1 | IARM 54G       | 21.1  | 8.52  | 4.03    | 3.48    | 0.27    | 0.240   | (0.03) | 0.15  | 0.0027   | 0.053   | 0.060   | 0.066  | 0.172    | 0.007    | (0.0020) | 61.9  |
| 1 | IARM 274A      | 21.0  | 8.06  | 7.60    | 3.48    | (0.02)  | 1.55    | 0.06   | 0.26  | 0.002    | 0.007   | 0.143   | 0.10   | 0.08     | 0.007    | (0.0004) | 57.5  |
| 1 | 28X 6252Q *    | 21    | 8.8   | 4.7     | 3.1     | 0.95    | 0.10    | .      | 0.12  | .        | 0.075   | 0.28    | 0.22   | 0.35     | 0.01     | 0.01     | Rem   |
| 2 | BS 725         | 20.72 | 7.97  | 8.0     | 3.52    | 0.02    | 1.52    | .      | 0.13  | (0.002)  | 0.010   | 0.02    | 0.014  | 0.08     | 0.004    | 0.002    | 58.0  |
| 1 | NCS HS41745    | 20.69 | 8.37  | 3.50    | 3.19    | 0.071   | 0.011   | .      | 0.016 | .        | 0.043   | (0.011) | .      | 0.124    | 0.0023   | 0.0006   | 63.72 |
| 2 | 26X 11384E     | 20.5  | 10.2  | 0.98    | .       | 0.15    | 2.6     | .      | 0.50  | .        | .       | 0.30    | 0.12   | 0.13     | .        | .        | .     |
| 1 | IARM 276A      | 20.54 | 16.20 | 1.30    | 0.014   | 0.043   | (0.004) | (0.03) | 0.245 | 0.0038   | 0.0040  | 0.041   | 0.038  | 0.305    | 0.006    | 0.0005   | 61.1  |
| 1 | IARM 362B      | 20.4  | 16.1  | (0.010) | (0.015) | (0.04)  | 0.052   | 3.90   | 0.32  | .        | 0.0079  | (0.010) | .      | 0.229    | (0.005)  | (0.0004) | 58.7  |
| 1 | 28X 6251M      | 20.22 | 9.60  | 4.22    | 2.64    | 0.251   | 0.0096  | .      | 0.006 | 0.0040   | 0.0026  | 0.0080  | 0.0570 | 0.0694   | 0.002    | 0.0012   | 62.93 |
| 1 | 28X 6255M      | 19.65 | 8.32  | 2.03    | 4.09    | 0.448   | 0.346   | .      | 0.334 | 0.0101   | 0.0342  | 0.164   | 0.0647 | 0.2034   | 0.0105   | 0.0080   | 64.16 |
| 2 | HRT NI2004     | 15.72 | 14.89 | 0.41    | 0.022   | 0.019   | 0.391   | 0.011  | 0.097 | .        | 0.005   | 0.011   | 0.010  | 0.27     | 0.004    | 0.002    | 68.05 |

| Number         | As       | Ca       | Mg     | N      | O        | Pb        | Sb       | Sn       | Ta       | V       | Zr      | Units                                       |
|----------------|----------|----------|--------|--------|----------|-----------|----------|----------|----------|---------|---------|---|
| <b>BS 625E</b> | (0.003)  | (0.0006) | 0.0021 | 0.0074 | 0.0015   | (0.00005) | (0.0001) | (0.0006) | (0.0036) | 0.020   | (0.003) | wrought 38 mm Ø x ~7 or 19+ mm <b>17025</b> |
| <b>BS H6B</b>  | (0.0015) | .        | 0.0010 | 0.0118 | 0.0007   | .         | (0.006)  | (0.0007) | .        | 0.0063  | .       | wrought 38 mm Ø x ~7 or 19+ mm <b>17025</b> |
| <b>BS 625D</b> | 0.0007   | (0.0009) | .      | 0.0067 | 0.0012   | .         | (0.0004) | (0.0006) | (0.004)  | 0.018   | .       | wrought 38 mm Ø x ~7 mm <b>17025</b>        |
| 28X 06625A     | .        | .        | .      | 0.0219 | .        | .         | .        | .        | .        | .       | .       | wrought 40 mm Ø x ~15 mm                    |
| ECRM 377-2     | .        | .        | .      | .      | .        | .         | .        | .        | .        | .       | .       | wrought 40 mm Ø x 20 mm                     |
| ECRM 377-1     | .        | .        | .      | .      | .        | .         | .        | .        | .        | .       | .       | wrought 40 mm Ø x 20 mm                     |
| 28X 6256A      | .        | .        | .      | 0.007  | .        | .         | .        | .        | .        | .       | .       | HIP 40 mm Ø x 13 mm                         |
| IARM 54H *     | .        | .        | <0.001 | <0.02  | <0.001   | .         | .        | <0.001   | <0.03    | <0.02   | <0.002  | 38 mm Ø x 2 or 18                           |
| IARM 54G       | .        | .        | 0.0040 | 0.022  | .        | .         | .        | (0.0009) | .        | 0.025   | .       | 31 mm Ø x 2 or 18 mm                        |
| IARM 274A      | .        | .        | 0.0019 | 0.007  | 0.0006   | .         | .        | 0.001    | (0.002)  | 0.019   | (0.001) | 31 mm Ø x 2 or 18 mm                        |
| 28X 6252Q *    | .        | .        | .      | 0.09   | .        | .         | .        | .        | 0.005    | .       | .       | c.cast ~40 mm Ø x ~15 mm                    |
| BS 725         | .        | .        | .      | 0.0051 | .        | .         | .        | .        | .        | .       | .       | wrought 38 mm Ø x ~7 or 19+ mm              |
| NCS HS41745    | .        | .        | .      | .      | .        | .         | .        | .        | (0.001)  | .       | .       | 40 mm Ø x 30 mm                             |
| 26X 11384E     | .        | .        | .      | .      | .        | .         | .        | .        | .        | .       | .       | cast 40 mm Ø x 15 mm                        |
| IARM 276A      | (0.0009) | <0.007   | 0.007  | 0.0388 | 0.0010   | (0.0004)  | 0.00019  | 0.0004   | 0.011    | (0.008) | (0.003) | 38 mm Ø x 2 or 18                           |
| IARM 362B      | .        | .        | 0.008  | 0.0060 | (0.0006) | .         | .        | .        | .        | (0.010) | .       | 31 mm Ø x 2 or 18 mm                        |
| 28X 6251M      | .        | .        | .      | .      | .        | .         | .        | .        | 0.0112   | .       | .       | c.cast ~40 mm Ø x ~15 mm                    |
| 28X 6255M      | .        | .        | .      | .      | .        | 0.0005    | .        | 0.0012   | 0.093    | .       | .       | c.cast ~40 mm Ø x ~15 mm                    |
| HRT NI2004     | .        | .        | .      | .      | .        | .         | .        | .        | 0.010    | 0.012   | .       | 35 mm Ø x 20 mm last                        |

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## VARIOUS INCOLOY ALLOYS

# = class, where 1 = CRM, 2 = RM, and 3 = RM with no uncertainties, sale price

| # | Number    | Cr    | Fe  | Mn   | Si   | Ti   | Al    | C     | Co   | Cu   | Mo   | P     | S     | Ni    |
|---|-----------|-------|-----|------|------|------|-------|-------|------|------|------|-------|-------|-------|
| 3 | HH 5179A  | 22.20 | Rem | 0.87 | 0.38 | 0.46 | 0.30  | 0.042 | .    | 0.26 | .    | 0.012 | 0.003 | 34.13 |
| 3 | HH 5157A  | 21.48 | Rem | 0.95 | 0.43 | 0.55 | 0.45  | 0.067 | .    | 0.33 | .    | 0.012 | 0.003 | 29.31 |
| 3 | HH 5196A  | 20.66 | Rem | 1.05 | 0.45 | 1.13 | 0.31  | 0.036 | .    | 0.24 | .    | 0.011 | 0.002 | 31.46 |
| 3 | HH 5300A  | 18.18 | Rem | 0.86 | 0.35 | 0.54 | 0.45  | 0.026 | .    | 0.28 | .    | 0.013 | 0.003 | 33.56 |
| 2 | 23X DS 4E | 16.83 | Rem | 1.02 | 2.01 | 0.20 | 0.037 | 0.05  | 0.48 | 0.30 | 0.29 | .     | .     | 37.1  |
| 2 | 23X DS 5E | 8.64  | Rem | 1.04 | 1.98 | 0.17 | 0.083 | 0.080 | 0.50 | 0.30 | 0.30 | .     | .     | 36.6  |

| Number    | Units   |                 |
|-----------|---------|-----------------|
| HH 5179A  | wrought | 44 mm Ø x 12 mm |
| HH 5157A  | wrought | 44 mm Ø x 12 mm |
| HH 5196A  | wrought | 44 mm Ø x 12 mm |
| HH 5300A  | wrought | 41 mm Ø x 12 mm |
| 23X DS 4E | cast    | 40 mm Ø x 15 mm |
| 23X DS 5E | cast    | 40 mm Ø x 15 mm |

## RM Cr/Nb NICKEL ALLOY

cast typical analysis

| Number     | Cr   | Nb   | Co   | Cu   | Fe   | Mn   | Mo   | Si   | W    | Units           |
|------------|------|------|------|------|------|------|------|------|------|-----------------|
| 25X 10221F | 20.0 | 7.43 | 0.26 | 0.11 | 0.62 | 0.28 | 6.57 | 0.45 | 2.23 | 40 mm Ø x 15 mm |

## RM Cr/Mo/Nb/W TYPE

cast last of stock ~40 mm Ø x ~11 mm

| Number     | Co   | Cr    | Cu   | Fe   | Mn   | Mo   | Nb   | Si   | W    |
|------------|------|-------|------|------|------|------|------|------|------|
| 25X 10235E | 0.53 | 19.87 | 0.26 | 1.26 | 0.53 | 5.85 | 7.25 | 0.56 | 3.14 |

## CRM Cr/W TYPE 'HAYNES 230'

analysis listed in mass %

| Number   | Cr    | W     | Mo   | Fe    | Mn    | Si   | Ni     | Al   | B      | C     | Co   | Cu    | Mg      | N     | Nb    | P       | V       |
|----------|-------|-------|------|-------|-------|------|--------|------|--------|-------|------|-------|---------|-------|-------|---------|---------|
| BS H230  | 22.35 | 14.45 | 1.69 | 1.376 | 0.470 | 0.39 | 58.4   | 0.29 | 0.0044 | 0.096 | 0.24 | 0.030 | 0.004   | 0.061 | 0.053 | 0.0042  | 0.0056  |
| IARM 68E | 21.88 | 14.6  | 1.18 | 1.06  | 0.51  | 0.39 | (59.9) | 0.30 | 0.007  | 0.099 | 0.16 | 0.022 | (0.006) | 0.050 | 0.035 | (0.005) | (0.007) |

| Number   | As           | Ca        | O      | Pb        | S        | Sb        | Sn       | Ta     | Ti     | Zr      | Units                  |
|----------|--------------|-----------|--------|-----------|----------|-----------|----------|--------|--------|---------|------------------------|
| BS H230  | 0.0007       | (0.00003) | 0.0009 | (0.00003) | (0.0003) | (0.00007) | (0.0003) | (<0.1) | (0.01) | (0.002) | 38 mm Ø x ~7 or 19+ mm |
| IARM 68E | . La:(0.008) |           | 0.0007 | .         | (0.0005) | .         | .        | .      | 0.015  | .       | 31 mm Ø x 2 or 18 mm   |

17025



## CRM Cr/Fe/Mn/Nb ALLOY

analysis listed in mass %

~40 mm Ø x ~15 mm

| Number      | C     | Co      | Cr    | Cu    | Fe   | Mn    | Mo    | Nb   | Ni   | P      | S      | Si    | Ta    | Ti   |
|-------------|-------|---------|-------|-------|------|-------|-------|------|------|--------|--------|-------|-------|------|
| 219X 20004A | 0.224 | (0.104) | 13.63 | 0.319 | 9.46 | 14.05 | 0.104 | 1.53 | 59.1 | 0.0147 | 0.0028 | 0.916 | 0.077 | 0.52 |

## 'MONEL' TYPE COPPER-NICKEL ALLOY

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

| Number        | Cu    | Al      | Fe    | Mn    | Si     | Ti      | C      | Co       | Cr      | Mg       | Mo      | Nb       | P        | Pb       | S        | Ni     |       |
|---------------|-------|---------|-------|-------|--------|---------|--------|----------|---------|----------|---------|----------|----------|----------|----------|--------|-------|
| 1 BS 400D     | 33.0  | 0.0231  | 2.00  | 0.993 | 0.146  | 0.064   | 0.130  | 0.032    | 0.0057  | 0.0217   | 0.0024  | (0.0001) | (0.0010) | 0.0004   | 0.0006   | 63.4   | 17025 |
| 1 IARM 51D    | 32.6  | 0.036   | 1.68  | 1.03  | 0.16   | 0.033   | 0.139  | 0.011    | 0.064   | 0.016    | 0.019   | (0.006)  | (0.010)  | .        | 0.0015   | 64.1   |       |
| 1 212X 04400A | 32.47 | 0.030   | 2.065 | 1.027 | 0.253  | 0.0193  | 0.157  | 0.0432   | 0.166   | 0.053    | 0.0307  | .        | 0.0033   | .        | (0.002)  | 63.69  |       |
| 1 BS 405A     | 32.1  | (0.002) | 1.51  | 1.90  | (0.15) | 0.0021  | 0.051  | 0.019    | 0.0099  | (0.17)   | 0.0031  | 0.0004   | 0.0037   | 0.0004   | 0.041    | 63.8   | 17025 |
| 1 SS 363/1    | 31.90 | (0.028) | 1.86  | 1.26  | 0.028  | (0.03)  | 0.140  | 0.032    | (0.05)  | .        | .       | .        | .        | .        | (0.002)  | Rem    |       |
| 2 BS 405      | 31.80 | 0.10    | 1.34  | 1.03  | 0.04   | 0.003   | 0.13   | 0.025    | 0.006   | 0.026    | (0.002) | (0.002)  | 0.010    | .        | 0.041    | 65.49  |       |
| 2 BS 400-3    | 31.25 | 0.001   | 1.60  | 0.85  | 0.063  | 0.004   | 0.153  | 0.46     | 0.21    | 0.012    | 0.003   | (0.0004) | 0.026    | (0.0015) | 0.006    | 65.4   |       |
| 2 BS 400-1    | 30.97 | 0.004   | 1.27  | 1.07  | 0.16   | 0.007   | 0.109  | 0.37     | 0.033   | 0.048    | 0.001   | 0.0003   | 0.022    | 0.0020   | 0.008    | 66.0   |       |
| 2 BS 400-2    | 30.75 | 0.006   | 1.42  | 1.17  | 0.17   | 0.011   | 0.170  | 0.46     | 0.091   | 0.033    | 0.0012  | 0.0004   | 0.027    | (0.001)  | 0.008    | 65.9   |       |
| 1 212X 4001Q  | 28.92 | (0.038) | 0.503 | 2.95  | 1.48   | (0.094) | 0.0130 | 0.111    | 0.0795  | 0.0016   | .       | 0.100    | 0.0198   | 0.0703   | 0.0206   | 65.49  |       |
| 1 212X 05500A | 29.91 | 3.00    | 1.162 | 0.634 | 0.167  | 0.632   | 0.135  | (0.0090) | 0.073   | 0.0098   | .       | .        | 0.0031   | .        | 0.0010   | 64.3   |       |
| 1 BS 500E     | 29.9  | 2.94    | 0.722 | 0.605 | 0.148  | 0.607   | 0.134  | 0.017    | 0.0174  | 0.0058   | 0.0044  | (0.002)  | 0.0022   | (0.0008) | 0.0006   | 64.7   | 17025 |
| 1 SRM CI248   | 29.80 | 0.009   | 2.10  | 0.31  | 1.61   | .       | 0.266  | .        | 0.095   | .        | 0.006   | .        | 0.002    | 0.00038  | 0.0008   | 65.75  |       |
| 1 IARM 52D    | 29.6  | 2.95    | 1.38  | 0.59  | 0.170  | 0.60    | 0.125  | 0.005    | (0.004) | 0.0065   | .       | (0.002)  | (0.002)  | .        | (0.0012) | 64.5   |       |
| 2 212X NA 2G  | 29.6  | .       | 1.53  | 1.06  | 2.50   | .       | 0.07   | .        | .       | 0.008    | .       | .        | .        | 0.02     | 0.023    | .      |       |
| 1 212X 4004M  | 29.0  | 0.71    | 3.68  | 0.953 | 0.557  | 0.652   | 0.081  | 0.0758   | 0.822   | .        | 0.197   | 0.949    | 0.0400   | 0.0206   | 0.0110   | 62.1   |       |
| 1 212X 4007B  | 28.95 | 0.0307  | 2.02  | 1.08  | 2.18   | 0.099   | 0.0483 | 0.0205   | 0.498   | 0.050    | 0.048   | 2.40     | 0.025    | 0.0192   | 0.0039   | 62.4   |       |
| 1 212X 4005G  | 21.53 | 1.399   | 1.053 | 1.437 | 2.52   | 1.005   | 0.0494 | 0.156    | 0.20    | (0.0026) | 0.102   | 0.341    | 0.0106   | 0.0091   | 0.0038   | (70.1) |       |

| Number      | Cu       | Al       | Fe    | Mn        | Si         | Ti        | C        | Co        | Cr        | Mg       | Mo       | Nb       | P       | Pb                     | S                      | Ni |
|-------------|----------|----------|-------|-----------|------------|-----------|----------|-----------|-----------|----------|----------|----------|---------|------------------------|------------------------|----|
| Number      | As       | B        | Bi    | Ca        | Cd         | N         | O        | Sb        | Sn        | V        | Zn       | Zr       | Units   |                        |                        |    |
| BS 400D     | (0.0001) | 0.0009   | .     | (0.001)   | Ta:(0.009) | (0.00017) | 0.0008   | (0.0001)  | (0.00012) | (0.0002) | (0.0004) | (0.0003) | wrought | 38 mm Ø x ~7 or 19+ mm |                        |    |
| IARM 51D    | .        | .        | .     | .         | .          | .         | .        | .         | .         | .        | .        | .        | .       | wrought                | 31 mm Ø x 2 or 18 mm   |    |
| 212X 04400A | .        | 0.0019   | .     | .         | .          | 0.0005    | .        | .         | .         | .        | .        | .        | .       | wrought                | ~40 mm Ø x ~15 mm      |    |
| BS 405A     | 0.0004   | 0.0007   | .     | (0.00006) | .          | (0.001)   | 0.0007   | W: 0.0017 | 0.0004    | (0.002)  | 0.0017   | 0.012    | wrought | 38 mm Ø x ~7 or 19+ mm |                        |    |
| SS 363/1    | .        | .        | .     | .         | .          | .         | .        | .         | .         | .        | .        | .        | .       | wrought                | 38 mm Ø x 19 mm        |    |
| BS 405      | .        | (0.001)  | .     | .         | .          | .         | .        | .         | .         | .        | .        | .        | .       | wrought                | 38 mm Ø x ~7 or 19+ mm |    |
| BS 400-3    | 0.004    | (0.0002) | .     | .         | .          | .         | .        | (0.001)   | 0.0014    | 0.003    | (0.001)  | .        | .       | wrought                | 38 mm Ø x ~18 mm       |    |
| BS 400-1    | 0.004    | (0.0005) | .     | .         | .          | .         | .        | (0.0005)  | 0.0010    | (0.001)  | (0.0006) | .        | .       | wrought                | 38 mm Ø x ~18 mm       |    |
| BS 400-2    | 0.004    | (0.0006) | .     | .         | .          | .         | .        | (0.001)   | 0.0012    | (0.003)  | (0.001)  | .        | .       | wrought                | 38 mm Ø x ~18 mm       |    |
| 212X 4001Q  | .        | .        | .     | .         | .          | .         | .        | .         | (0.056)   | .        | .        | .        | .       | cast                   | ~40 mm Ø x ~15 mm      |    |
| 212X 05500A | .        | 0.0015   | .     | .         | .          | 0.0010    | .        | .         | .         | .        | .        | 0.0343   | wrought | ~38 mm Ø x ~15 mm      |                        |    |
| BS 500E     | (0.0008) | 0.0017   | .     | (0.0004)  | W:(0.002)  | (0.00025) | 0.0005   | .         | (0.0008)  | (0.001)  | (0.001)  | 0.0133   | wrought | 38 mm Ø x ~7 or 19+ mm |                        |    |
| SRM CI248   | .        | .        | .     | .         | .          | .         | .        | .         | 0.00011   | .        | 0.0003   | .        | .       | wrought                | 32 mm Ø x 19 mm        |    |
| IARM 52D    | .        | (0.0020) | .     | .         | .          | .         | .        | .         | 0.0013    | (0.0010) | .        | 0.026    | .       | wrought                | 31 mm Ø x 2 or 18 mm   |    |
| 212X NA 2G  | .        | .        | .     | .         | .          | .         | .        | .         | .         | .        | .        | .        | .       | cast                   | 40 mm Ø x 15 mm        |    |
| 212X 4004M  | .        | .        | .     | .         | 0.0010     | .         | .        | .         | 0.0596    | .        | .        | .        | .       | c.cast                 | ~40 mm Ø x ~15 mm      |    |
| 212X 4007B  | .        | .        | 0.040 | .         | (0.0025)   | .         | Se:0.019 | .         | 0.0110    | .        | (0.093)  | .        | .       | cast                   | ~40 mm Ø x ~15 mm      |    |
| 212X 4005G  | .        | .        | .     | .         | .          | .         | .        | .         | .         | .        | .        | .        | .       | cast                   | ~40 mm Ø x ~15 mm      |    |

## Fe, Fe/Co, and Fe/Mo NICKEL ALLOY

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

CT: 30-35 mm Ø x ~16 mm

IARM: 31 mm Ø x 2 or 18 mm

SRM: 31-32 mm Ø x 19 mm

VS: ~38 mm Ø x ~19 mm

| # | Number     | Fe    | Co    | Cu    | Mo    | Al    | B      | C      | Cr    | Mn    | Nb   | Ni    | P      | S      | Si    | Ta    | Ti   | V     |
|---|------------|-------|-------|-------|-------|-------|--------|--------|-------|-------|------|-------|--------|--------|-------|-------|------|-------|
| 1 | SRM 1159   | 51.0  | 0.022 | 0.038 | 0.01  | .     | .      | 0.007  | 0.06  | 0.30  | .    | 48.2  | 0.003  | 0.003  | 0.32  | .     | .    | .     |
| 1 | SRM 1250   | 40.5  | 16.1  | 0.022 | 0.014 | 0.99  | 0.0078 | 0.022  | 0.077 | 0.052 | 2.99 | 37.78 | <0.003 | 0.0025 | 0.097 | 0.003 | 1.48 | 0.077 |
| 2 | IARM 203A  | 40.6  | 12.88 | 0.05  | 0.090 | 0.066 | .      | 0.005  | 0.72  | 0.023 | 5.00 | 38.4  | 0.006  | 0.0009 | 0.41  | .     | 1.58 | .     |
| 1 | SRM 1160   | 14.3  | 0.054 | 0.021 | 4.3   | .     | .      | 0.019  | 0.05  | 0.55  | .    | 80.3  | 0.003  | 0.001  | 0.37  | .     | .    | .     |
| 2 | CT ISO133A | 13.75 | 0.003 | 4.41  | 4.17  | .     | .      | 0.014  | 0.037 | 0.51  | .    | 76.99 | 0.003  | <0.001 | 0.145 | .     | .    | .     |
| 1 | VS NG15/2  | Rem   | 18.6  | 0.282 | .     | .     | .      | 0.0204 | 0.016 | 0.40  | .    | 27.7  | 0.017  | 0.012  | 0.177 | .     | .    | .     |
| 1 | VS NG16/2  | Rem   | 16.5  | 0.044 | .     | .     | .      | 0.018  | 0.14  | 0.15  | .    | 33.2  | 0.0023 | 0.0037 | 0.27  | .     | .    | .     |
| 1 | VS NG17/2  | Rem   | 14.0  | 0.47  | .     | .     | .      | 0.0031 | 0.23  | 0.276 | .    | 29.6  | 0.020  | 0.012  | 0.018 | .     | .    | .     |

Mo/Fe 'HASTELLOY' TYPE ALLOY

# = class, where 1 = CRM and 2 = RM \* Provisional Analysis

| # | Number        | Mo    | Co      | Cr    | Fe    | W       | Ni     | Al      | C       | Cu      | Mn    | N        | P        | S        | Si      | Ti       | V      |
|---|---------------|-------|---------|-------|-------|---------|--------|---------|---------|---------|-------|----------|----------|----------|---------|----------|--------|
| 1 | 215X HB1P     | 33.04 | 0.252   | 1.090 | 5.78  | .       | 58.00  | .       | 0.0422  | 0.0718  | 0.697 | 0.0156   | 0.0056   | 0.0506   | 0.150   | .        | 0.504  |
| 1 | 215X HB4G     | 27.94 | 1.703   | 0.375 | 5.94  | (0.096) | 61.80  | 0.0159  | 0.0843  | 0.0192  | 0.597 | 0.0013   | 0.049    | 0.0313   | 1.005   | 0.0338   | 0.212  |
| 1 | <b>BS H1C</b> | 27.2  | (0.01)  | 0.70  | 1.29  | (0.009) | 69.8   | 0.15    | 0.0022  | (0.002) | 0.51  | (0.0005) | (0.0049) | (0.0004) | (0.01)  | (0.008)  | (0.02) |
| 2 | BS H1B        | 26.52 | <0.02   | <0.01 | 1.00  | .       | (71.3) | 0.12    | 0.006   | (0.01)  | 0.82  | .        | 0.003    | 0.0005   | 0.049   | 0.11     | <0.01  |
| 1 | 215X HC1M     | 19.72 | 2.49    | 15.62 | 4.03  | 3.59    | .      | 0.008   | 0.0255  | 0.024   | 1.272 | 0.0040   | .        | (0.0018) | 0.493   | 0.267    | 0.149  |
| 1 | 215X HC2K     | 18.44 | 1.70    | 16.46 | 2.97  | 4.02    | (53.8) | 0.005   | 0.0455  | .       | 0.909 | 0.0091   | .        | 0.0163   | 1.22    | 0.181    | 0.282  |
| 1 | 215X HC3M     | 17.38 | 0.973   | 17.86 | 4.84  | 4.63    | .      | 0.111   | 0.0897  | 0.0988  | 0.685 | 0.0066   | 0.0211   | 0.0131   | 0.944   | 0.150    | 0.399  |
| 1 | SRM C2402     | 17.1  | 1.50    | 16.15 | 7.3   | 4.29    | 51.5   | .       | 0.010   | 0.19    | 0.64  | .        | 0.007    | 0.018    | 0.85    | .        | 0.22   |
| 1 | 215X HC4M     | 16.93 | 0.709   | 18.44 | 6.01  | 4.99    | (50.3) | (0.052) | 0.141   | 0.331   | 0.441 | 0.071    | 0.0390   | 0.0222   | 1.15    | (0.094)  | 0.491  |
| 1 | 215X HC5V     | 16.03 | 0.0460  | 20.05 | 8.15  | 6.19    | (45.9) | 0.721   | 0.201   | 0.485   | 0.400 | 0.0081   | 0.054    | 0.038    | 1.379   | 0.198    | 0.607  |
| 1 | BS H2E *      | 16.0  | <0.5    | 15.9  | 5.4   | 3.3     | [58.3] | 0.4     | 0.003   | <0.05   | 0.56  | 0.013    | <0.03    | <0.005   | <0.08   | <0.05    | 0.15   |
| 1 | 215X 10276A   | 15.96 | 0.182   | 15.56 | 5.79  | 3.59    | 57.81  | 0.203   | 0.008   | 0.0423  | 0.498 | 0.0099   | 0.0027   | (0.001)  | 0.029   | 0.0186   | 0.196  |
| 2 | HRT NI2012    | 15.77 | .       | 15.56 | 6.66  | 3.47    | 57.32  | 0.23    | (0.008) | 0.09    | 0.38  | .        | (0.009)  | (0.003)  | (0.06)  | .        | 0.20   |
| 1 | <b>BS H2C</b> | 15.36 | 0.178   | 16.14 | 5.99  | 3.25    | 58.3   | 0.124   | 0.0027  | 0.116   | 0.415 | 0.0126   | 0.0086   | 0.00030  | 0.031   | 0.0172   | 0.0222 |
| 1 | <b>BS H2D</b> | 15.34 | 0.180   | 16.08 | 6.01  | 3.25    | 58.4   | 0.129   | 0.0025  | 0.117   | 0.414 | 0.0126   | 0.0081   | 0.00034  | 0.030   | 0.0129   | 0.022  |
| 1 | <b>BS H6B</b> | 14.05 | 0.079   | 22.3  | 3.45  | 3.20    | 55.9   | 0.23    | (0.008) | 0.035   | 0.226 | 0.0118   | 0.0054   | 0.0005   | (0.035) | 0.050    | 0.0063 |
| 1 | IARM 65D      | 13.1  | 1.22    | 21.5  | 3.66  | 2.81    | 56.8   | 0.29    | 0.0021  | 0.050   | 0.28  | 0.019    | 0.008    | 0.0004   | 0.035   | 0.005    | 0.012  |
| 2 | HRT NI2014    | 13.03 | (0.02)  | 21.42 | 2.47  | 2.92    | 59.23  | 0.16    | (0.009) | .       | 0.30  | .        | (0.006)  | (0.003)  | 0.06    | 0.13     | (0.02) |
| 1 | <b>BS H3C</b> | 8.82  | 1.37    | 21.50 | 19.54 | 0.623   | 46.6   | 0.149   | 0.087   | 0.106   | 0.492 | 0.0266   | 0.0150   | (0.0003) | 0.36    | (0.0064) | 0.047  |
| 1 | IARM 329A     | 8.38  | 0.052   | 33.7  | 0.92  | 0.021   | 55.8   | 0.29    | 0.0086  | 0.065   | 0.222 | 0.073    | 0.0059   | 0.0003   | 0.053   | (0.005)  | 0.009  |
| 1 | IARM 67C      | 4.93  | 1.75    | 28.9  | 13.48 | 1.97    | 45.8   | 0.14    | 0.0058  | 1.24    | 1.01  | 0.035    | 0.011    | 0.0006   | 0.14    | 0.005    | 0.031  |
| 1 | IARM 328A     | 3.16  | (0.003) | 20.57 | 22.41 | (0.015) | 47.03  | 0.189   | (0.006) | 1.94    | 0.017 | 0.0056   | (0.004)  | 0.0006   | 0.021   | 1.53     | 0.008  |

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

| Number        | As       | B       | Ca       | Mg       | Nb       | O        | Pb        | Sb       | Sn       | Ta        | Zr        | Units                               |
|---------------|----------|---------|----------|----------|----------|----------|-----------|----------|----------|-----------|-----------|-------------------------------------|
| 215X HB1P     | .        | .       | .        | .        | 0.203    | .        | .         | .        | .        | .         | .         | ~40 mm Ø x ~15 mm                   |
| 215X HB4G     | .        | .       | .        | .        | 0.056    | .        | .         | .        | .        | .         | (0.016)   | ~40 mm Ø x ~15 mm                   |
| <b>BS H1C</b> | (0.001)  | (0.001) | (0.001)  | (0.0012) | (0.0009) | (0.0009) | (0.00002) | .        | (0.002)  | (0.009)   | (0.001)   | 38 mm Ø x ~7 or 19+ mm <b>17025</b> |
| BS H1B        | .        | 0.003   | .        | .        | <0.005   | .        | .         | .        | .        | .         | .         | 38 mm Ø x ~7 or 19+ mm              |
| 215X HC1M     | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | ~40 mm mm Ø x ~15 mm                |
| 215X HC2K     | .        | (0.006) | .        | .        | .        | .        | .         | .        | .        | .         | .         | ~40 mm mm Ø x ~15 mm                |
| 215X HC3M     | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | ~40 mm mm Ø x ~15 mm                |
| SRM C2402     | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | 32 mm Ø x 19 mm                     |
| 215X HC4M     | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | ~40 mm mm Ø x ~15 mm                |
| 215X HC5V     | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | ~40 mm mm Ø x ~15 mm                |
| BS H2E *      | <0.005   | <0.05   | <0.005   | <0.005   | <0.05    | <0.005   | .         | .        | <0.05    | .         | <0.005    | 32 mm Ø x ~7 or 19+ mm              |
| 215X 10276A   | .        | .       | .        | 0.0090   | 0.031    | .        | .         | .        | .        | .         | 0.009     | ~40 mm Ø x ~15 mm                   |
| HRT NI2012    | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | 38 mm Ø x 20 mm                     |
| <b>BS H2C</b> | 0.0008   | 0.0008  | 0.0004   | 0.0061   | 0.032    | 0.0012   | 0.00014   | 0.0006   | 0.0011   | (0.00008) | (0.00012) | 32 mm Ø x ~7 or 19+ mm <b>17025</b> |
| <b>BS H2D</b> | 0.0010   | 0.0013  | 0.0004   | 0.0065   | 0.029    | 0.0012   | (0.00009) | 0.0006   | 0.0010   | 0.0005    | 0.0008    | 32 mm Ø x ~7 or 19+ mm <b>17025</b> |
| <b>BS H6B</b> | (0.0015) | 0.0016  | .        | 0.0010   | (0.1)    | 0.0007   | .         | (0.006)  | (0.0007) | .         | .         | 38 mm Ø x 19+ mm <b>17025</b>       |
| IARM 65D      | .        | (0.001) | .        | 0.007    | 0.033    | 0.0005   | .         | .        | (0.001)  | (0.01)    | (0.002)   | 31 mm Ø x 2 or 18 mm                |
| HRT NI2014    | .        | .       | .        | .        | .        | .        | .         | .        | .        | .         | .         | 25 mm Ø x 20 mm                     |
| <b>BS H3C</b> | (0.003)  | 0.0020  | (0.0003) | 0.0020   | 0.095    | 0.0013   | .         | (0.0003) | 0.0019   | (0.0001)  | (0.005)   | 38 mm Ø x ~7 or 19+ mm <b>17025</b> |
| IARM 329A     | 0.0009   | 0.0010  | .        | 0.0124   | 0.131    | 0.0027   | 0.00003   | 0.00013  | (0.0005) | .         | (0.0012)  | 31 mm Ø x 2 or 18 mm                |
| IARM 67C      | .        | (0.001) | .        | 0.0068   | 0.36     | 0.0016   | .         | (0.0003) | 0.0014   | (0.006)   | (0.002)   | 31 mm Ø x 2 or 18 mm                |
| IARM 328A     | (0.0009) | 0.0011  | .        | (0.0008) | 3.14     | 0.0006   | (0.00002) | 0.00023  | (0.0002) | (0.0004)  | (0.004)   | 31 mm Ø x 2 or 18 mm                |

| Number | As | B | Ca | Mg | Nb | O | Pb | Sb | Sn | Ta | Zr | Units |
|--------|----|---|----|----|----|---|----|----|----|----|----|-------|
|--------|----|---|----|----|----|---|----|----|----|----|----|-------|

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**Most BS items are**  
**available in any height.**

**NICKEL ALLOY XRF SET**

-7 mm discs **17025**

Part Number: BS NI-18 AVAILABLE INDIVIDUALLY

| Grade           | Number         | Al     | As       | B      | C       | Co     | Cr     | Cu     | Fe     | Mg       | Mn     | Mo     | N         | Nb       | Ni     | O        | P        | Pb        | S        | Si       | Sn        | Ta       | Ti       | V        | W        | Zr       |
|-----------------|----------------|--------|----------|--------|---------|--------|--------|--------|--------|----------|--------|--------|-----------|----------|--------|----------|----------|-----------|----------|----------|-----------|----------|----------|----------|----------|----------|
| Nickel 200      | <b>BS 200A</b> | 0.0281 | 0.0015   | 0.0044 | 0.078   | 0.0564 | 0.0038 | 0.0006 | 0.074  | 0.0131   | 0.151  | 0.0004 | 0.0004    | 0.0004   | 99.54  | 0.0013   | 0.0007   | (0.00005) | 0.0037   | 0.0051   | (0.0001)  | (0.0003) | 0.0427   | 0.0006   | 0.0005   | (0.0004) |
| Inconel 400     | <b>BS 400D</b> | 0.0231 | (0.0001) | 0.0009 | 0.130   | 0.032  | 0.0057 | 33.0   | 2.00   | 0.0217   | 0.993  | 0.0024 | (0.00017) | (0.0001) | 63.4   | 0.0008   | (0.0010) | 0.0004    | 0.0006   | 0.146    | (0.00012) | (0.009)  | 0.064    | (0.0002) | (0.0004) | (0.0003) |
| Inconel® K500   | <b>BS 500E</b> | 2.94   | (0.0008) | 0.0017 | 0.134   | 0.017  | 0.0174 | 29.9   | 0.722  | 0.0058   | 0.605  | 0.0044 | (0.00025) | (0.002)  | 64.7   | 0.0005   | 0.0022   | (0.0008)  | 0.0006   | 0.148    | (0.0008)  | .        | 0.607    | (0.001)  | (0.002)  | 0.0133   |
| Inconel® 600    | BS 600-6       | 0.288  | .        | 0.0028 | 0.083   | 0.066  | 14.86  | 0.24   | 7.33   | 0.022    | 0.21   | 0.12   | 0.0078    | 0.14     | 76.0   | .        | 0.007    | .         | 0.001    | 0.31     | (-0.003)  | (-0.003) | 0.24     | 0.023    | .        | .        |
| Inconel® 625    | <b>BS 625D</b> | 0.21   | 0.0007   | 0.0019 | 0.048   | 0.041  | 22.33  | 0.019  | 3.81   | .        | 0.069  | 8.74   | 0.0067    | 3.54     | 60.9   | 0.0012   | 0.0039   | .         | 0.0004   | 0.072    | (0.0006)  | (0.004)  | 0.276    | 0.018    | 0.014    | .        |
| Inconel® 690    | <b>BS 690A</b> | 0.209  | (0.0004) | 0.0003 | 0.0321  | 0.0056 | 29.5   | 0.0072 | 9.08   | 0.0058   | 0.214  | 0.0025 | 0.0069    | 0.0039   | 60.5   | 0.0009   | 0.0052   | (0.0001)  | 0.0004   | 0.036    | (0.0003)  | (0.011)  | 0.340    | 0.0095   | 0.0011   | 0.0018   |
| Inconel® 718    | <b>BS 718D</b> | 0.631  | 0.0011   | 0.0041 | 0.037   | 0.368  | 18.32  | 0.071  | 18.51  | 0.0038   | 0.100  | 3.00   | 0.0084    | 5.16     | 52.5   | 0.0015   | 0.0083   | (0.00006) | 0.0004   | 0.072    | 0.0020    | (0.0022) | 0.93     | 0.038    | 0.049    | (0.002)  |
| Inconel® X750   | BS 750A        | .      | .        | 0.0033 | 0.047   | 0.29   | 15.68  | 0.04   | 7.07   | .        | 0.09   | 0.22   | .         | 1.07     | 71.9   | .        | (0.005)  | .         | 0.0007   | 0.10     | .         | .        | 2.60     | 0.046    | .        | .        |
| Inconel® 800    | <b>BS 800A</b> | 0.362  | (0.002)  | 0.0018 | 0.075   | 0.069  | 21.09  | 0.244  | 42.7   | 0.0022   | 0.883  | 0.117  | 0.0126    | 0.021    | 33.3   | 0.0014   | 0.013    | (0.001)   | (0.0007) | (0.0005) | 0.361     | 0.0041   | 0.526    | 0.058    | (0.030)  | (0.002)  |
| Inconel® 825    | <b>BS 825E</b> | 0.080  | .        | 0.0025 | 0.010   | 0.26   | 21.87  | 1.72   | 31.45  | .        | 0.51   | 2.74   | 0.0105    | 0.19     | 39.92  | (0.004)  | 0.015    | .         | 0.0010   | 0.24     | .         | .        | 0.82     | 0.049    | 0.166    | .        |
| Inconel® 925    | BS 925         | 0.17   | .        | 0.002  | 0.011   | 0.34   | 20.82  | 1.74   | 26.92  | .        | 0.50   | 3.00   | 0.0042    | 0.23     | 43.53  | (0.0075) | 0.016    | .         | 0.0020   | 0.11     | (0.002)   | .        | 2.20     | 0.03     | 0.47     | .        |
| Hastelloy B     | BS H-1B        | 0.12   | .        | 0.003  | 0.006   | <0.02  | <0.01  | (0.01) | 1.00   | .        | 0.82   | 26.52  | .         | <0.005   | [71.3] | .        | 0.003    | .         | 0.0005   | 0.049    | .         | .        | 0.11     | <0.01    | .        | .        |
| Hastelloy C-276 | <b>BS H2C</b>  | 0.124  | 0.0008   | 0.0008 | 0.0027  | 0.178  | 16.14  | 0.116  | 5.99   | 0.0061   | 0.415  | 15.36  | 0.0126    | 0.032    | 58.3   | 0.0012   | 0.0086   | 0.00014   | 0.00030  | 0.031    | 0.0011    | Ca:4ppm  | 0.0172   | 0.0222   | 3.25     | Sb:6ppm  |
| Hastelloy X     | <b>BS H2C</b>  | 0.149  | (0.003)  | 0.0020 | 0.087   | 1.37   | 21.50  | 0.106  | 19.54  | 0.0020   | 0.492  | 8.82   | 0.0266    | 0.095    | 46.6   | 0.0013   | 0.0150   | .         | (0.0003) | 0.36     | 0.0019    | (0.0001) | (0.0064) | 0.047    | 0.623    | (0.005)  |
| Hastelloy C-22  | <b>BS H2B</b>  | 0.23   | (0.0015) | 0.0016 | (0.008) | 0.079  | 22.3   | 0.035  | 3.45   | 0.0010   | 0.226  | 14.05  | 0.0118    | (0.1)    | 55.9   | 0.0007   | 0.0054   | .         | 0.0005   | (0.035)  | (0.0007)  | .        | 0.050    | 0.0063   | 3.20     | .        |
| Hastelloy       | <b>BS 192B</b> | 1.37   | .        | 0.0053 | 0.041   | 12.41  | 19.46  | 0.015  | 1.17   | 0.0032   | 0.0240 | 3.87   | 0.0038    | 0.069    | 58.4   | 0.0006   | 0.0031   | .         | 0.0005   | 0.034    | 0.0006    | (0.001)  | 3.00     | 0.071    | 0.048    | 0.045    |
| RA 333          | BS 197A        | 0.18   | .        | 0.0019 | 0.050   | 3.06   | 25.11  | 0.12   | 18.07  | .        | 1.56   | 2.99   | (0.052)   | 0.20     | 44.44  | .        | 0.021    | (0.0002)  | <0.001   | 0.96     | .         | .        | 0.017    | 0.051    | 2.79     | .        |
| Alloy 20        | <b>BS 187D</b> | 0.0164 | (0.0035) | 0.0026 | 0.0337  | 0.089  | 19.91  | 3.52   | [39.6] | (0.0009) | 0.938  | 2.17   | 0.046     | 0.621    | 32.3   | 0.0026   | 0.0155   | 0.0019    | 0.0021   | 0.669    | 0.0085    | 0.0008   | 0.0027   | 0.073    | 0.086    | (0.0012) |

Nickel with brackets [ ] calculated by difference.

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| ALLOY      | ISO?  | NUMBER      | ALLOY            | ISO?  | NUMBER     | ALLOY | ISO? | NUMBER |
|------------|-------|-------------|------------------|-------|------------|-------|------|--------|
| 028        |       | IARM 357A   | 825              | 17025 | BS 825E    |       |      |        |
| 20         | 17025 | BS 187D     | 825              | 17025 | BS 825F    |       |      |        |
| 20         |       | IARM 25D    | 825              |       | HRT Ni2013 |       |      |        |
| 200        | 17025 | BS 200-1    | 825              |       | SRM 1247   |       |      |        |
| 200        | 17025 | BS 200-2    | 901              |       | SS 387/1   |       |      |        |
| 200        | 17025 | BS 200-4    | 903              |       | SRM 1250   |       |      |        |
| 200        | 17025 | BS 200A     | 904L             |       | IARM 347A  |       |      |        |
| 200        |       | IARM 50C    | 909              |       | IARM 203A  |       |      |        |
| 200        |       | IARM 187A   | 925              |       | BS 925     |       |      |        |
| 200        |       | IARM 188A   | 945              |       | IARM 328A  |       |      |        |
| 200        |       | IARM 189A   | 945X             |       | IARM 328B  |       |      |        |
| 200        |       | IARM 190A   | AL6XN            | 17025 | BS 189A    |       |      |        |
| 200        |       | IARM 191A   | Bl900            |       | IARM 283A  |       |      |        |
| 205        | 17025 | BS 200-3    | Hastelloy        |       | 215X HB4   |       |      |        |
| 330        |       | IARM 7C     | Hastelloy B      |       | 215X HB1   |       |      |        |
| 400        |       | 212X 04400  | Hastelloy B      |       | BS H1B     |       |      |        |
| 400        | 17025 | BS 400D     | Hastelloy B      | 17025 | BS H1C     |       |      |        |
| 400        |       | BS 400-1    | Hastelloy C      |       | HRT Ni2012 |       |      |        |
| 400        |       | BS 400-2    | Hastelloy C      |       | SRM C2402  |       |      |        |
| 400        |       | BS 400-3    | Hastelloy C-22   | 17025 | BS H6B     |       |      |        |
| 400        |       | IARM 51D    | Hastelloy C-22   |       | HRT NI2014 |       |      |        |
| 400        |       | SS 363/1    | Hastelloy C-22   |       | IARM 65D   |       |      |        |
| 405 (R405) |       | BS 405      | Hastelloy C-22HS |       | IARM 276A  |       |      |        |
| 405 (R405) | 17025 | BS 405A     | Hastelloy C-276  | 17025 | BS H2C     |       |      |        |
| 500        |       | 212X 05500  | Hastelloy C-276  | 17025 | BS H2D     |       |      |        |
| 500+Si     | 17025 | BS 500E     | Hastelloy C-276  |       | BS H2E     |       |      |        |
| 500        |       | IARM 52D    | Hastelloy G-30   |       | IARM 67C   |       |      |        |
| 600        |       | 28X 6001    | Hastelloy G-35   |       | IARM 329A  |       |      |        |
| 600        |       | 28X 6002    | Hastelloy X      | 17025 | BS H3C     |       |      |        |
| 600        |       | 28X 6003    | Haynes 230       | 17025 | BS H230    |       |      |        |
| 600        |       | 28X 6004    | Haynes 230       |       | IARM 68E   |       |      |        |
| 600        |       | 28X 6005    | HR-120           |       | IARM 282A  |       |      |        |
| 600        |       | BS 600-2    | IN 100           |       | IMZ 182    |       |      |        |
| 600        |       | BS 600-3    | IN 100           |       | SS 345     |       |      |        |
| 600        |       | BS 600-4    | IN 100           |       | SS 346A    |       |      |        |
| 600        |       | BS 600-5    | Incoloy          |       | 23X DS2    |       |      |        |
| 600        |       | BS 600-6    | Incoloy          |       | 23X DS4    |       |      |        |
| 600        |       | IARM 53F    | Incoloy          |       | 23X DS5    |       |      |        |
| 600        |       | SRM 1244    | Incoloy          |       | HH 5157A   |       |      |        |
| 602CA      |       | IARM 338A   | Incoloy          |       | HH 5179A   |       |      |        |
| 617        |       | BS 617      | Incoloy          |       | HH 5300A   |       |      |        |
| 617        |       | IARM 272A   | Inconel          |       | 28X 6256   |       |      |        |
| 625        |       | 28X 06625   | Magnetic         |       | SRM 1159   |       |      |        |
| 625        |       | 28X 6251    | Magnetic         |       | SRM 1160   |       |      |        |
| 625        |       | 28X 6252    | Mar M 247        |       | IMZ 202    |       |      |        |
| 625        |       | 28X 6255    | Monel            |       | 212X 4001  |       |      |        |
| 625        | 17025 | BS 625D     | Monel            |       | 212X NA2   |       |      |        |
| 625        | 17025 | BS 625E     | Monel            |       | 212X NA3   |       |      |        |
| 625        |       | IARM 54H    | MP 35N           |       | SRM 1775   |       |      |        |
| 625        |       | ECRM 377-1  | Nimonic 80A      |       | 22X 801    |       |      |        |
| 625        |       | ECRM 377-2  | Nimonic 80A      |       | 22X 804    |       |      |        |
| 625        |       | IARM 54G    | Nimonic 80A      |       | 22X 806    |       |      |        |
| 625        |       | NCS HS41745 | Nimonic 80A      |       | CT ISO122A |       |      |        |
| 686        |       | IARM 362B   | Nimonic 90       |       | 22X 902    |       |      |        |
| 690        | 17025 | BS 690A     | Nimonic 90       |       | 22X 904    |       |      |        |
| 690        |       | BS 690B     | RA 333           |       | BS 197A    |       |      |        |
| 693        |       | IARM 372A   | RA 333           |       | BS 197B    |       |      |        |
| 713        |       | SS 350      | Rene 41          |       | IARM 325A  |       |      |        |
| 718        |       | 28X 07718   | Rene 77          |       | IARM 277A  |       |      |        |
| 718        |       | 28X 7181    | Udimet 500       |       | IARM 287A  |       |      |        |
| 718        |       | 28X 7182    | Waspaloy         |       | 24X 07001  |       |      |        |
| 718        | 17025 | BS 718D     | Waspaloy         |       | 24X 7201   |       |      |        |
| 718        |       | IARM 56H    | Waspaloy         | 17025 | BS 199B    |       |      |        |
| 718        |       | NCS HS41746 | Waspaloy         |       | SRM 1243   |       |      |        |
| 718        |       | SRM 1249    | X750             |       | IARM 57E   |       |      |        |
| 718        |       | SS 351      |                  |       |            |       |      |        |
| 718        |       | SS 351/1    |                  |       |            |       |      |        |
| 725        |       | BS 725      |                  |       |            |       |      |        |
| 725        |       | IARM 274A   |                  |       |            |       |      |        |
| 738        |       | IMZ 183     |                  |       |            |       |      |        |
| 740        |       | IARM 358A   |                  |       |            |       |      |        |
| 750        | 17025 | BS 750C     |                  |       |            |       |      |        |
| 750        | 17025 | BS 750D     |                  |       |            |       |      |        |
| 750        |       | HT 8209X    |                  |       |            |       |      |        |
| 750        |       | HT 8211X    |                  |       |            |       |      |        |
| 800        | 17025 | BS 800      |                  |       |            |       |      |        |
| 800, 800HT | 17025 | BS 800A     |                  |       |            |       |      |        |
| 800, 800HT |       | IARM 58B    |                  |       |            |       |      |        |
| 800        |       | SRM 1246    |                  |       |            |       |      |        |
| 801        |       | HH 5196A    |                  |       |            |       |      |        |
| 825        |       | 13X 08825   |                  |       |            |       |      |        |
| 825        |       | 219X 08825A |                  |       |            |       |      |        |

Please use the Adobe Acrobat "search" function to find the complete chemistry of these samples listed within this catalog.

The best efforts have been made in the construction of this chart. Some samples do not perfectly fit the alloy specifications, but are considered acceptable for the purposes of calibration and type standardization.

| Type   | Comment         | Al        | B           | C         | Co        | Cr        | Cu      | Fe       | Mn        | Mo        | Nb        |
|--------|-----------------|-----------|-------------|-----------|-----------|-----------|---------|----------|-----------|-----------|-----------|
| 20     | CB3 Mod         | .         | .           | <0.035    | .         | 19.0-21.0 | 3.0-4.0 | rem      | 1.5-2.5   | 2.0-3.0   | 8\mtC-0.4 |
| 20     | Mo-6HS          | .         | .           | <0.06     | .         | 22.0-26.0 | 1.0-3.0 | rem      | <1.00     | 5.00-6.70 | .         |
| 31     | N 0.17-0.40     | .         | .           | <0.015    | .         | 26.0-28.0 | 1.0-1.4 | rem      | <2.00     | 6.0-7.0   | .         |
| 52     | N 0.15-0.25     | <0.10     | .           | <0.05     | <0.50     | <0.25     | .       | rem      | <0.60     | .         | .         |
| 59     |                 | 0.10-0.40 | .           | <0.010    | <0.30     | 22.0-24.0 | <0.50   | <1.50    | <0.50     | 15.0-16.5 | .         |
| 100    | V 0.7-1.2       | 5.00-6.00 | 0.01-0.02   | 0.15-0.20 | 13.0-17.0 | 8.0-11.0  | .       | <1.00    | <0.20     | 2.0-4.0   | .         |
| 102    | Mg 0.01-0.05    | 0.30-0.60 | 0.003-0.008 | <0.08     | .         | 14.0-16.0 | .       | 5.0-9.0  | <0.75     | 2.75-3.25 | 2.75-3.25 |
| 200    |                 | .         | .           | <0.15     | .         | .         | .       | <0.25    | <0.40     | <0.35     | .         |
| 201    |                 | .         | .           | <0.02     | .         | .         | .       | <0.25    | <0.40     | <0.35     | .         |
| 205    | Mg 0.01-0.08    | .         | .           | <0.15     | .         | .         | .       | <0.15    | <0.20     | <0.35     | .         |
| 211    |                 | .         | .           | <0.20     | .         | .         | .       | <0.75    | 4.25-5.25 | .         | .         |
| 214    | Y 0.002-0.04    | 4.0-5.0   | <0.006      | <0.05     | <2.0      | 15.0-17.0 | <0.25   | 2.0-4.0  | <0.50     | <0.50     | .         |
| 220    | Mg 0.01-0.08    | .         | .           | <0.15     | .         | .         | .       | <0.10    | <0.20     | .         | .         |
| 225    | Mg 0.01-0.08    | .         | .           | <0.15     | .         | .         | .       | <0.10    | <0.20     | .         | .         |
| 230    | Mg 0.04-0.08    | .         | .           | <0.15     | .         | .         | .       | <0.10    | <0.15     | .         | .         |
| 230    | La 0.005-0.05   | 0.20-0.50 | <0.015      | 0.05-0.15 | <5.00     | 20.0-24.0 | .       | <3.00    | 0.30-1.00 | 1.0-3.0   | .         |
| 233    | Mg 0.01-0.10    | .         | .           | <0.15     | .         | .         | .       | <0.10    | <0.30     | .         | .         |
| 270    | Mg <0.001       | .         | .           | <0.02     | <0.001    | <0.001    | <0.001  | <0.005   | <0.001    | .         | .         |
| 300    | Mg 0.20-0.50    | .         | .           | <0.40     | .         | .         | .       | <0.25    | <0.60     | <0.50     | .         |
| 301    |                 | 4.00-4.75 | .           | <0.30     | .         | .         | .       | <0.25    | <0.60     | <0.50     | .         |
| 400    |                 | .         | .           | <0.03     | .         | .         | rem     | <2.50    | <2.00     | .         | .         |
| 401    |                 | .         | .           | <0.10     | <0.25     | .         | .       | <0.75    | <2.25     | .         | .         |
| 404    |                 | <0.05     | .           | <0.15     | .         | .         | rem     | <0.50    | <0.10     | .         | .         |
| 502    |                 | 2.5-3.5   | .           | <0.10     | .         | .         | rem     | <2.00    | <1.50     | .         | .         |
| 520    |                 | 1.8-2.2   | <0.010      | <0.06     | 12.0-14.0 | 18.0-20.0 | .       | .        | .         | 5.0-7.0   | .         |
| 600    |                 | .         | .           | <0.15     | .         | 14.0-17.0 | <0.50   | 6.0-10.0 | <1.00     | .         | .         |
| 601    |                 | 1.0-1.7   | .           | <0.10     | .         | 21.0-25.0 | <1.00   | rem      | <1.00     | .         | .         |
| 603GT  | Y 0.05-0.15     | 2.4-3.0   | .           | 0.20-0.40 | .         | 24.0-26.0 | <0.50   | 8.0-11.0 | <0.15     | .         | .         |
| 617    |                 | 0.80-1.50 | <0.006      | 0.05-0.15 | 10.0-15.0 | 20.0-24.0 | <0.50   | <3.00    | <1.00     | 8.0-10.0  | .         |
| 625    |                 | <0.40     | .           | <0.10     | .         | 20.0-23.0 | .       | <5.00    | <0.50     | 8.0-10.0  | 3.15-4.15 |
| 625LCF | N <0.02         | <0.40     | .           | <0.03     | <1.0      | 20.0-23.0 | .       | <5.00    | <0.50     | 8.0-10.0  | 3.15-4.15 |
| 686    |                 | .         | .           | <0.01     | .         | 19.0-23.0 | .       | <5.00    | <0.75     | 15.0-17.0 | .         |
| 690    |                 | .         | .           | <0.05     | .         | 27.0-31.0 | <0.50   | 7.0-11.0 | <0.50     | .         | .         |
| 702    |                 | 2.75-3.75 | .           | <0.10     | .         | 14.0-17.0 | <0.50   | <2.00    | <1.00     | .         | .         |
| 706    |                 | <0.40     | <0.006      | <0.06     | .         | 14.5-17.5 | <0.30   | rem      | <0.35     | .         | 2.5-3.3   |
| 713    |                 | 5.5-6.5   | 0.005-0.015 | 0.08-0.20 | .         | 12.0-14.0 | .       | <2.50    | <0.25     | 3.8-5.2   | 1.8-2.8   |
| 718    |                 | 0.20-0.80 | <0.006      | <0.08     | <1.0      | 17.0-21.0 | <0.30   | rem      | <0.35     | 2.8-3.3   | 4.75-5.50 |
| 718SPF | N <0.01         | 0.20-0.80 | <0.006      | <0.05     | <1.0      | 17.0-21.0 | <0.30   | rem      | <0.35     | 2.8-3.3   | 4.75-5.25 |
| 720    |                 | 2.0-3.0   | <0.02       | <0.03     | 14.0-16.0 | 15.0-17.0 | <0.20   | .        | .         | 2.5-3.5   | .         |
| 721    |                 | <0.10     | .           | <0.07     | .         | 15.0-17.0 | <0.20   | <8.00    | 2.00-2.50 | .         | .         |
| 722    |                 | 0.4-1.0   | .           | <0.08     | .         | 14.0-17.0 | <0.50   | 5.0-9.0  | <1.00     | .         | .         |
| 725    |                 | <0.35     | .           | <0.03     | .         | 19.0-22.5 | .       | rem      | <0.35     | 7.0-9.5   | 2.75-4.00 |
| 751    |                 | 0.90-1.50 | .           | <0.10     | .         | 14.0-17.0 | <0.50   | 5.0-9.0  | <1.00     | .         | 0.7-1.2   |
| 800    |                 | 0.15-0.60 | .           | <0.10     | .         | 19.0-23.0 | <0.75   | rem      | <1.50     | .         | .         |
| 800H   |                 | 0.15-0.60 | .           | 0.05-0.10 | .         | 19.0-23.0 | <0.75   | rem      | <1.50     | .         | .         |
| 800HT  | Al+Ti 0.85-1.20 | 0.15-0.60 | .           | 0.06-0.10 | .         | 19.0-23.0 | <0.75   | >39.5    | <1.50     | .         | .         |
| 801    |                 | .         | .           | <0.10     | .         | 19.0-22.0 | <0.50   | rem      | <1.50     | .         | .         |
| 802    |                 | 0.15-1.00 | .           | 0.20-0.50 | .         | 19.0-23.0 | <0.75   | rem      | <1.50     | .         | .         |
| 804    |                 | <0.60     | .           | <0.10     | .         | 28.0-31.0 | <0.50   | rem      | <1.50     | .         | .         |
| 825    |                 | <0.02     | .           | <0.05     | .         | 19.5-23.5 | 1.5-3.0 | rem      | <1.00     | 2.5-3.5   | .         |
| 901    |                 | <0.35     | 0.010-0.020 | <0.10     | .         | 11.0-14.0 | <0.50   | rem      | <1.00     | 5.00-7.00 | .         |
| 903    |                 | 0.30-1.15 | <0.012      | <0.06     | 13.0-17.0 | <1.0      | <0.50   | rem      | <1.00     | .         | 2.4-3.5   |
| 908    |                 | 0.75-1.25 | <0.012      | <0.03     | <0.50     | 3.75-4.5  | <0.50   | rem      | <1.00     | .         | 2.7-3.3   |
| 926    |                 | <0.3      | .           | <0.04     | .         | 14.0-18.0 | 3.5-5.5 | >39.0    | <1.50     | 2.5-3.5   | .         |
| 2120   | N 0.02-0.15     | <0.40     | .           | <0.010    | <0.30     | 20.0-23.0 | <0.50   | <1.50    | <0.50     | 19.0-21.0 | .         |

| Type   | Ni      | P         | S      | Si          | Ti        | W         | Zr        |
|--------|---------|-----------|--------|-------------|-----------|-----------|-----------|
| 20     | CB3 Mod | 32.0-36.0 | <0.020 | <0.015      | <0.30     | .         | .         |
| 20     | Mo-6HS  | 33.0-37.2 | <0.030 | <0.030      | <0.50     | .         | .         |
| 31     |         | 30.0-32.0 | <0.030 | <0.005      | <0.05     | .         | .         |
| 52     |         | 50.5      | <0.025 | <0.025      | <0.30     | .         | .         |
| 59     |         | rem       | <0.015 | <0.010      | <0.10     | .         | .         |
| 100    |         | rem       | <0.015 | <0.015      | <0.20     | 4.5-5.0   | 0.03-0.09 |
| 102    |         | rem       | <0.010 | <0.010      | <0.40     | 0.4-0.7   | 2.72-3.25 |
| 200    |         | >99.0     | <0.010 | <0.010      | <0.35     | .         | .         |
| 201    |         | >99.0     | <0.010 | <0.010      | <0.35     | .         | .         |
| 205    |         | >99.0     | <0.008 | <0.008      | <0.15     | 0.01-0.05 | .         |
| 211    |         | >93.7     | <0.015 | <0.015      | <0.15     | .         | .         |
| 214    |         | rem       | <0.015 | <0.015      | <0.20     | <0.05     | <0.05     |
| 220    |         | >99.0     | <0.008 | 0.01-0.05   | 0.01-0.05 | .         | .         |
| 225    |         | >99.0     | <0.008 | 0.15-0.25   | 0.01-0.05 | .         | .         |
| 230    |         | >99.0     | <0.008 | 0.010-0.035 | <0.005    | .         | .         |
| 230    |         | rem       | <0.030 | <0.015      | 0.25-0.75 | 13.0-15.0 | .         |
| 233    |         | >99.0     | <0.008 | <0.10       | <0.005    | .         | .         |
| 270    |         | >99.97    | <0.001 | <0.001      | <0.001    | .         | .         |
| 300    |         | >97.0     | <0.010 | <0.35       | 0.20-0.60 | .         | .         |
| 301    |         | >93.0     | <0.010 | <1.00       | 0.25-1.00 | .         | .         |
| 400    |         | 63.0-70.0 | .      | <0.024      | <0.50     | .         | .         |
| 401    |         | 40.0-45.0 | .      | <0.015      | <0.25     | .         | .         |
| 404    |         | 52.0-57.0 | .      | <0.024      | <0.10     | .         | .         |
| 502    |         | 63.0-70.0 | .      | <0.010      | <0.50     | .         | .         |
| 520    |         | rem       | .      | .           | 2.8-3.2   | 0.8-1.2   | .         |
| 600    |         | >72.0     | .      | <0.015      | <0.50     | .         | .         |
| 601    |         | 58.0-63.0 | .      | <0.015      | <0.50     | .         | .         |
| 603GT  |         | rem       | <0.020 | <0.010      | <0.50     | 0.01-0.25 | 0.01-0.10 |
| 617    |         | >44.5     | <0.015 | <0.015      | <1.00     | <0.06     | .         |
| 625    |         | rem       | <0.015 | <0.015      | <0.50     | <0.40     | .         |
| 625LCF |         | >58.0     | <0.015 | <0.015      | <0.15     | <0.40     | .         |
| 686    |         | rem       | <0.040 | <0.020      | <0.08     | 0.02-0.25 | 3.0-4.4   |
| 690    |         | >58.0     | .      | <0.015      | <0.50     | .         | .         |
| 702    |         | rem       | <0.010 | <0.010      | <0.70     | 0.25-1.00 | .         |
| 706    |         | 39.0-44.0 | <0.020 | <0.015      | <0.35     | 1.5-2.0   | .         |
| 713    |         | rem       | .      | <0.50       | 0.5-1.0   | .         | 0.05-0.15 |
| 718    |         | 50.0-55.0 | <0.015 | <0.015      | <0.35     | 0.65-1.15 | .         |
| 718SPF |         | 50.0-55.0 | <0.015 | <0.002      | <0.35     | 0.65-1.15 | .         |
| 720    |         | rem       | .      | <0.15       | 4.5-5.5   | 1.0-2.0   | <0.05     |
| 721    |         | rem       | .      | <0.10       | 2.75-3.35 | .         | .         |
| 722    |         | >70.0     | .      | <0.010      | <0.07     | 2.00-2.75 | .         |
| 725    |         | 55.0-59.0 | <0.015 | <0.010      | <0.20     | 1.0-1.7   | .         |
| 751    |         | >70.0     | .      | <0.010      | <0.50     | 2.0-2.6   | .         |
| 800    |         | 30.0-35.0 | <0.045 | <0.015      | <1.00     | 0.15-0.60 | .         |
| 800H   |         | 30.0-35.0 | <0.045 | <0.015      | <1.0      | 0.15-0.60 | .         |
| 800HT  |         | 30.0-35.0 | <0.045 | <0.015      | <1.0      | 0.15-0.60 | .         |
| 801    |         | 30.0-34.0 | .      | <0.015      | <1.0      | 0.75-1.5  | .         |
| 802    |         | 30.0-35.0 | .      | <0.015      | <0.75     | 0.25-1.25 | .         |
| 804    |         | 39.0-43.0 | .      | <0.015      | <0.75     | <1.20     | .         |
| 825    |         | 38.0-46.0 | <0.030 | <0.030      | <0.50     | 0.6-1.2   | .         |
| 901    |         | 40.0-45.0 | .      | <0.030      | <0.60     | 2.35-3.10 | .         |
| 903    |         | 36.0-40.0 | .      | <0.015      | <0.35     | 1.00-1.25 | .         |
| 908    |         | 47.0-51.0 | <0.015 | <0.005      | <0.50     | 1.2-1.8   | .         |
| 926    |         | 26.0-30.0 | <0.015 | <0.015      | <0.75     | 1.5-2.3   | .         |
| 2120   |         | rem       | <0.015 | <0.010      | <0.10     | <0.30     | .         |

**These are specifications for reference purposes only, not samples for sale.**

**FOR 750 see X750 (last chart)**

| Type          | Comment                      | Al        | B           | C         | Co         | Cr        | Cu      | Fe      | Mn        | Mo        | Nb        |
|---------------|------------------------------|-----------|-------------|-----------|------------|-----------|---------|---------|-----------|-----------|-----------|
| ACI CN-7M     |                              | .         | .           | <0.07     | .          | 19.0-22.0 | 3.0-4.0 | rem     | <1.50     | 2.00-3.00 | .         |
| ACI CY-40     |                              | .         | .           | <0.40     | .          | 14.0-17.0 | .       | <11.0   | <1.50     | .         | .         |
| ACI CZ-100    |                              | .         | .           | <1.00     | .          | .         | <1.25   | <3.00   | <1.50     | .         | .         |
| ACI HT        |                              | .         | .           | 0.35-0.75 | .          | 13.0-17.0 | .       | rem     | <2.00     | <0.50     | .         |
| ACI HT-30     |                              | .         | .           | 0.25-0.35 | .          | 13.0-17.0 | .       | rem     | <2.00     | <0.50     | .         |
| ACI HT-50     |                              | .         | .           | 0.40-0.60 | .          | 15.0-19.0 | .       | rem     | <1.50     | <0.50     | .         |
| ACI HT-50C    |                              | .         | .           | 0.40-0.60 | .          | 13.0-17.0 | .       | rem     | .         | <0.50     | 0.75-1.25 |
| ACI HU        |                              | .         | .           | 0.35-0.75 | .          | 17.0-21.0 | .       | rem     | <2.00     | <0.50     | .         |
| ACI HU-50     |                              | .         | .           | 0.40-0.60 | .          | 17.0-21.0 | .       | rem     | <1.50     | <0.50     | .         |
| ACI HW        |                              | .         | .           | 0.35-0.75 | .          | 10.0-14.0 | .       | rem     | <2.00     | <0.50     | .         |
| ACI HW-50     |                              | .         | .           | 0.40-0.60 | .          | 10.0-14.0 | .       | rem     | <1.50     | <0.50     | .         |
| ACI HX        |                              | .         | .           | 0.35-0.75 | .          | 15.0-19.0 | .       | rem     | <2.00     | <0.50     | .         |
| ACI HX-50     |                              | .         | .           | 0.40-0.60 | .          | 15.0-19.0 | .       | rem     | <1.50     | <0.50     | .         |
| AF2-1DA       | Ta 1-2; B, N, O, Pb limits   | 4.20-4.80 | 0.01-0.02   | 0.30-0.35 | 9.50-10.50 | 11.5-12.5 | .       | <1.00   | <0.10     | 2.50-3.50 | .         |
| AL-6X         |                              | .         | .           | <0.035    | .          | 20.0-22.0 | .       | rem     | <2.00     | 6.0-7.0   | .         |
| AL-6XN        | N 0.18-0.25                  | .         | .           | <0.030    | .          | 20.0-22.0 | .       | rem     | <2.00     | 6.0-7.0   | .         |
| Allcorr       |                              | <1.50     | .           | <0.15     | <12.0      | 27.0-33.0 | .       | .       | .         | 8.0-12.0  | <2.00     |
| Alumel        |                              | 1.75-2.25 | .           | <0.15     | .          | .         | .       | <0.50   | 2.00-3.00 | .         | .         |
| ARMCO 20-45-5 |                              | .         | .           | <0.08     | .          | 18.0-22.0 | .       | rem     | 3.0-7.0   | 1.5-3.0   | <0.40     |
| Astroloy M    | Bi, N, Pb limits             | 3.85-4.15 | 0.020-0.030 | 0.02-0.06 | 16.0-18.0  | 14.0-16.0 | <0.10   | <0.50   | <0.15     | 4.50-5.50 | .         |
| B-2           |                              | .         | .           | <0.02     | <1.0       | <1.0      | .       | <2.00   | <1.00     | 26.0-30.0 | .         |
| B-3           | Ni+Mo 94.0-98.0; Ta, V <0.20 | <0.50     | .           | <0.01     | <3.0       | 1.0-3.0   | <0.20   | 1.0-3.0 | <3.00     | 27.0-32.0 | <0.20     |
| B-4           |                              | 0.10-0.50 | .           | <0.01     | <2.5       | 0.5-1.5   | <0.50   | 1.0-6.0 | <1.50     | 26.0-30.0 | .         |
| B-10          |                              | <0.5      | .           | <0.01     | <1.0       | 6.0-10.0  | <0.50   | 5.0-8.0 | <1.00     | 21.0-25.0 | .         |
| Be-Ni         | Be 1.85-2.05                 | .         | .           | .         | .          | .         | .       | .       | .         | .         | .         |
| BNi-1         | Se <0.005, Other <0.50       | <0.05     | 2.75-3.50   | 0.6-0.9   | <0.10      | 13.0-15.0 | .       | 4.0-5.0 | .         | .         | .         |
| BNi-1a        | Se <0.005, Other <0.50       | <0.05     | 2.75-3.50   | <0.06     | <0.10      | 13.0-15.0 | .       | 4.0-5.0 | .         | .         | .         |
| BNi-2         | Se <0.005, Other <0.50       | <0.05     | 2.75-3.50   | <0.06     | <0.10      | 6.0-8.0   | .       | 2.5-3.5 | .         | .         | .         |
| BNi-3         | Se <0.005, Other <0.50       | <0.05     | 2.75-3.50   | <0.06     | <0.10      | .         | .       | <0.50   | .         | .         | .         |
| BNi-4         | Se <0.005, Other <0.50       | <0.05     | 1.50-2.20   | <0.06     | <0.10      | .         | .       | <1.50   | .         | .         | .         |
| BNi-5         | Se <0.005, Other <0.50       | <0.05     | <0.03       | <0.10     | <0.10      | 18.5-19.5 | .       | .       | .         | .         | .         |
| BNi-5a        | Se <0.005, Other <0.50       | <0.05     | 1.0-1.5     | <0.10     | <0.10      | 18.5-19.5 | .       | <0.50   | .         | .         | .         |
| BNi-5b        | Se <0.005, Other <0.50       | <0.05     | 1.0-1.6     | <0.06     | <1.0       | 14.5-15.5 | .       | <1.00   | .         | .         | .         |
| BNi-6         | Se <0.005, Other <0.50       | <0.05     | .           | <0.01     | <0.10      | .         | .       | .       | .         | .         | .         |
| BNi-7         | Se <0.005, Other <0.50       | <0.05     | <0.010      | <0.08     | <0.10      | 13.0-15.0 | .       | <0.20   | <0.04     | .         | .         |
| BNi-8         | Se <0.005, Other <0.50       | <0.05     | .           | <0.10     | <0.10      | .         | 4.0-5.0 | .       | 21.5-24.5 | .         | .         |
| BNi-9         | Se <0.005, Other <0.50       | <0.05     | 3.25-4.00   | <0.06     | <0.10      | 13.5-16.5 | .       | <1.50   | .         | .         | .         |
| BNi-10        | Se <0.005, Other <0.50       | <0.05     | 2.00-3.00   | 0.40-0.55 | <0.10      | 10.0-13.0 | .       | 2.5-4.5 | .         | .         | .         |
| BNi-11        | Se <0.005, Other <0.50       | <0.05     | 2.20-3.10   | 0.30-0.50 | <0.10      | 9.0-11.75 | .       | 2.5-4.5 | .         | .         | .         |
| BNi-12        | Se <0.005                    | <0.05     | <0.02       | <0.06     | <0.10      | 24.0-26.0 | .       | <0.20   | .         | .         | .         |
| BNi-13        | Se <0.005                    | <0.05     | 2.75-3.50   | <0.06     | <0.10      | 7.0-9.0   | 2.0-3.0 | <0.40   | .         | 1.5-2.5   | 1.5-2.35  |

| Type          | Ni        | P         | S      | Si        | Ti        | W           | Zr        |
|---------------|-----------|-----------|--------|-----------|-----------|-------------|-----------|
| ACI CN-7M     | 27.5-30.5 | .         | .      | <1.50     | .         | .           | .         |
| ACI CY-40     | rem       | .         | .      | <3.00     | .         | .           | .         |
| ACI CZ-100    | rem       | .         | .      | <2.00     | .         | .           | .         |
| ACI HT        | 33.0-37.0 | <0.040    | <0.040 | <2.50     | .         | .           | .         |
| ACI HT-30     | 33.0-37.0 | <0.040    | <0.040 | <2.50     | .         | .           | .         |
| ACI HT-50     | 33.0-37.0 | <0.040    | <0.040 | 0.50-2.00 | .         | .           | .         |
| ACI HT-50C    | 33.0-37.0 | .         | .      | .         | .         | .           | .         |
| ACI HU        | 37.0-41.0 | <0.040    | <0.040 | <2.50     | .         | .           | .         |
| ACI HU-50     | 37.0-41.0 | <0.040    | <0.040 | 0.50-2.00 | .         | .           | .         |
| ACI HW        | 58.0-62.0 | <0.040    | <0.040 | <2.50     | .         | .           | .         |
| ACI HW-50     | 58.0-62.0 | <0.040    | <0.040 | 0.50-2.00 | .         | .           | .         |
| ACI HX        | 64.0-68.0 | <0.040    | <0.040 | <2.50     | .         | .           | .         |
| ACI HX-50     | 64.0-68.0 | <0.040    | <0.040 | 0.50-2.00 | .         | .           | .         |
| AF2-1DA       | rem       | <0.015    | <0.015 | <1.00     | 2.75-3.25 | 5.50-6.50   | 0.05-0.15 |
| AL-6X         | 23.5-25.5 | <0.030    | <0.030 | <1.00     | .         | .           | .         |
| AL-6XN        | 23.5-25.5 | <0.040    | <0.030 | <1.00     | .         | .           | .         |
| Allcorr       | rem       | .         | .      | .         | <1.50     | <4.00       | .         |
| Alumel        | rem       | .         | .      | <1.60     | .         | .           | .         |
| ARMCO 20-45-5 | 43.0-49.0 | <0.045    | <0.030 | <1.00     | .         | .           | .         |
| Astroloy M    | rem       | <0.015    | <0.015 | <0.20     | 3.35-3.65 | <0.05       | <0.06     |
| B-2           | rem       | <0.040    | <0.030 | <0.10     | .         | .           | .         |
| B-3           | >65.0     | <0.030    | <0.010 | <0.10     | <0.20     | <3.00       | <0.10     |
| B-4           | rem       | <0.040    | <0.010 | <0.05     | .         | .           | .         |
| B-10          | rem       | <0.025    | <0.010 | <0.10     | .         | .           | .         |
| Be-Ni         | rem       | .         | .      | .         | 0.4-0.6   | .           | .         |
| BNi-1         | rem       | <0.020    | <0.020 | 4.0-5.0   | <0.05     | .           | <0.05     |
| BNi-1a        | rem       | <0.020    | <0.020 | 4.0-5.0   | <0.05     | .           | <0.05     |
| BNi-2         | rem       | <0.020    | <0.020 | 4.0-5.0   | <0.05     | .           | <0.05     |
| BNi-3         | rem       | <0.020    | <0.020 | 4.0-5.0   | <0.05     | .           | <0.05     |
| BNi-4         | rem       | <0.020    | <0.020 | 3.0-4.0   | <0.05     | .           | <0.05     |
| BNi-5         | rem       | <0.020    | <0.020 | 9.75-10.5 | <0.05     | .           | <0.05     |
| BNi-5a        | rem       | <0.020    | <0.020 | 7.0-7.5   | <0.05     | .           | <0.05     |
| BNi-5b        | rem       | <0.020    | <0.020 | 7.0-7.5   | <0.05     | .           | <0.05     |
| BNi-6         | rem       | 10.0-12.0 | <0.020 | .         | <0.05     | .           | <0.05     |
| BNi-7         | rem       | 9.7-10.5  | <0.020 | <0.10     | <0.05     | .           | <0.05     |
| BNi-8         | rem       | <0.020    | <0.020 | 6.0-8.0   | <0.05     | .           | <0.05     |
| BNi-9         | rem       | <0.020    | <0.020 | .         | <0.05     | .           | <0.05     |
| BNi-10        | rem       | <0.020    | <0.020 | 3.0-4.0   | <0.05     | 15.0-17.0   | <0.05     |
| BNi-11        | rem       | <0.020    | <0.020 | 3.25-4.25 | <0.05     | 11.50-12.75 | <0.05     |
| BNi-12        | rem       | 9.0-11.0  | <0.020 | <0.10     | <0.05     | .           | <0.05     |
| BNi-13        | rem       | <0.020    | <0.020 | 3.8-4.8   | <0.05     | .           | <0.05     |

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| Type            | Comment                | Al        | B           | C         | Co    | Cr        | Cu      | Fe        | Mn        | Mo        | Nb        |
|-----------------|------------------------|-----------|-------------|-----------|-------|-----------|---------|-----------|-----------|-----------|-----------|
| Comm.Pure Ni    | Mg <0.005              | .         | .           | <0.02     | <0.10 | <0.005    | <0.01   | <0.05     | <0.003    | .         | .         |
| Comm.Pure Ni    | Mg, N <0.001; O <0.025 | <0.001    | .           | <0.006    | .     | <0.001    | <0.02   | <0.015    | <0.001    | .         | .         |
| Creusot UR SB 8 | N 0.17-0.25            | .         | .           | <0.020    | .     | 24.0-26.0 | 1.0-2.0 | rem       | <2.00     | 4.7-5.7   | .         |
| CT15C           | .                      | .         | .           | 0.05-0.15 | .     | 19.0-21.0 | .       | rem       | 0.15-1.50 | .         | 0.50-1.50 |
| D979            | Zr <0.05               | 0.75-1.30 | 0.008-0.015 | <0.08     | .     | 14.0-16.0 | .       | rem       | <0.75     | 3.75-4.50 | .         |
| Eatonite        | .                      | .         | .           | 2.4       | 10.0  | 29.0      | .       | <6.50     | .         | .         | .         |
| Eatonite 3      | .                      | .         | .           | 1.80-2.20 | .     | 28.0-30.0 | .       | 1.0-8.0   | <1.00     | 4.0-6.0   | .         |
| Eatonite 5      | .                      | .         | .           | 1.80-2.20 | .     | 28.0-30.0 | .       | 1.0-8.0   | <1.00     | 7.0-9.0   | .         |
| ER330           | .                      | .         | .           | 0.18-0.25 | .     | 15.0-17.0 | <0.75   | rem       | 1.0-2.5   | <0.75     | .         |
| ERNi-C1         | Other <1.00            | .         | .           | <1.00     | .     | .         | <4.00   | <4.00     | <2.50     | .         | .         |
| ERNiCr-6        | Pb <0.010              | <0.40     | .           | 0.08-0.15 | .     | 19.0-21.0 | <0.50   | <2.00     | <1.00     | .         | .         |
| ERNiCr-A        | Se <0.005              | .         | 2.00-3.00   | 0.30-0.60 | <1.50 | 8.0-14.0  | .       | 1.25-3.25 | .         | .         | .         |
| ERNiCr-C        | Se <0.005              | .         | 2.00-4.00   | 0.40-0.80 | <1.25 | 10.0-16.0 | .       | 3.0-5.0   | .         | .         | .         |
| ERNiCr-C        | Se <0.005              | .         | 2.50-4.50   | 0.50-1.00 | <1.0  | 12.0-18.0 | .       | 3.5-5.5   | .         | .         | .         |
| ERNiCr-D        | .                      | .         | 0.35-0.60   | 0.6-1.1   | <0.10 | 8.0-12.0  | .       | 1.0-5.0   | .         | .         | .         |
| ERNiCr-E        | Sn 0.5-0.9             | .         | 0.7-1.4     | 0.1-0.5   | <0.10 | 15.-20.   | .       | 3.5-7.5   | .         | .         | .         |
| ERNiCrMo-5A     | V <0.40                | .         | .           | <0.12     | .     | 14-18     | .       | 4.0-7.0   | <1.00     | 14-18     | .         |
| ERNi-Cu-8       | Pb <0.010              | 2.0-4.0   | .           | <0.25     | .     | .         | rem     | <2.00     | <1.50     | .         | .         |
| ERNiFeMn-C1     | Other <1.00            | <1.00     | .           | <0.50     | .     | .         | <2.50   | rem       | 10.0-14.0 | .         | .         |
| ERNiMo-8        | .                      | .         | .           | <0.10     | .     | 0.5-3.5   | <0.50   | .         | <1.00     | 18.0-21.0 | .         |
| ERNiMo-9        | .                      | <1.00     | .           | <0.10     | .     | .         | 0.3-1.3 | .         | <1.00     | 19.0-22.0 | .         |
| Filler 72       | Other <0.50            | .         | .           | 0.01-0.10 | .     | 42.0-46.0 | <0.50   | <0.50     | <0.20     | .         | .         |
| FM 52           | Al+Ti <1.50            | <1.10     | .           | <0.04     | .     | 28.0-31.5 | <0.30   | 7.0-11.0  | <1.00     | <0.50     | <0.10     |
| FM60            | .                      | <1.25     | .           | <0.15     | .     | .         | rem     | <2.50     | <4.00     | .         | .         |
| FM61            | .                      | <1.50     | .           | <0.15     | .     | .         | <0.25   | <1.00     | <1.00     | .         | .         |
| FM65            | <0.20                  | .         | .           | <0.05     | .     | 19.5-23.5 | 1.5-3.0 | >22.0     | <1.00     | 2.5-3.5   | .         |
| FM69            | 0.40-1.00              | .         | .           | <0.08     | .     | 14.0-17.0 | <0.50   | 5.0-9.0   | <1.00     | >70.0     | 0.7-1.2   |
| FM82            | .                      | .         | .           | <0.10     | .     | 18.0-22.0 | <0.50   | <3.00     | 2.5-3.5   | .         | 2.0-3.0   |
| FM92            | .                      | .         | .           | <0.08     | .     | 14.0-17.0 | <0.50   | <8.00     | 2.00-2.75 | .         | .         |

| Type            | Ni        | P      | S       | Si        | Ti        | W         |
|-----------------|-----------|--------|---------|-----------|-----------|-----------|
| Comm.Pure Ni    | >99.9     | .      | <0.003  | <0.005    | <0.005    | .         |
| Comm.Pure Ni    | rem       | .      | <0.0008 | <0.001    | .         | .         |
| Creusot UR SB 8 | 24.0-26.0 | <0.025 | <0.010  | <0.50     | .         | .         |
| CT15C           | 31.0-34.0 | <0.030 | <0.030  | 0.50-1.50 | .         | .         |
| D979            | 42.0-48.0 | <0.015 | <0.015  | <0.75     | 2.70-3.30 | 3.75-4.50 |
| Eatonite        | 39.0      | .      | .       | 0.70      | .         | 15.0      |
| Eatonite 3      | rem       | <0.030 | <0.030  | 0.8-1.2   | .         | .         |
| Eatonite 5      | rem       | <0.030 | <0.030  | 0.80-1.20 | .         | .         |
| ER330           | 34.0-37.0 | <0.030 | <0.030  | 0.30-0.65 | .         | .         |
| ERNi-C1         | rem       | .      | <0.030  | <0.75     | .         | .         |
| ERNiCr-6        | >75.0     | <0.030 | <0.015  | <0.30     | 0.15-0.50 | .         |
| ERNiCr-A        | rem       | .      | .       | 1.25-3.25 | .         | .         |
| ERNiCr-C        | rem       | .      | .       | 3.0-5.0   | .         | .         |
| ERNiCr-C        | rem       | .      | .       | 3.5-5.5   | .         | .         |
| ERNiCr-D        | rem       | .      | .       | 4.0-6.6   | .         | 1.0-3.0   |
| ERNiCr-E        | .         | .      | .       | 5.5-8.0   | .         | 0.5-1.5   |
| ERNiCrMo-5A     | rem       | .      | .       | <1.00     | .         | 3.0-5.0   |
| ERNi-Cu-8       | 63.0-70.0 | <0.030 | <0.015  | <1.00     | 0.25-1.00 | .         |
| ERNiFeMn-C1     | 35.0-45.0 | .      | <0.030  | <1.00     | .         | .         |
| ERNiMo-8        | >60.0     | <0.015 | <0.015  | <0.50     | .         | 2.0-4.0   |
| ERNiMo-9        | >65.0     | <0.015 | <0.015  | <0.50     | .         | 2.0-4.0   |
| Filler 72       | rem       | <0.020 | <0.015  | <0.20     | 0.3-1.0   | .         |
| FM 52           | rem       | .      | <0.015  | <0.50     | <1.00     | .         |
| FM60            | 62.0-69.0 | <0.020 | <0.015  | <1.25     | 1.5-3.0   | .         |
| FM61            | >93.0     | <0.030 | <0.015  | <0.75     | 2.0-3.5   | .         |
| FM65            | 38.0-46.0 | <0.030 | <0.030  | <0.50     | 0.60-1.2  | .         |
| FM69            | .         | <0.030 | <0.015  | <0.50     | 2.00-2.75 | .         |
| FM82            | >67.0     | <0.030 | <0.015  | <0.50     | <0.75     | .         |
| FM92            | >67.0     | <0.030 | <0.015  | <0.35     | 2.50-3.50 | .         |

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| Type             | Comment                   | Al        | B          | C         | Co        | Cr        | Cu      | Fe        | Mn        | Mo        |
|------------------|---------------------------|-----------|------------|-----------|-----------|-----------|---------|-----------|-----------|-----------|
| Hastelloy B      | V <0.60                   | .         | .          | <0.12     | <2.5      | <1.00     | .       | <6.00     | <1.00     | 26.0-33.0 |
| Hastelloy C      | V <0.35                   | .         | .          | <0.08     | <2.5      | 14.5-16.5 | .       | 4.0-7.0   | <1.00     | 15.0-17.0 |
| Hastelloy C-4    | .                         | .         | .          | <0.015    | <2.0      | 14.0-18.0 | <3.00   | .         | <1.00     | 14.0-17.0 |
| Hastelloy C-22   | V <0.35                   | .         | .          | <0.015    | <2.5      | 20.0-22.5 | .       | 2.0-6.0   | <0.50     | 12.5-14.5 |
| Hastelloy C-276  | V <0.35                   | .         | .          | <0.02     | <2.5      | 14.5-16.5 | .       | 4.0-7.0   | <1.00     | 15.0-17.0 |
| Hastelloy C-2000 | .                         | <0.50     | .          | <0.010    | <2.0      | 22.0-24.0 | 1.3-1.9 | <3.00     | <0.50     | 15.0-17.0 |
| Hastelloy F      | .                         | .         | .          | <0.05     | <2.5      | 21.0-23.0 | .       | rem       | 1.0-2.0   | 5.5-7.5   |
| Hastelloy G      | .                         | .         | .          | <0.05     | <2.5      | 21.0-23.5 | 1.5-2.5 | 18.0-21.0 | 1.0-2.0   | 5.5-7.5   |
| Hastelloy G-2    | .                         | .         | .          | <0.03     | .         | 23.0-26.0 | 0.7-1.2 | rem       | <1.00     | 5.0-7.0   |
| Hastelloy G-3    | Nb+Ta <0.50               | .         | .          | <0.015    | <5.0      | 21.0-23.5 | 1.5-2.5 | 18.0-21.0 | <1.00     | 6.0-8.0   |
| Hastelloy G-30   | .                         | .         | .          | <0.03     | <5.00     | 28.0-31.5 | 1.0-2.4 | 13.0-17.0 | <1.50     | 4.0-6.0   |
| Hastelloy G-50   | .                         | .         | .          | <0.015    | <2.5      | 19.0-21.0 | <0.50   | 15.0-20.0 | <1.00     | 8.0-10.0  |
| Hastelloy H-9M   | .                         | .         | .          | <0.03     | <5.0      | 20.5-23.0 | .       | 17.0-20.0 | <1.00     | 8.0-10.0  |
| Hastelloy N      | V <0.50                   | <0.50     | <0.010     | 0.04-0.08 | <0.20     | 6.0-8.0   | <0.35   | <5.00     | <1.00     | 15.0-18.0 |
| Hastelloy S      | La 0.01-0.10              | 0.10-0.50 | <0.015     | <0.02     | <2.0      | 14.5-17.0 | <0.35   | <3.00     | 0.30-1.00 | 14.0-16.5 |
| Hastelloy W      | V <0.60                   | .         | .          | <0.12     | .         | 4.00-6.00 | .       | 4.0-7.0   | <1.00     | 23.0-26.0 |
| Hastelloy X      | .                         | .         | .          | 0.05-0.15 | 0.5-2.5   | 20.5-23.0 | .       | 17.0-20.0 | <1.00     | 8.0-10.0  |
| Haynes 20 Mod    | .                         | .         | .          | <0.05     | .         | 21.0-23.0 | .       | rem       | <2.50     | 4.0-6.0   |
| Haynes 230       | La <0.050                 | 0.20-0.50 | <0.003     | 0.05-0.15 | <3.0      | 20.0-24.0 | <0.50   | <3.00     | 0.3-1.0   | 1.0-3.0   |
| Haynes 242       | .                         | <0.50     | <0.006     | <0.03     | <1.0      | 7.0-9.0   | <0.50   | <2.00     | <0.80     | 24.0-26.0 |
| HL               | .                         | .         | .          | 0.20-0.60 | .         | 28.0-32.0 | .       | rem       | <2.00     | <0.50     |
| HL-30            | .                         | .         | .          | 0.25-0.35 | .         | 28.0-32.0 | .       | rem       | <1.50     | <0.50     |
| HL-40            | .                         | .         | .          | 0.35-0.45 | .         | 28.0-32.0 | .       | rem       | <1.50     | <0.50     |
| HP               | .                         | .         | .          | 0.35-0.75 | .         | 24.0-28.0 | .       | rem       | <2.00     | <0.50     |
| HR-120           | N 0.15-0.30               | <0.40     | <0.010     | 0.02-0.1  | <3.0      | 23.0-27.0 | <0.50   | rem       | <1.50     | <2.50     |
| HR-160           | .                         | .         | .          | <0.15     | 27.0-33.0 | 26.0-30.0 | .       | <3.50     | <1.50     | <1.0      |
| HT               | .                         | .         | .          | 0.35-0.75 | .         | 15.0-19.0 | .       | rem       | <2.00     | .         |
| HT-30            | .                         | .         | .          | 0.25-0.35 | .         | 13.0-17.0 | .       | rem       | <2.00     | <0.50     |
| INCO 032         | .                         | .         | .          | <0.03     | .         | 20.0-23.0 | .       | rem       | <1.00     | 4.0-5.0   |
| Inconle FM62     | .                         | .         | .          | <0.035    | .         | 14.0-17.0 | <0.50   | 6.0-10.0  | <1.00     | .         |
| JS 700           | Pb <0.005, Sn <0.035      | .         | .          | <0.04     | .         | 19.0-23.0 | <0.50   | rem       | <2.00     | 4.3-5.0   |
| K500             | .                         | 2.30-3.15 | .          | <0.25     | .         | .         | rem     | <2.00     | <1.50     | .         |
| M220C            | Be 1.80-2.30              | .         | .          | 0.30-0.50 | .         | .         | .       | .         | .         | .         |
| M252             | .                         | 0.75-1.25 | 0.003-0.01 | 0.10-0.20 | 9.0-11.0  | 18.0-20.0 | .       | <5.00     | <0.50     | 9.0-10.5  |
| MA754            | Y2O3 0.5-0.7              | 0.20-0.50 | .          | <0.05     | .         | 19.0-23.0 | .       | <2.50     | .         | .         |
| MAR-M-Alloy      | Hf 1.50-2.0, Ta 1.25-1.75 | 5.25-5.75 | 0.01-0.02  | 0.13-0.17 | 9.0-10.0  | 8.0-10.0  | <0.10   | <1.00     | <0.20     | 2.25-2.75 |
| MAT21            | Ta 1.5-2.2, V <0.35       | .         | .          | <0.015    | <1.0      | 18.0-20.0 | <1.00   | <0.50     | <0.50     | 18.0-20.0 |

| Type             | Nb        | Ni        | P      | S      | Si        | Ta        | Ti        | W         | Zr        |
|------------------|-----------|-----------|--------|--------|-----------|-----------|-----------|-----------|-----------|
| Hastelloy B      | .         | rem       | <0.040 | <0.030 | <1.00     | .         | .         | .         | .         |
| Hastelloy C      | .         | rem       | <0.040 | <0.030 | <1.00     | .         | .         | 3.0-4.5   | .         |
| Hastelloy C-4    | .         | rem       | <0.040 | <0.030 | <0.08     | .         | <0.70     | .         | .         |
| Hastelloy C-22   | .         | rem       | <0.020 | <0.020 | <0.08     | .         | .         | 2.5-3.5   | .         |
| Hastelloy C-276  | .         | rem       | <0.030 | <0.030 | <0.08     | .         | .         | 3.0-4.5   | .         |
| Hastelloy C-2000 | .         | rem       | <0.025 | <0.010 | <0.08     | .         | .         | .         | .         |
| Hastelloy F      | 1.8-2.5   | 44.0-47.0 | <0.040 | <0.010 | <1.00     | .         | <0.03     | <1.00     | .         |
| Hastelloy G      | 1.75-2.50 | rem       | <0.040 | <0.030 | <1.0      | .         | .         | <1.00     | .         |
| Hastelloy G-2    | .         | 47.0-52.0 | <0.030 | <0.030 | <1.00     | .         | 0.7-1.5   | .         | .         |
| Hastelloy G-3    | .         | rem       | <0.040 | <0.030 | <1.00     | .         | .         | <1.00     | .         |
| Hastelloy G-30   | 0.3-1.5   | rem       | <0.040 | <0.020 | <0.08     | .         | .         | 1.5-4.0   | .         |
| Hastelloy G-50   | <0.50     | >50.0     | <0.010 | <0.015 | <1.00     | .         | .         | <1.00     | .         |
| Hastelloy H-9M   | .         | rem       | <0.040 | <0.030 | <1.00     | .         | .         | 1.0-2.0   | .         |
| Hastelloy N      | .         | rem       | <0.015 | <0.020 | <1.00     | .         | .         | <0.50     | .         |
| Hastelloy S      | .         | rem       | <0.020 | <0.015 | 0.20-0.75 | .         | .         | <1.00     | .         |
| Hastelloy W      | .         | rem       | <0.050 | <0.050 | <1.00     | .         | .         | .         | .         |
| Hastelloy X      | .         | rem       | <0.040 | <0.030 | <1.00     | .         | .         | 0.2-1.0   | .         |
| Haynes 20 Mod    | .         | 25.0-27.0 | <0.040 | <0.030 | <1.0      | .         | 4\mtC min | .         | .         |
| Haynes 230       | .         | rem       | <0.030 | <0.015 | 0.25-0.75 | .         | .         | 13.0-15.0 | .         |
| Haynes 242       | .         | rem       | <0.030 | <0.015 | <0.80     | .         | .         | .         | .         |
| HL               | .         | 16.0-22.0 | <0.040 | <0.040 | <2.00     | .         | .         | .         | .         |
| HL-30            | .         | 18.0-22.0 | <0.040 | <0.040 | 0.50-2.00 | .         | .         | .         | .         |
| HL-40            | .         | 18.0-22.0 | <0.040 | <0.040 | 0.50-2.00 | .         | .         | .         | .         |
| HP               | .         | 35.0-37.0 | <0.040 | <0.040 | <2.50     | .         | .         | .         | .         |
| HR-120           | 0.4-0.9   | 35.0-39.0 | <0.040 | <0.030 | <1.00     | .         | <0.20     | <2.50     | .         |
| HR-160           | <1.00     | rem       | <0.030 | <0.015 | 2.4-3.0   | .         | 0.20-0.80 | <1.00     | .         |
| HT               | .         | 33.0-37.0 | <0.040 | <0.050 | <2.50     | .         | .         | .         | .         |
| HT-30            | .         | 33.0-37.0 | <0.040 | <0.040 | <2.50     | .         | .         | .         | .         |
| INCO 032         | .         | 30.0-34.0 | <0.030 | <0.005 | <0.05     | .         | .         | .         | .         |
| Inconle FM62     | 1.0-3.0   | >72.0     | <0.030 | <0.015 | <0.50     | .         | .         | .         | .         |
| JS 700           | 8*C <0.50 | 24.0-26.0 | <0.040 | <0.030 | <1.00     | .         | .         | .         | .         |
| K500             | .         | 63.0-70.0 | .      | <0.010 | <0.05     | .         | 0.35-0.85 | .         | .         |
| M220C            | .         | rem       | .      | .      | .         | .         | .         | .         | .         |
| M252             | .         | rem       | <0.015 | <0.015 | <0.50     | .         | 2.25-2.75 | .         | .         |
| MA754            | .         | rem       | .      | .      | .         | .         | 0.3-0.6   | .         | .         |
| MAR-M-Alloy      | .         | rem       | .      | <0.015 | <0.20     | 1.25-1.75 | 1.25-1.75 | 9.0-11.0  | 0.03-0.08 |
| MAT21            | .         | rem       | <0.020 | <0.020 | <0.08     | .         | .         | .         | .         |

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| Type   | Comment                    | Al        | B           | C           | Co         | Cr        | Cu        | Fe        | Hf        | Mn        |
|--------|----------------------------|-----------|-------------|-------------|------------|-----------|-----------|-----------|-----------|-----------|
| N03260 | ThO <sub>2</sub> 1.80-2.60 | .         | .           | <0.02       | <0.20      | <0.05     | <0.15     | <0.05     | .         | .         |
| N04019 |                            | .         | .           | <0.25       | .          | .         | 27.0-31.0 | <2.50     | .         | <1.50     |
| N04020 |                            | <0.50     | .           | <0.35       | .          | .         | 26.0-33.0 | <2.50     | .         | <1.50     |
| N04406 |                            | <0.10     | .           | <0.25       | .          | .         | 26.0-28.0 | <2.00     | .         | <1.50     |
| N06602 |                            | .         | .           | <0.02       | .          | 14.0-17.0 | <0.50     | 6.0-10.0  | .         | <1.00     |
| N07002 | nominal concentrations     | 0.05      | .           | 0.05        | 0.50       | 16.00     | .         | .         | .         | 2.30      |
| N07013 | Other 7.3-7.7              | 3.20-3.60 | 0.010-0.020 | 0.07-0.20   | 8.50-9.50  | 12.2-13.0 | .         | <0.50     | 0.75-1.05 | <0.10     |
| N07048 |                            | 0.40-0.90 | .           | <0.015      | <2.0       | 20.0-23.5 | 1.0-2.2   | 18.0-21.0 | .         | <0.80     |
| N07626 | N <0.05                    | 0.40-0.80 | .           | <0.05       | <1.0       | 20.0-23.0 | <0.50     | <6.00     | .         | <0.50     |
| N07716 |                            | <0.35     | .           | <0.03       | .          | 19.0-22.0 | .         | rem       | .         | <0.20     |
| N07752 | Nb+Ta 0.70-1.20, V <0.10   | 0.40-1.00 | .           | 0.020-0.060 | <0.050     | 14.5-17.0 | <0.50     | 5.0-9.0   | .         | <1.00     |
| N07924 | Mg <0.005, N <0.02         | <0.75     | .           | <0.020      | <3.0       | 20.5-22.5 | 1.0-4.0   | 7.0-13.0  | .         | <0.20     |
| N08021 | Nb+Ta 8\mtc-1.0            | .         | .           | <0.07       | .          | 19.0-21.0 | 3.0-4.0   | rem       | .         | <2.50     |
| N08022 | Nb+Ta 8\mtc-1.0            | .         | .           | <0.025      | .          | 19.0-21.0 | 3.0-4.0   | rem       | .         | 1.5-2.0   |
| N08024 |                            | .         | .           | <0.03       | .          | 22.5-25.0 | 0.5-1.5   | rem       | .         | <1.00     |
| N08221 |                            | <0.20     | .           | <0.025      | .          | 20.0-22.0 | 1.5-3.0   | rem       | .         | <1.00     |
| N08310 | N 0.20-0.40                | .         | .           | <0.02       | .          | 24.0-26.0 | .         | rem       | .         | 2.00-4.00 |
| N08421 |                            | <0.2      | .           | <0.025      | .          | 20.0-22.0 | 1.5-2.0   | rem       | .         | <1.00     |
| N08535 |                            | .         | .           | <0.03       | .          | 24.0-27.0 | <1.50     | rem       | .         | <1.00     |
| N08826 |                            | .         | .           | <0.05       | .          | 19.5-23.5 | 1.5-3.5   | >22.0     | .         | <1.00     |
| N08904 |                            | .         | .           | <0.020      | .          | 19.0-23.0 | 1.0-2.0   | rem       | .         | <2.00     |
| N08925 | N 0.10-0.20                | .         | .           | <0.020      | .          | 19.0-21.0 | 0.8-1.5   | rem       | .         | <1.00     |
| N08926 | N 0.15-0.25                | .         | .           | <0.020      | .          | 19.0-21.0 | 0.5-1.5   | rem       | .         | <2.00     |
| N09925 |                            | 0.10-0.50 | .           | <0.03       | .          | 19.5-23.5 | 1.5-3.0   | >22.0     | .         | <1.00     |
| N13009 | Bi <0.5 ppm, Pb <10 ppm    | 4.75-5.25 | 0.010-0.020 | 0.12-0.17   | 9.00-11.00 | 8.0-10.0  | <0.10     | <1.50     | .         | <0.20     |
| N13010 | Bi, Pb <0.5 ppm; Ta 4-5    | 5.75-6.25 | 0.010-0.020 | 0.08-0.13   | 9.50-10.50 | 7.50-8.50 | .         | <0.35     | .         | <0.20     |
| N13020 | Bi <0.5 ppm                | 3.75-4.75 | 0.025-0.035 | 0.03-0.10   | 17.0-20.0  | 14.0-16.0 | <0.10     | <2.00     | .         | <0.15     |
| N13021 | Ag, Bi, Pb limits          | 4.5-4.9   | 0.003-0.010 | 0.12-0.17   | 18.0-22.0  | 14.0-15.7 | <0.20     | <1.00     | .         | <1.00     |
| N14076 |                            | .         | .           | <0.05       | <0.50      | 2.0-3.0   | 4.0-6.0   | rem       | .         | <1.50     |
| N14080 |                            | .         | .           | <0.05       | <0.50      | <0.30     | <0.30     | rem       | .         | <0.80     |
| N19907 |                            | <0.20     | <0.012      | <0.06       | 12.0-16.0  | <1.0      | <0.50     | rem       | .         | <1.00     |
| N19909 |                            | <0.15     | .           | <0.06       | 12.0-16.0  | <1.00     | <0.50     | rem       | .         | <1.00     |
| N22000 |                            | .         | .           | <0.12       | .          | <1.0      | 2.0-4.0   | .         | .         | <1.50     |
| N24025 |                            | .         | .           | <0.25       | .          | .         | 27.0-33.0 | <3.50     | .         | <1.50     |
| N24030 |                            | .         | .           | <0.30       | .          | .         | 27.0-33.0 | <3.50     | .         | <1.50     |
| N24130 |                            | .         | .           | <0.30       | .          | .         | 26.0-33.0 | <3.50     | .         | <1.50     |
| N24135 |                            | .         | .           | <0.35       | .          | .         | 26.0-33.0 | <3.50     | .         | <1.50     |
| N26022 | V <0.35                    | .         | .           | <0.02       | .          | 20.0-22.5 | .         | 2.0-6.0   | .         | <1.00     |
| N26055 | Bi, Sn 3.0-5.0             | .         | .           | <0.05       | .          | 11.0-14.0 | .         | <2.00     | .         | <1.50     |
| N26455 |                            | .         | .           | <0.02       | .          | 15.0-17.5 | .         | <2.00     | .         | <1.00     |
| N26625 |                            | .         | .           | <0.06       | .          | 20.0-23.0 | .         | <5.00     | .         | <1.00     |
| N26641 |                            | .         | 1.2-2.0     | 0.2-0.8     | .          | 10.0-15.0 | .         | 2.0-5.0   | .         | .         |
| N26985 | Nb+Ta <0.5                 | .         | .           | <0.02       | <5.0       | 21.5-23.5 | 1.5-2.5   | 18.0-21.0 | .         | <1.00     |
| N28825 |                            | .         | .           | <0.05       | .          | 19.5-23.5 | 1.5-3.0   | 28.0-32.0 | .         | <1.00     |
| N30002 | V 0.2-0.4                  | .         | .           | <0.12       | .          | 15.5-17.5 | .         | 4.5-7.5   | .         | <1.00     |
| N30007 |                            | .         | .           | <0.07       | .          | <1.0      | .         | <3.00     | .         | <1.00     |
| N30012 |                            | .         | .           | <0.12       | .          | <1.00     | .         | 4.0-6.0   | .         | <1.00     |
| N30107 |                            | .         | .           | <0.07       | .          | 17.0-20.0 | .         | <3.00     | .         | <1.00     |
| N94620 | Mg <0.010                  | <0.01     | .           | <0.02       | 25 nom     | <0.03     | <0.20     | rem       | .         | <0.14     |
| N94630 | Mg <0.010                  | <0.01     | .           | <0.02       | 17 nom     | <0.03     | <0.20     | rem       | .         | <0.35     |

| Type   | Mo        | Nb        | Ni        | P      | S       | Si        | Ta       | Ti        | W         | Zr        |
|--------|-----------|-----------|-----------|--------|---------|-----------|----------|-----------|-----------|-----------|
| N03260 | .         | .         | rem       | .      | <0.0025 | .         | .        | <0.05     | .         | .         |
| N04019 | .         | .         | >60.0     | .      | <0.015  | 3.5-4.5   | .        | .         | .         | .         |
| N04020 | .         | .         | rem       | .      | .       | <2.00     | .        | .         | .         | .         |
| N04406 | .         | .         | rem       | .      | .       | <0.025    | .        | .         | .         | .         |
| N06602 | .         | .         | >72.0     | .      | <0.015  | <0.50     | .        | .         | .         | .         |
| N07002 | .         | .         | rem       | .      | .       | 0.05      | .        | 3.10      | .         | .         |
| N07013 | 1.70-2.10 | <0.10     | rem       | <0.015 | <0.015  | <0.10     | 3.85-4.5 | 3.85-4.15 | 3.85-4.50 | 0.05-0.15 |
| N07048 | 5.0-7.0   | <0.05     | rem       | <0.020 | <0.010  | <0.10     | .        | 1.5-2.1   | .         | .         |
| N07626 | 8.0-10.0  | 4.50-5.50 | rem       | <0.020 | <0.015  | <0.50     | .        | <0.60     | .         | .         |
| N07716 | 7.0-9.5   | 2.75-4.00 | 57.0-63.0 | <0.015 | <0.010  | <0.20     | .        | 1.0-1.6   | .         | .         |
| N07752 |           | .         | >70.0     | <0.008 | <0.003  | <0.50     | .        | 2.25-2.75 | .         | <0.05     |
| N07924 | 5.50-7.00 | 2.75-3.50 | >52.0     | <0.030 | <0.005  | <0.20     | .        | 1.0-2.0   | <0.50     | .         |
| N08021 | 2.0-3.0   | .         | 32.0-36.0 | <0.030 | <0.030  | <0.60     | .        | .         | .         | .         |
| N08022 | 2.0-3.0   | .         | 32.0-36.0 | <0.015 | <0.020  | <0.15     | .        | .         | .         | .         |
| N08024 | 3.50-5.00 | 0.15-0.35 | 35.0-40.0 | <0.035 | <0.035  | <0.50     | .        | .         | .         | .         |
| N08221 | 5.00-6.50 | .         | 36.0-46.0 | .      | <0.030  | <0.50     | .        | 0.6-1.0   | .         | .         |
| N08310 | 2.00-4.00 | .         | 18.0-22.0 | <0.035 | <0.015  | <0.05     | .        | .         | .         | .         |
| N08421 | 5.0-6.5   | .         | 39.0-41.0 | <0.030 | <0.030  | <0.50     | .        | 0.6-1.0   | .         | .         |
| N08535 | 2.5-4.0   | .         | 29.0-36.5 | <0.030 | <0.030  | <0.50     | .        | .         | .         | .         |
| N08826 | 2.5-3.5   | 0.6-1.2   | 38.0-44.0 | <0.030 | <0.030  | <1.00     | .        | .         | .         | .         |
| N08904 | 4.00-5.00 | .         | 23.0-28.0 | <0.045 | <0.035  | <1.00     | .        | .         | .         | .         |
| N08925 | 6.0-7.0   | .         | 24.0-26.0 | <0.045 | <0.030  | <0.50     | .        | .         | .         | .         |
| N08926 | 6.0-7.0   | .         | 24.0-26.0 | <0.030 | <0.010  | <0.50     | .        | .         | .         | .         |
| N09925 | 2.50-3.50 | <0.50     | 38.0-46.0 | .      | <0.030  | <0.50     | .        | 1.9-2.4   | .         | .         |
| N13009 | .         | 0.75-1.25 | rem       | .      | <0.015  | <0.20     | .        | 1.75-2.25 | 11.5-13.5 | 0.03-0.08 |
| N13010 | 5.75-6.25 | .         | rem       | <0.015 | <0.015  | <0.25     | .        | 0.8-1.2   | <0.10     | 0.05-0.10 |
| N13020 | 4.50-5.50 | .         | rem       | .      | .       | .         | .        | 2.75-3.75 | .         | <0.06     |
| N13021 | 4.5-5.5   | .         | rem       | .      | <0.015  | <1.0      | .        | 0.9-1.5   | .         | .         |
| N14076 | <0.50     | .         | 75.0-78.0 | <0.020 | <0.010  | <0.50     | .        | .         | .         | .         |
| N14080 | 3.5-6.0   | .         | 79.0-82.0 | <0.020 | <0.010  | <0.50     | .        | .         | .         | .         |
| N19907 | .         | 4.3-5.2   | 35.0-40.0 | <0.015 | <0.015  | <0.35     | .        | 1.2-1.8   | .         | .         |
| N19909 | .         | 4.3-5.2   | 35.0-40.0 | <0.015 | <0.015  | 0.25-0.50 | .        | 1.3-1.8   | .         | .         |
| N22000 | .         | .         | rem       | <0.030 | <0.030  | 8.5-10.0  | .        | .         | .         | .         |
| N24025 | .         | .         | rem       | <0.030 | <0.030  | 3.5-4.5   | .        | .         | .         | .         |
| N24030 | .         | .         | rem       | <0.030 | <0.030  | 2.7-3.7   | .        | .         | .         | .         |
| N24130 | .         | 1.0-3.0   | rem       | <0.030 | <0.030  | 1.0-2.0   | .        | .         | .         | .         |
| N24135 | .         | <0.50     | rem       | <0.030 | <0.030  | <1.25     | .        | .         | .         | .         |
| N26022 | 12.5-14.5 | .         | rem       | <0.025 | <0.025  | <0.80     | .        | .         | 2.5-3.5   | .         |
| N26055 | 2.0-3.5   | .         | rem       | <0.030 | <0.030  | <0.50     | .        | .         | .         | .         |
| N26455 | 15.0-17.5 | .         | rem       | <0.030 | <0.030  | <0.80     | .        | .         | <1.00     | .         |
| N26625 | 8.0-10.0  | 3.15-4.50 | rem       | <0.015 | <0.015  | <1.00     | .        | .         | .         | .         |
| N26641 | .         | .         | rem       | .      | .       | 1.2-5.0   | .        | .         | .         | .         |
| N26985 | 6.0-8.0   | .         | rem       | <0.025 | <0.030  | <1.00     | .        | <1.50     | .         | .         |
| N28825 | 2.5-3.5   | 0.7-1.0   | rem       | <0.030 | <0.030  | 0.75-1.20 | .        | .         | .         | .         |
| N30002 | 16.0-18.0 | .         | rem       | <0.040 | <0.030  | <1.00     | .        | .         | 3.75-5.25 | .         |
| N30007 | 30.0-33.0 | .         | rem       | <0.040 | <0.030  | <1.00     | .        | .         | .         | .         |
| N30012 | 26.0-30.0 | .         | rem       | <0.040 | <0.030  | <1.00     | .        | .         | .         | .         |
| N30107 | 17.0-20.0 | .         | rem       | <0.040 | <0.030  | <1.00     | .        | .         | .         | .         |
| N94620 | <0.06     | .         | 27 nom    | <0.006 | <0.006  | <0.15     | .        | <0.01     | .         | <0.01     |
| N94630 | <0.06     | .         | 29 nom    | <0.006 | <0.006  | <0.15     | .        | <0.01     | .         | <0.01     |

**These are specifications for reference purposes only, not samples for sale.**

| Type            | Comment                           | Al        | B           | C         | Co          | Cr        | Cu        | Fe        | Mn       |
|-----------------|-----------------------------------|-----------|-------------|-----------|-------------|-----------|-----------|-----------|----------|
| Ni-20 Cr +Nb    |                                   | .         | .           | <0.15     | .           | 19.0-21.0 | .         | <1.00     | <2.50    |
| NIC 52          |                                   | .         | .           | <0.03     | .           | 23.0-27.0 | 0.5-1.0   | rem       | <1.00    |
| NIC42M          |                                   | .         | .           | <0.03     | .           | 20.0-23.0 | 1.5-3.0   | rem       | <1.00    |
| Nichrome        |                                   | .         | .           | <0.15     | .           | 14.0-18.0 | .         | rem       | <1.00    |
| Nichrome V      |                                   | .         | .           | <0.15     | .           | 19.0-21.0 | .         | <1.00     | <2.50    |
| Nicofer 45      | 0.05-0.15 rare earths with 50% Ce | .         | .           | 0.05-0.12 | .           | 26.0-29.0 | <0.30     | 21.0-25.0 | <1.00    |
| Nicofer 6219Si  |                                   | <0.50     | .           | <0.05     | <1.0        | 18.0-22.0 | <0.50     | 2.0-4.0   | <0.50    |
| Ni-Cr 30        |                                   | <0.20     | .           | <0.15     | .           | 29.0-31.0 | .         | <1.00     | <0.10    |
| Nicofer 5020hMo | N 0.05-0.20, Other <0.50          | 0.50-0.50 | .           | <0.03     | .           | 18.0-21.0 | .         | 12.0-16.0 | <0.50    |
| Nicofer 6025 HT | Y 0.05-0.12                       | 1.8-2.4   | .           | 0.15-0.25 | .           | 24.0-26.0 | <0.10     | 8.0-11.0  | <0.15    |
| Ni-Cu           |                                   | .         | .           | <0.04     | .           | .         | 28.0-34.0 | <2.50     | <2.00    |
| Nimonic 263     | Al+Ti 2.4-2.8                     | 0.30-0.60 | .           | 0.04-0.08 | 19.0-21.0   | 19.0-21.0 | <0.20     | <0.70     | <0.60    |
| Nimonic 75      |                                   | .         | .           | 0.08-0.15 | .           | 18.0-21.0 | <0.50     | <5.00     | <1.00    |
| Nimonic 80A     |                                   | 1.0-1.8   | <0.008      | <0.10     | <2.0        | 18.0-21.0 | <0.20     | <3.00     | <1.00    |
| Nimonic 90      |                                   | 0.8-2.0   | .           | <0.13     | 15.0-21.0   | 18.0-21.0 | .         | <3.00     | <1.00    |
| Ni-Span-C 902   |                                   | 0.30-0.80 | .           | <0.06     | .           | 4.90-5.75 | .         | rem       | <0.80    |
| Nitiono 55      | H <0.005, O <0.05                 | .         | .           | <0.07     | <0.05       | <0.01     | <0.01     | <0.05     | .        |
| PH3             | Mo+0.5W = 2.5-5.5                 | <2.00     | .           | <0.03     | .           | 18.0-27.0 | .         | rem       | <1.00    |
| PH6             |                                   | <2.00     | .           | <0.03     | .           | 12.0-22.0 | .         | rem       | <1.00    |
| PH7             |                                   | <0.35     | .           | <0.03     | .           | 14.0-19.0 | .         | rem       | <1.00    |
| Pyromet 31      |                                   | 1.00-1.70 | 0.003-0.007 | 0.03-0.06 | .           | 22.0-23.0 | .         | rem       | <0.20    |
| Pyromet 31V     |                                   | 1.15-1.40 | .           | 0.03-0.06 | <1.0        | 22.3-22.9 | .         | rem       | .        |
| R405            |                                   | .         | .           | <0.30     | .           | .         | rem       | <2.50     | <2.00    |
| RA 330          | Pb <0.005, Sn <0.025              | .         | .           | <0.08     | .           | 17.0-20.0 | <1.00     | rem       | <2.00    |
| RA 330-04       |                                   | .         | .           | 0.18-0.29 | .           | 17.0-20.0 | <0.50     | rem       | 4.25-6.5 |
| RA 330TX        | Pb <0.005, Sn <0.025              | 0.10-0.50 | .           | 0.05-0.10 | .           | 17.0-20.0 | <1.00     | rem       | <2.00    |
| RA 333          | Pb <0.025, Sn <0.025              | .         | .           | <0.08     | 2.5-4.0     | 24.0-27.0 | <0.50     | rem       | <2.00    |
| Rene 41         |                                   | 1.40-1.80 | 0.003-0.010 | <0.12     | 10.0-12.0   | 18.0-20.0 | .         | <5.00     | <0.10    |
| Sanicro 28      |                                   | .         | .           | <0.03     | .           | 26.0-28.0 | 0.6-1.4   | rem       | <2.50    |
| SM2035          |                                   | .         | .           | <0.03     | .           | 20.5-23.5 | <0.70     | rem       | <1.00    |
| SM2050          |                                   | .         | .           | <0.02     | .           | 20.0-23.0 | 0.25-1.25 | rem       | <1.00    |
| SM2060Mo        |                                   | .         | .           | <0.03     | .           | 19.0-22.0 | 0.25-1.25 | rem       | <1.50    |
| SM2550          |                                   | .         | .           | <0.03     | .           | 23.0-26.0 | <1.20     | rem       | <1.00    |
| Udimet 500      |                                   | 2.05-3.25 | 0.003-0.01  | <0.15     | 13.00-20.00 | 15.0-20.0 | <0.15     | <4.00     | <0.75    |
| Waspaloy        |                                   | 1.20-1.60 | 0.003-0.01  | 0.03-0.10 | 12.00-15.00 | 18.0-21.0 | <0.50     | <2.00     | <1.00    |
| W-Ni-3          |                                   | .         | .           | <0.15     | .           | .         | <0.25     | <0.60     | <0.35    |
| W-NiAl-1        |                                   | 4.0-6.0   | .           | .         | .           | .         | .         | .         | .        |
| W-NiAl-2        | Other <1.00                       | 17.0-27.0 | .           | .         | .           | .         | .         | .         | .        |
| W-NiCrFe-2      |                                   | .         | .           | <0.10     | .           | 14.0-7.0  | <0.50     | 6.0-10.0  | <1.00    |
| W-NiCrMo        | Other 3.0-4.0+Z86                 | .         | .           | .         | .           | 21.0-23.0 | .         | 1.0-2.0   | .        |
| W-NiCrTi        |                                   | .         | .           | .         | .           | 44-46     | .         | .         | .        |
| X750            |                                   | 0.40-1.00 | .           | <0.08     | .           | 14.0-17.0 | <0.50     | 5.0-9.0   | <1.00    |
| X782            | nominal concentrations            | .         | .           | 2.00      | 0.50        | 26.00     | .         | 4.00      | 0.30     |

| Type            | Mo        | Nb        | Ni        | P      | S           | Si        | Ti        | W         | Zr        |
|-----------------|-----------|-----------|-----------|--------|-------------|-----------|-----------|-----------|-----------|
| Ni-20 Cr +Nb    | .         | 0.75-1.50 | rem       | .      | <0.010      | 0.75-1.60 | .         | .         | .         |
| NIC 52          | 6.0-8.0   | .         | 48.0-56.0 | <0.030 | <0.003      | .         | 0.6-1.5   | .         | .         |
| NIC42M          | 5.0-4.0   | .         | 40.0-44.0 | <0.030 | <0.003      | <0.50     | 0.6-1.2   | .         | .         |
| Nichrome        | .         | .         | >57.0     | .      | <0.010      | 0.75-1.60 | .         | .         | .         |
| Nichrome V      | .         | .         | rem       | .      | <0.010      | 0.75-1.60 | .         | .         | .         |
| Nicofer 45      | .         | .         | >45.0     | <0.020 | <0.010      | 2.5-3.0   | .         | .         | .         |
| Nicofer 6219Si  | 7.0-9.0   | .         | rem       | <0.020 | <0.010      | 0.70-1.10 | <0.50     | .         | .         |
| Ni-Cr 30        | .         | .         | rem       | <0.030 | <0.010      | 0.75-1.60 | .         | .         | .         |
| Nicofer 5020hMo | 9.5-12.5  | 0.05-0.60 | rem       | <0.020 | <0.010      | <0.50     | .         | 0.05-2.5  | .         |
| Nicofer 6025 HT | .         | .         | rem       | <0.020 | <0.010      | <0.50     | 0.1-0.2   | .         | 0.01-0.10 |
| Ni-Cu           | .         | .         | >63.0     | .      | <0.025      | <0.50     | .         | .         | .         |
| Nimonic 263     | 5.6-6.1   | .         | rem       | <0.015 | <0.007      | <0.40     | 1.9-2.4   | .         | .         |
| Nimonic 75      | .         | .         | rem       | .      | .           | <1.00     | 0.20-0.60 | .         | .         |
| Nimonic 80A     | .         | .         | rem       | <0.045 | <0.015      | <1.00     | 1.8-2.7   | .         | .         |
| Nimonic 90      | .         | .         | rem       | .      | .           | <1.50     | 1.8-3.0   | .         | .         |
| Ni-Span-C 902   | .         | .         | 41.0-43.5 | <0.040 | <0.040      | <1.0      | 2.20-2.75 | .         | .         |
| Nitiono 55      | .         | <0.025    | 54.0-57.0 | .      | .           | .         | rem       | .         | .         |
| PH3             | 2.5-5.5   | 2.5-6.0   | 45.0-60.0 | <0.030 | <0.010      | <0.50     | <2.00     | <0.50     | .         |
| PH6             | 9.0-15.0  | 4.0-6.0   | 50.0-60.0 | <0.030 | <0.010      | <0.50     | <1.00     | 0.5-2.5   | .         |
| PH7             | 2.5-5.5   | <0.10     | 34.0-42.0 | <0.030 | <0.010      | <0.50     | .         | 2.0-3.0   | .         |
| Pyromet 31      | 1.70-2.30 | 0.6-1.2   | 55.0-58.0 | <0.015 | <0.015      | <0.20     | 2.10-2.60 | .         | .         |
| Pyromet 31V     | 1.70-2.30 | 0.75-0.95 | 55.0-58.0 | <0.015 | <0.015      | <0.20     | 2.10-2.40 | .         | .         |
| R405            | .         | .         | 63.0-70.0 | .      | 0.025-0.060 | <0.50     | .         | .         | .         |
| RA 330          | .         | .         | 34.0-37.0 | <0.030 | <0.030      | 0.75-1.50 | .         | .         | .         |
| RA 330-04       | <0.70     | .         | 33.0-37.0 | <0.025 | <0.020      | 0.65-1.30 | .         | .         | .         |
| RA 330TX        | .         | .         | 34.0-37.0 | <0.030 | <0.030      | 0.75-1.50 | 0.20-0.60 | .         | .         |
| RA 333          | 2.50-4.00 | .         | 44.0-47.0 | <0.030 | <0.030      | 0.75-1.50 | .         | 2.5-4.0   | .         |
| Rene 41         | 9.0-10.5  | .         | rem       | .      | <0.015      | <0.50     | 3.0-3.3   | .         | .         |
| Sanicro 28      | 3.0-4.0   | .         | 30.0-34.0 | <0.030 | <0.030      | <1.00     | .         | .         | .         |
| SM2035          | 4.0-5.0   | .         | 33.0-38.0 | <0.030 | <0.030      | <0.75     | .         | 0.2-0.8   | .         |
| SM2050          | 10.1-12.0 | .         | 50.0-54.0 | <0.030 | <0.005      | <0.09     | .         | 0.25-1.25 | .         |
| SM2060Mo        | 12.0-14.0 | 0.50-1.25 | 54.0-60.0 | <0.030 | <0.005      | <0.50     | .         | 0.25-1.25 | .         |
| SM2550          | 6.0-9.0   | .         | 47.0-52.0 | <0.030 | <0.030      | <1.00     | <0.69     | <3.00     | .         |
| Udimet 500      | 3.0-5.0   | .         | rem       | <0.015 | <0.015      | <0.75     | 2.50-3.25 | .         | .         |
| Waspaloy        | 3.50-5.00 | .         | rem       | <0.030 | <0.030      | <0.75     | 2.75-3.25 | .         | 0.02-0.12 |
| W-Ni-3          | .         | .         | >97.0     | .      | <0.040      | <0.50     | .         | .         | .         |
| W-NiAl-1        | .         | .         | rem       | .      | .           | .         | .         | .         | .         |
| W-NiAl-2        | .         | .         | rem       | .      | .           | .         | .         | .         | .         |
| W-NiCrFe-2      | .         | .         | >72.0     | .      | <0.020      | <0.50     | .         | .         | .         |
| W-NiCrMo        | 9.0-11.0  | .         | rem       | .      | .           | .         | .         | .         | .         |
| W-NiCrTi        | .         | .         | rem       | .      | .           | .         | 3.0-4.0   | .         | .         |
| X750            | .         | 0.7-1.2   | >70.0     | .      | <0.010      | <0.50     | 2.25-2.75 | .         | .         |
| X782            | .         | .         | rem       | .      | .           | 0.30      | .         | 8.75      | .         |

These are specifications for reference purposes only, not samples for sale.