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## PURITY ALUMINUM SETTING-UP SAMPLES

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

| Number     | Si       | Ag       | As    | B*   | Ba*  | Be       | Bi       | Ca       | Cd       | Ce    | Co       | Cr       | Cu       | Fe       |
|------------|----------|----------|-------|------|------|----------|----------|----------|----------|-------|----------|----------|----------|----------|
| AL RC11/06 | 0.025    | 0.010    | 0.003 | .    | 40   | 0.002    | 0.010    | 0.0023   | 0.0050   | 0.002 | 0.011    | 0.010    | 0.015    | 0.048    |
| PY 60548   | <0.01    | <0.001   | .     | .    | .    | <0.001   | <0.001   | <0.001   | <0.001   | .     | <0.001   | <0.001   | <0.01    | <0.01    |
| R A 10     | <0.0020  | <0.0005  | .     | <5   | .    | <0.0001  | <0.0020  | <0.0005  | <0.0010  | .     | <0.0010  | <0.0010  | <0.0010  | <0.0010  |
| AL RC10/02 | <0.002   | <0.0002  | .     | <2   | <1   | <0.0001  | <0.0002  | <0.0001  | <0.0002  | .     | <0.0002  | <0.0002  | <0.0002  | <0.001   |
| IARM 220G  | 0.0014   | <0.00001 | .     | 5.7  | 2.2  | <0.00001 | <0.00001 | 0.000010 | <0.00001 | .     | <0.00001 | 0.000030 | 0.0027   | 0.0021   |
| KUT Al 4N  | 0.0013   | .        | .     | 0.6  | .    | 0.00001  | 0.00001  | 0.00002  | 0.0001   | .     | .        | 0.00006  | 0.0025   | 0.0018   |
| V E10      | <0.0010  | <0.00005 | .     | <2   | <3   | <0.00002 | <0.0003  | <0.0001  | <0.0001  | .     | <0.0001  | <0.0001  | <0.0004  | <0.0005  |
| V E1/0     | <0.0005  | <0.00001 | .     | <2   | <1   | <0.00001 | <0.00005 | <0.0001  | <0.00002 | .     | <0.00001 | <0.00005 | <0.0004  | <0.0003  |
| V E0       | <0.00008 | <0.00001 | .     | <0.4 | <0.1 | <0.00001 | <0.00002 | <0.00004 | <0.00002 | .     | <0.00001 | <0.00003 | <0.00004 | <0.00005 |
| AA SQ-10   | .        | .        | .     | .    | .    | .        | .        | .        | .        | .     | .        | .        | .        | .        |
| C Fe 0     | .        | .        | .     | .    | .    | .        | .        | .        | .        | .     | .        | .        | .        | .        |

| Number     | Ga       | Hg    | In       | La    | Li       | Mg       | Mn       | Mo    | Na       | Ni       | P       | Pb       | Sb       | Sc    |
|------------|----------|-------|----------|-------|----------|----------|----------|-------|----------|----------|---------|----------|----------|-------|
| AL RC11/06 | <0.001   | 0.005 | 0.010    | 0.010 | <0.0001  | 0.018    | 0.016    | 0.067 | 0.002    | 0.010    | 0.0026  | 0.015    | 0.013    | 0.010 |
| PY 60548   | <0.0010  | .     | .        | .     | <0.001   | <0.001   | <0.001   | .     | <0.001   | <0.001   | .       | <0.001   | <0.001   | .     |
| R A 10     | <0.0010  | .     | .        | .     | <0.0010  | <0.0010  | <0.0010  | .     | <0.0001  | <0.0020  | .       | <0.0010  | <0.0020  | .     |
| AL RC10/02 | <0.0002  | .     | <0.0002  | .     | <0.0001  | <0.0003  | <0.0002  | .     | <0.0001  | 0.0002   | <0.0005 | <0.0003  | <0.0003  | .     |
| IARM 220G  | 0.00005  | .     | <0.00001 | .     | <0.00001 | 0.00087  | 0.00023  | .     | 0.000030 | 0.000060 | .       | 0.000015 | 0.000010 | .     |
| KUT Al 4N  | <0.0001  | .     | .        | .     | 0.00002  | 0.0015   | 0.0002   | .     | 0.0001   | 0.00004  | .       | 0.0001   | 0.0002   | .     |
| V E10      | <0.00002 | .     | <0.00002 | .     | <0.00002 | <0.0003  | <0.0001  | .     | <0.0001  | <0.0001  | .       | <0.0002  | <0.0003  | .     |
| V E1       | <0.00001 | .     | <0.00001 | .     | <0.00001 | <0.0003  | <0.00005 | .     | <0.0001  | <0.00005 | .       | <0.00005 | <0.0001  | .     |
| V E0       | .        | .     | <0.00001 | .     | <0.00001 | <0.00006 | <0.00002 | .     | <0.00002 | <0.00001 | .       | <0.00001 | <0.00002 | .     |
| AA SQ-10   | .        | .     | .        | .     | .        | .        | .        | .     | .        | .        | .       | .        | .        | .     |
| C Al 0     | .        | .     | .        | .     | .        | .        | .        | .     | .        | .        | .       | .        | .        | .     |

| Number     | Sn       | Sr       | Ti       | V        | W      | Zn       | Zr       | Units              |
|------------|----------|----------|----------|----------|--------|----------|----------|--------------------|
| AL RC11/06 | 0.015    | 0.006    | 0.016    | 0.018    | 0.0057 | 0.019    | 0.017    | 60 mm Ø x 25 mm    |
| PY 60548   | <0.001   | <0.001   | <0.001   | <0.001   | .      | <0.001   | <0.001   | 60 mm Ø x 40 mm    |
| R A 10     | <0.0010  | <0.0010  | <0.0010  | <0.0010  | .      | <0.0010  | <0.0010  | 50 mm Ø x 50 mm    |
| AL RC10/02 | <0.0002  | <0.0001  | 0.0004   | <0.0002  | .      | <0.0005  | <0.0002  | 60 mm Ø x 25 mm    |
| IARM 220G  | <0.00001 | <0.00001 | <0.002   | 0.00052  | .      | 0.0003   | 0.000088 | 57 mm Ø x 38 mm    |
| KUT Al 4N  | 0.00005  | 0.0001   | 0.00006  | 0.0001   | .      | 0.0003   | 0.00005  | 50 mm Ø x 35 mm    |
| V E10      | <0.0003  | <0.00005 | <0.0001  | <0.0002  | .      | <0.0003  | <0.0001  | 60 mm Ø x 40 mm    |
| V E1       | <0.00002 | <0.00005 | <0.0001  | <0.00003 | .      | <0.0002  | <0.00005 | 60 mm Ø x 40 mm    |
| V E0       | <0.00002 | <0.00002 | <0.00005 | <0.00003 | .      | <0.00005 | <0.00003 | 60 mm Ø x 40 mm    |
| AA SQ-10   | .        | .        | .        | .        | .      | .        | .        | 64 mm Ø x 37 mm    |
| C Al 0     | .        | .        | .        | .        | .      | .        | .        | 50 mm Ø x 30-50 mm |

Al: 99.96

many more elements

1199 Alloy, no analysis issued

no analysis issued

## POT METAL SETTING-UP SAMPLE typical analysis

| Number   | Base Metal | B    | Li   | Na   | Units           |
|----------|------------|------|------|------|-----------------|
| AA SQ-18 | P0506      | 0.02 | 0.02 | 0.02 | 64 mm Ø x 25 mm |

## SPECIALTY ALUMINUM SETTING-UP SAMPLES typical analysis

| Number   | As   | Bi  | Cu  | Fe  | Mg  | P     | Pb  | Sb   | Sc   | Si  | Ti   | Units           |
|----------|------|-----|-----|-----|-----|-------|-----|------|------|-----|------|-----------------|
| PY 10914 | .    | 0.7 | 0.3 | 0.2 | 1.2 | .     | 0.8 | .    | .    | 0.9 | 0.05 | 60 mm Ø x 41 mm |
| AA SQ-19 | 0.03 | .   | .   | .   | .   | 0.014 | .   | 0.02 | 0.20 | .   | .    | 64 mm Ø x 37 mm |

## ALUMINUM SETTING-UP SAMPLES, chart 1 of 2

typical analysis

| Number       | Si    | Cu     | Fe     | Mg     | Mn     | Ni     | Zn    | Be      | Ca      | Cr     | Na      | Pb      | Sb      | Sn     | Sr      | Ti     |
|--------------|-------|--------|--------|--------|--------|--------|-------|---------|---------|--------|---------|---------|---------|--------|---------|--------|
| C Al 4       | 18    | 0.01   | 5      | <0.001 | 0.03   | 1.9    | <0.01 | .       | 0.009   | .      | .       | <0.01   | .       | .      | .       | .      |
| R A 18       | 17.5  | 8      | 0.5    | 0.2    | 0.4    | 2.8    | 0.3   | .       | 0.03    | <0.005 | 0.01    | 0.3     | 0.3     | 0.2    | 0.1     | <0.001 |
| PY 9601      | 17.3  | 1.21   | 0.43   | 1.09   | 0.12   | 1.1    | 0.07  | .       | 0.0026  | .      | 0.0003  | 0.006   | 0.02    | 0.004  | 0.0058  | 0.08   |
| R A 16       | 15    | 4      | 0.2    | 0.2    | <0.001 | 2.7    | 0.3   | <0.001  | 0.002   | 0.003  | 0.003   | 0.4     | >0.2    | 0.1    | 0.03    | <0.001 |
| KUT ASC-1    | 14.0  | 6.0    | 1.6    | 1.2    | 0.4    | 0.6    | 0.5   | 0.003   | 0.02    | 0.2    | .       | 0.1     | 0.02    | 0.1    | 0.03    | 0.5    |
| R A 20       | 13.5  | 5.2    | 0.7    | 1      | 0.25   | 2.7    | 0.17  | <0.0001 | 0.005   | 0.09   | 0.008   | 0.1     | 0.008   | 0.06   | 0.004   | 0.05   |
| AL RC40/02   | 13.2  | 1.03   | 1.19   | 1.09   | .      | .      | 6.03  | .       | 0.0131  | .      | .       | 0.10    | .       | 0.21   | 0.14    | 0.20   |
| PY 9327      | 12.8  | 0.01   | 0.15   | 0.003  | 0.005  | 0.003  | 0.01  | .       | <0.0007 | .      | <0.0004 | 0.001   | <0.0003 | 0.0003 | .       | 0.006  |
| PY 9326      | 12.8  | 0.01   | 0.15   | 0.003  | 0.005  | 0.003  | 0.01  | .       | <0.0007 | .      | <0.0004 | 0.001   | <0.0003 | 0.0003 | .       | 0.006  |
| AL RC40/03   | 12.5  | 1.03   | 1.23   | 1.05   | .      | .      | 6.14  | .       | 0.0195  | .      | .       | 0.11    | .       | 0.21   | 0.14    | 0.20   |
| AA SQ-15     | 12.0  | 0.5    | 0.7    | 1.2    | 0.05   | 2.5    | .     | .       | .       | 0.05   | .       | .       | .       | .      | 0.02    | 0.1    |
| PY 9415      | 11.7  | 1.24   | 0.53   | 1      | 0.12   | 0.86   | 0.07  | .       | 0.0006  | .      | 0.00004 | 0.01    | 0.01    | 0.01   | 0.01    | 0.02   |
| PY 2150      | 10.6  | 0.6    | .      | 0.9    | 0.4    | 0.5    | 1.2   | .       | .       | 0.06   | .       | 0.8     | .       | 0.3    | 0.1     | 0.3    |
| V E3         | 10.0  | 4.0    | .      | .      | .      | 0.9    | .     | .       | 0.009   | .      | .       | 0.25    | 0.3     | .      | .       | .      |
| 164X ALSUS 8 | 9.5   | 0.75   | 0.25   | 0.9    | 0.45   | 0.12   | 0.25  | 0.015   | <0.001  | 0.06   | .       | 0.001   | 0.03    | 0.13   | 0.07    | 0.02   |
| C Al 5       | 8.8   | 1.4    | 0.7    | 1.9    | 0.08   | 1.3    | 0.24  | .       | .       | 0.08   | .       | 0.07    | .       | 0.07   | .       | 0.09   |
| PY 9313      | 8.8   | 0.003  | 0.1    | 0.32   | 0.005  | <0.002 | 0.01  | .       | 0.0009  | .      | <0.0004 | <0.0004 | <0.003  | 0.0004 | .       | 0.12   |
| PY 2003      | 8.6   | 3      | 0.71   | 0.22   | 0.23   | 0.05   | 0.13  | .       | 0.001   | .      | 0.0003  | 0.07    | .       | 0.012  | .       | 0.08   |
| PY 2001      | 8.5   | 2.9    | 0.7    | 0.22   | 0.23   | 0.05   | 0.13  | .       | 0.002   | .      | .       | 0.07    | .       | 0.012  | .       | 0.08   |
| PY 9520      | 6.6   | 0.012  | 0.1    | 0.34   | 0.005  | 0.003  | 0.017 | .       | 0.0044  | .      | 0.0005  | <0.0001 | <0.008  | 0.0004 | 0.052   | 0.12   |
| PY 9517      | 6.4   | 2.8    | 0.48   | 0.3    | 0.25   | 0.02   | 0.2   | .       | 0.009   | .      | 0.001   | 0.02    | 0.01    | 0.01   | 0.014   | 0.13   |
| AL RC41/01   | 5.9   | 5.1    | 0.4    | 0.09   | 0.5    | 0.02   | 1.3   | .       | 0.004   | 0.03   | .       | 0.02    | .       | 0.02   | 0.02    | 0.03   |
| PY 9809      | 5.5   | .      | 0.5    | .      | .      | 1.9    | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| PY 20001     | 5.4   | 3.1    | 0.48   | 0.23   | 0.22   | 0.03   | 0.14  | .       | 0.0033  | .      | 0.00004 | 0.01    | .       | 0.01   | .       | 0.07   |
| 58A AC19215b | 5.05  | 0.049  | 1.0    | 0.08   | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| AA SQ-16     | 4.0   | 10.0   | 1.0    | 0.3    | 0.2    | 0.2    | 0.2   | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| 58A AC19214b | 3.96  | 0.096  | 2.07   | 0.041  | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| 58A AC19213b | 2.88  | 0.21   | 3.15   | 0.017  | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| V P-2        | 2.2   | 0.5    | 1.8    | 2.8    | 1.5    | 0.03   | 0.54  | 0.002   | 0.018   | 0.34   | 0.002   | 0.06    | .       | 0.03   | <0.0002 | 0.24   |
| 58A AC19212b | 1.92  | 0.41   | 4.14   | 0.011  | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| AL RC60/02   | 1.34  | 0.29   | 0.49   | 0.92   | 1.1    | 0.10   | 0.10  | .       | .       | 0.20   | .       | .       | .       | .      | .       | 0.21   |
| R A 19       | 1.3   | 0.5    | 1.2    | 8.3    | 1.1    | 0.5    | 7.8   | 0.005   | 0.003   | 0.2    | <0.001  | <0.01   | .       | .      | <0.01   | 0.2    |
| C Al 2       | 1.205 | 0.0614 | 0.439  | 0.809  | 0.662  | .      | .     | .       | .       | 0.0036 | .       | .       | .       | .      | .       | 0.052  |
| KUT AMS-1    | 1.2   | 0.6    | 0.8    | 1.3    | 0.5    | 0.02   | 0.4   | 0.002   | 0.01    | 0.2    | 0.005   | 0.05    | 0.02    | 0.03   | .       | 0.2    |
| PY 2006      | 1.2   | 0.07   | 0.11   | 6.2    | 0.07   | 0.06   | 7.8   | 0.002   | 0.03    | 0.02   | 0.02    | 0.04    | .       | 0.06   | .       | 0.06   |
| AA SQ-12     | 1.1   | 4.8    | 0.6    | 0.15   | 1.1    | 0.25   | 0.20  | 0.005   | .       | .      | .       | 0.06    | .       | 0.06   | .       | .      |
| PY 2004      | 1.1   | 0.08   | 0.11   | 6.1    | 0.07   | 0.07   | 7.7   | 0.01    | 0.03    | .      | 0.03    | 0.04    | .       | 0.06   | .       | 0.06   |
| 58A AC19211b | 0.97  | 0.82   | (4.94) | .      | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .       | .      |
| 164X ALSUS 7 | 0.9   | 4      | 0.55   | 0.15   | 0.06   | 1.1    | 0.12  | 0.1     | <0.001  | 0.01   | .       | 0.11    | 0.12    | 0.01   | 0.003   | 0.3    |
| V E2         | 0.9   | 0.20   | 0.9    | 0.20   | 0.20   | 0.20   | 0.10  | 0.004   | 0.008   | 0.05   | 0.008   | 0.10    | .       | 0.20   | 0.11    | 0.20   |

| Number       | Si     | Cu     | Fe     | Mg     | Mn    | Ni     | Zn     | Be     | Ca     | Cr    | Na     | Pb     | Sb     | Sn   | Sr       | Ti       |
|--------------|--------|--------|--------|--------|-------|--------|--------|--------|--------|-------|--------|--------|--------|------|----------|----------|
| C Al 4       | .      | .      | 0.0008 | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | 75   | 50x30-50 | .        |
| R A 18       | <0.001 | <0.005 | 0.005  | <0.005 | 0.001 | 0.005  | <0.001 | <0.001 | <0.001 | .     | 0.01   | <0.005 | <0.005 | 70   | 50 x 50  | .        |
| PY 9601      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0086 | .      | .      | .    | 50 x 50  | .        |
| R A 16       | <0.001 | .      | 0.01   | <0.001 | 0.01  | <0.001 | 0.01   | <0.001 | <0.001 | .     | 0.005  | <0.001 | 0.002  | Rem  | 50 x 45  | last     |
| KUT ASC-1    | .      | .      | .      | 0.1    | 0.05  | .      | 0.04   | .      | .      | .     | .      | 0.02   | 0.01   | .    | 45 x 35  | .        |
| R A 20       | .      | .      | 0.0007 | .      | .     | 0.017  | .      | .      | .      | 0.001 | 0.02   | 0.1    | 0.09   | Rem  | 50 x 50  | Sc: 0.20 |
| AL RC40/02   | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 60 x 25  | .        |
| PY 9327      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0017 | .      | .      | .    | 50 x 50  | .        |
| PY 9326      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0017 | .      | .      | .    | 50 x 50  | .        |
| AL RC40/03   | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 60 x 25  | Sc: 0.20 |
| AA SQ-15     | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 64 x 37  | .        |
| PY 9415      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0058 | .      | .      | .    | 50 x 50  | .        |
| PY 2150      | 0.9    | .      | 0.02   | .      | 0.04  | .      | .      | 0.06   | .      | 0.007 | 0.04   | 0.02   | .      | .    | 60 x 40  | .        |
| V E3         | .      | .      | 0.01   | .      | .     | .      | .      | .      | 0.007  | .     | .      | .      | .      | .    | 60 x 40  | .        |
| 164X ALSUS 8 | 0.09   | .      | .      | .      | .     | 0.025  | .      | .      | .      | .     | .      | .      | 0.025  | .    | 50 x 25  | .        |
| C Al 5       | .      | .      | 0.0010 | .      | .     | .      | .      | .      | .      | .     | 0.0050 | .      | .      | 85.3 | 50x30-50 | .        |
| PY 9313      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0011 | .      | .      | .    | 50 x 50  | .        |
| PY 2003      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 50 x 50  | .        |
| PY 2001      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 50 x 50  | .        |
| PY 9520      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.0009 | .      | .      | .    | 50 x 50  | .        |
| PY 9517      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.002  | .      | .      | .    | 50 x 50  | .        |
| AL RC41/01   | .      | .      | .      | .      | 0.001 | .      | 0.01   | .      | .      | .     | .      | 0.008  | 0.005  | .    | 60 x 25  | .        |
| PY 9809      | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.01   | 0.12   | 0.14   | .    | 60 x 40  | .        |
| PY 20001     | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | 0.001  | .      | .      | .    | 50 x 50  | .        |
| 58A AC19215b | .      | .      | .      | .      | .     | 0.083  | .      | .      | .      | .     | .      | .      | .      | .    | 45 x 35  | .        |
| AA SQ-16     | .      | .      | .      | .      | .     | .      | .      | .      | .      | .     | .      | .      | .      | .    | 64 x 37  | .        |
| 58A AC19214b | .      | .      | .      | .      | .     | .      | 0.044  | .      | .      | .     | .      | .      | .      | .    | 45 x 35  | .        |
| 58A AC19213b | .      | .      | .      | .      | .     | .      | 0.024  | .      | .      | .     | .      | .      | .      | .    | 45 x 35  | .        |
| V P-2        | 0.0006 | .      | 0.002  | 0.022  | 0.004 | 0.007  | 0.037  | .      | 0.007  | .     | .      | 0.017  | 0.09   | .    | 52 x 40  | .        |
| 58A AC19212b | .      | .      | .      | .      | .     | .      | 0.011  | .      | .      | .     | .      | .      | .      | .    | 45 x 35  | .        |
| AL RC60/02   | .      | .      | .      | 0.10   | .     | .      | 0.011  | .      | .      | .     | 0.0045 | 0.11   | .      | .    | 60 x 25  | .        |
| R A 19       | 0.2    | .      | 0.002  | 0.2    | 0.02  | 0.3    | 0.08   | 0.1    | 0.01   | .     | <0.01  | 0.02   | 0.2    | .    | 50 x 50  | .        |
| C Al 2       | .      | .      | .      | .      | .     | .      | 0.010  | .      | .      | .     | .      | .      | .      | .    | 50x30-50 | .        |
| KUT AMS-1    | .      | .      | 0.004  | 0.01   | 0.03  | .      | 0.01   | .      | 0.01   | .     | .      | 0.03   | .      | .    | 45 x 35  | .        |
| PY 2006      | .      | .      | .      | 0.01   | .     | .      | 0.03   | .      | 0.01   | .     | .      | .      | 0.02   | .    | 50 x 50  | .        |
| AA SQ-12     | 0.05   | .      | .      | 0.06   | 0.20  | 0.01   | 0.03   | .      | .      | .     | .      | 0.10   | 0.15   | .    | 64 x 37  | Hg: 0.01 |
| PY 2004      | .      | .      | .      | 0.02   | 0.02  | .      | 0.03   | .      | 0.01   | .     | .      | .      | 0.02   | .    | 60 x 40  | .        |
| 58A AC19211b | .      | .      | .      | .      | .     | .      | 0.0073 | .      | .      | .     | .      | .      | .      | .    | 45 x 35  | .        |
| 164X ALSUS 7 | .      | .      | .      | .      | .     | 0.2    | .      | .      | .      | .     | .      | .      | 0.18   | .    | 50 x 25  | .        |
| V E2         | 0.22   | .      | .      | .      | .     | 0.04   | 0.06   | .      | .      | .     | .      | 0.11   | .      | .    | 60 x 40  | .        |

| Number | Ag | As | B | Bi | Cd | Co | Ga | In | Li | Mo | P | V | Zr | Al | Ø X H mm |
|--------|----|----|---|----|----|----|----|----|----|----|---|---|----|----|----------|
|--------|----|----|---|----|----|----|----|----|----|----|---|---|----|----|----------|

## ALUMINUM SETTING-UP SAMPLES, chart 2 of 2

typical analysis

| Number     | Si      | Cu     | Fe    | Mg     | Mn     | Ni      | Zn    | Be      | Ca     | Cr       | Na       | Pb       | Sb    | Sn     | Sr    | Ti    |
|------------|---------|--------|-------|--------|--------|---------|-------|---------|--------|----------|----------|----------|-------|--------|-------|-------|
| PY 9632    | 0.8     | 4.1    | 0.32  | 0.48   | 0.71   | .       | 0.033 | .       | .      | 0.0181   | .        | 0.0096   | .     | .      | .     | 0.022 |
| AA SQ-17   | 0.7     | 0.35   | 0.4   | 1.6    | 0.12   | 0.12    | 0.12  | 0.005   | .      | 0.25     | .        | 0.1      | .     | 0.1    | .     | 0.08  |
| BS 6061    | 0.55    | 0.29   | 0.19  | 0.81   | 0.010  | 0.004   | 0.04  | .       | .      | 0.050    | .        | 0.010    | .     | <0.001 | .     | 0.024 |
| AA SQ-13   | 0.5     | 0.04   | 0.6   | 0.04   | 0.04   | 0.04    | 0.04  | 0.005   | .      | 0.04     | .        | 0.04     | .     | 0.04   | .     | 0.04  |
| AL RC50/02 | 0.5     | 0.003  | 0.85  | 4.5    | 0.005  | 0.5     | 0.02  | 0.005   | 0.02   | 0.5      | 0.004    | .        | 0.05  | 0.3    | 0.02  | .     |
| PY 906     | 0.40    | 0.005  | 0.19  | 0.43   | 0.03   | 0.005   | 0.019 | .       | .      | <0.004   | <0.0001  | .        | .     | .      | .     | 0.011 |
| BS 2017    | 0.30    | 4.05   | 0.25  | 0.51   | 0.51   | 0.006   | 0.065 | .       | .      | 0.015    | .        | 0.010    | .     | 0.002  | .     | 0.020 |
| IARM 221C  | 0.2     | 0.6    | 0.2   | 4.8    | 0.4    | .       | 6.8   | 0.005   | 0.03   | 0.2      | .        | .        | 0.01  | .      | .     | 0.1   |
| IARM 221D  | 0.2     | 0.6    | 0.2   | 4.7    | 0.4    | .       | 6.7   | 0.005   | 0.03   | 0.2      | .        | .        | 0.02  | .      | .     | 0.1   |
| IARM 221B  | 0.2     | 0.6    | 0.2   | 4.8    | 0.4    | .       | 6.8   | 0.005   | 0.03   | 0.2      | .        | .        | 0.01  | .      | .     | 0.1   |
| AA SQ-11   | 0.2     | 0.5    | 0.2   | 3.0    | 0.4    | .       | 6.6   | 0.005   | 0.02   | 0.25     | .        | .        | .     | .      | .     | 0.10  |
| PY 9627    | 0.2     | 0.13   | 0.57  | 0.0004 | 1.06   | 0.01    | 0.057 | .       | .      | 0.0223   | <0.00002 | 0.0065   | .     | .      | .     | 0.022 |
| PY 310     | 0.16    | 0.0037 | 0.58  | 0.0003 | 0.0078 | 0.004   | 0.017 | .       | .      | 0.0028   | <0.00002 | 0.0019   | .     | .      | .     | 0.004 |
| PY 9325    | 0.11    | 0.0069 | 0.24  | 4.33   | 0.4    | .       | 0.014 | 0.0001  | 0.0003 | 0.0007   | <0.00002 | 0.007    | .     | .      | .     | 0.005 |
| PY 9324    | 0.11    | 0.0055 | 0.24  | 4.28   | 0.4    | .       | 0.014 | 0.0001  | 0.0003 | 0.0007   | <0.00002 | 0.007    | .     | .      | .     | 0.005 |
| BS 7075    | 0.10    | 1.40   | 0.13  | 2.26   | 0.03   | 0.005   | 5.6   | .       | .      | 0.19     | .        | 0.003    | .     | 0.001  | .     | 0.028 |
| AA SQ-14   | 0.1     | 0.5    | 0.1   | 0.9    | 0.4    | 0.4     | 1.2   | 0.002   | .      | .        | .        | 0.5      | .     | 0.1    | .     | 0.1   |
| PY 9630    | 0.1     | 0.062  | 0.46  | 0.0006 | 0.0123 | 0.008   | 0.054 | .       | .      | 0.0216   | 0.00003  | 0.0035   | .     | .      | .     | 0.018 |
| PY 325     | 0.1     | 0.003  | 0.27  | 0.74   | 0.005  | <0.001  | 0.021 | .       | 0.0011 | 0.011    | 0.0001   | 0.001    | .     | .      | .     | 0.01  |
| PY 9806-1  | 0.08    | 6.9    | 1.3   | 0.08   | 1.9    | .       | 0.05  | .       | .      | 0.3      | .        | .        | 0.4   | .      | .     | .     |
| BS 2024    | 0.08    | 4.7    | 0.20  | 1.30   | 0.57   | 0.006   | 0.07  | .       | .      | 0.03     | .        | 0.006    | .     | 0.001  | .     | 0.030 |
| PY 9614    | 0.08    | 0.043  | 0.18  | 2.28   | 0.055  | 0.01    | 0.051 | .       | 0.0009 | 0.21     | 0.00006  | 0.0057   | .     | .      | .     | 0.019 |
| C Al 3     | 0.08    | 0.004  | 0.17  | 2.8    | 0.215  | 0.002   | 0.007 | .       | .      | 0.001    | .        | 0.002    | .     | 0.002  | .     | 0.009 |
| PY 9321    | 0.07    | 4.2    | 0.013 | 0.27   | 0.02   | 0.01    | 0.04  | .       | .      | .        | <0.00002 | 0.001    | .     | .      | .     | 0.21  |
| BS 2011    | 0.052   | 5.2    | 0.32  | 0.016  | 0.010  | 0.004   | 0.024 | .       | .      | 0.001    | .        | 0.56     | .     | 0.001  | .     | 0.006 |
| PY 9401    | 0.04    | 1.58   | 0.12  | 2.29   | 0.01   | 0.007   | 5.84  | .       | .      | 0.006    | <0.00002 | .        | .     | .      | .     | 0.032 |
| AL RC20/02 | 0.029   | 6.0    | 0.061 | 0.29   | 0.24   | 1.45    | 0.24  | .       | .      | .        | .        | 0.41     | 0.20  | 0.051  | .     | .     |
| V E8       | 0.012   | 0.020  | 0.014 | 0.005  | 0.006  | 0.004   | 0.005 | 0.001   | 0.004  | 0.005    | .        | 0.003    | 0.010 | 0.003  | 0.002 | 0.004 |
| R Al Mn 12 | .       | .      | .     | .      | 12     | .       | .     | .       | .      | .        | .        | .        | .     | .      | .     | .     |
| R Al Ce    | Ce: 1.0 | .      | .     | 4.6    | .      | La: 0.4 | .     | Nd: 0.1 | .      | Pr: 0.07 | .        | Sm: 0.01 | .     | Y: 0.2 | .     | .     |
| V E5       | .       | .      | .     | 4.8    | 1.3    | .       | .     | .       | .      | .        | .        | .        | .     | .      | .     | .     |
| V E4       | .       | .      | .     | 1.1    | 0.7    | .       | 5.2   | .       | .      | 0.2      | .        | .        | .     | .      | .     | .     |
| V E13      | .       | .      | 4.8   | .      | .      | .       | .     | .       | .      | .        | .        | .        | .     | .      | .     | .     |

| Number | Si | Cu | Fe | Mg | Mn | Ni | Zn | Be | Ca | Cr | Na | Pb | Sb | Sn | Sr | Ti |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

| Number     | Ag     | B      | Ba    | Bi     | Cd      | Co      | Ga    | Hg       | In    | Li      | V     | Zr     | Al     | Ø X H mm |
|------------|--------|--------|-------|--------|---------|---------|-------|----------|-------|---------|-------|--------|--------|----------|
| PY 9632    | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | 0.033  | .      | 50 x 50  |
| AA SQ-17   | .      | .      | .     | 0.08   | .       | .       | 0.03  | .        | .     | .       | 0.03  | .      | .      | 64 x 37  |
| BS 6061    | .      | .      | .     | 0.006  | .       | .       | .     | .        | .     | .       | 0.01  | <0.002 | .      | 62 x 50  |
| AA SQ-13   | .      | .      | .     | 0.04   | 0.04    | 0.01    | 0.03  | .        | .     | .       | 0.04  | 0.4    | .      | 64 x 37  |
| AL RC50/02 | Ce:0.1 | 0.005  | 0.02  | La:0.1 | 0.2     | Mo:0.03 | 0.03  | P:0.005  | 0.05  | 0.003   | 0.01  | 0.01   | W:0.04 | 60 x 25  |
| PY 906     | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | .      | .      | 50 x 50  |
| BS 2017    | .      | .      | .     | 0.002  | .       | .       | .     | .        | .     | .       | 0.007 | 0.002  | .      | 62 x 50  |
| IARM 221C  | .      | .      | .     | .      | .       | 0.2     | 0.03  | .        | .     | .       | .     | .      | .      | 63 x 39  |
| IARM 221D  | .      | .      | .     | .      | .       | 0.2     | 0.03  | .        | .     | .       | .     | .      | .      | 63 x 39  |
| IARM 221B  | .      | .      | .     | .      | .       | 0.2     | 0.03  | .        | .     | .       | .     | .      | .      | 63 x 39  |
| AA SQ-11   | .      | .      | .     | .      | .       | 0.01    | 0.03  | .        | .     | .       | .     | .      | .      | 64 x 37  |
| PY 9627    | .      | .      | .     | .      | <0.0001 | .       | .     | 0.0001   | .     | 0.00002 | .     | 0.01   | .      | 50 x 50  |
| PY 310     | .      | .      | .     | .      | <0.0002 | .       | .     | <0.00002 | .     | 0.00004 | .     | .      | .      | 50 x 50  |
| PY 9325    | .      | .      | .     | .      | <0.0001 | .       | .     | .        | .     | .       | .     | .      | .      | 50 x 50  |
| PY 9324    | .      | .      | .     | .      | <0.0001 | .       | .     | .        | .     | .       | .     | .      | .      | 50 x 50  |
| BS 7075    | .      | .      | .     | <0.001 | .       | .       | .     | .        | .     | .       | 0.006 | 0.006  | .      | 62 x 50  |
| AA SQ-14   | .      | .      | .     | 0.5    | .       | .       | .     | .        | .     | .       | .     | .      | .      | 64 x 37  |
| PY 9630    | .      | .      | .     | .      | 0.0002  | .       | .     | 0.0001   | .     | 0.00007 | .     | .      | .      | 50 x 50  |
| PY 325     | .      | 0.0007 | .     | .      | .       | .       | .     | .        | .     | .       | 0.006 | 0.0005 | .      | 50 x 50  |
| PY 9806-1  | .      | .      | .     | 0.7    | .       | 0.9     | .     | .        | .     | .       | .     | .      | .      | 60 x 40  |
| BS 2024    | .      | .      | .     | 0.002  | .       | .       | .     | .        | .     | .       | 0.01  | 0.01   | .      | 62 x 50  |
| PY 9614    | .      | .      | .     | .      | 0.0001  | .       | .     | 0.0004   | .     | .       | .     | 0.02   | .      | 50 x 50  |
| C Al 3     | .      | .      | .     | .      | .       | .       | 0.011 | .        | .     | .       | .     | .      | 96     | 50x30-50 |
| PY 9321    | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | .      | .      | 50 x 50  |
| BS 2011    | .      | .      | .     | 0.44   | .       | .       | .     | .        | .     | .       | 0.007 | <0.002 | .      | 62 x 50  |
| PY 9401    | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | 0.13   | .      | 50 x 50  |
| AL RC20/02 | 0.73   | .      | .     | 0.38   | 0.036   | 0.44    | .     | .        | .     | .       | .     | 0.17   | .      | 60 x 25  |
| V E8       | 0.005  | .      | 0.004 | 0.005  | 0.003   | 0.003   | 0.006 | .        | 0.005 | .       | 0.003 | 0.004  | .      | 60 x 40  |
| R Al Mn 12 | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | 3      | .      | 50 x 50  |
| R Al Ce    | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | 0.02   | Rem    | 40 x 25  |
| V E5       | .      | .      | .     | 0.2    | .       | .       | .     | .        | .     | 0.01    | .     | .      | .      | 60 x 40  |
| V E4       | 0.20   | .      | .     | .      | 0.06    | 0.4     | .     | .        | .     | .       | .     | 0.2    | .      | 60 x 40  |
| V E13      | .      | .      | .     | .      | .       | .       | .     | .        | .     | .       | .     | .      | .      | 60 x 40  |

| Number | Ag | B | Ba | Bi | Cd | Co | Ga | Hg | In | Li | V | Zr | Al | Ø X H mm |
|--------|----|---|----|----|----|----|----|----|----|----|---|----|----|----------|
|--------|----|---|----|----|----|----|----|----|----|----|---|----|----|----------|

## CERAMIC SETTING-UP SAMPLE

| Number     | Al | C | Fe  | O  | Ti | W   | Units           |
|------------|----|---|-----|----|----|-----|-----------------|
| JK CE 650A | 34 | 6 | 2.1 | 30 | 21 | 0.8 | ~25 mm Ø x 8 mm |

## COBALT BASE SETTING-UP SAMPLES

typical analysis T = trace, such as "&lt;0.005" or "&lt;0.01"

~35 mm Ø x ~25-35 mm

| Number  | Al   | B    | C    | Cr   | Cu | Fe   | Mn   | Mo | Nb | Ni    | P     | S     | Si   | Ta   | Ti  | V     | W      | Zr |
|---------|------|------|------|------|----|------|------|----|----|-------|-------|-------|------|------|-----|-------|--------|----|
| R Co 16 | 0.3  | 0.02 | 0.2  | 0.04 | 1  | 21   | 0.03 | 3  | 2  | <0.01 | <0.01 | <0.01 | 0.2  | 0.05 | 0.6 | 0.7   | (0.01) | .  |
| R Co 15 | 0.05 | .    | 0.8  | 0.3  | 2  | 22   | .    | 8  | 2  | 0.1   | 0.03  | 0.06  | 0.9  | 0.08 | .   | 0.1   | 0.1    | .  |
| R Co 14 | 0.03 | 0.04 | 0.46 | 28.6 | .  | 0.87 | 0.35 | .  | .  | 10.1  | 0.003 | <0.01 | 0.64 | .    | .   | <0.01 | 6.8    | .  |
| R Co 11 | T    | .    | T    | T    | T  | T    | T    | T  | T  | T     | T     | .     | T    | .    | T   | T     | T      | T  |

## COPPER BASE SETTING-UP SAMPLES

typical analysis listed in mass %

| Number        | Cu     | Sn      | Zn      | Al     | Bi      | Cr      | Fe      | Mn      | Ni      | Pb      | Si      | Ag      | As      | Au     | Be     |
|---------------|--------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|
| <b>COPPER</b> |        |         |         |        |         |         |         |         |         |         |         |         |         |        |        |
| R C 11        | 99.98  | <0.0030 | <0.0005 | .      | <0.0010 | <0.0005 | <0.0005 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | .      | .      |
| BS SU Cu1     | 99.96  | 0.0001  | 0.0001  | 0.0001 | .       | 0.0001  | 0.0002  | 0.0001  | 0.0002  | 0.0001  | 0.0001  | 0.0001  | 0.0012  | 0.0001 | 0.0001 |
| R C 20        | 99.9   | .       | .       | .      | .       | .       | .       | .       | .       | .       | .       | .       | .       | .      | .      |
| R C 110       | Rem    | 0.006   | 0.006   | 0.002  | 0.004   | 0.004   | 0.005   | 0.004   | 0.002   | 0.003   | 0.003   | 0.005   | 0.001   | 0.002  | 0.0002 |
| R C 14        | 98.8   | <0.01   | <0.002  | <0.01  | <0.01   | 0.9     | 0.03    | <0.01   | <0.01   | <0.01   | <0.02   | .       | <0.01   | .      | .      |
| C Cu 2        | .      | 0.2100  | 0.1150  | .      | 0.0102  | 0.0113  | 0.0220  | 0.0112  | 1.0100  | 0.3710  | .       | 0.5800  | .       | 0.0046 | .      |
| C Cu 3        | .      | .       | .       | .      | .       | .       | .       | .       | .       | .       | .       | .       | .       | 0.0875 | .      |
| R C 38        | 67.96  | <0.01   | <0.01   | <0.01  | <0.01   | <0.01   | 0.72    | 0.93    | 29.9    | <0.01   | 0.01    | <0.01   | <0.01   | .      | .      |
| <b>BRASS</b>  |        |         |         |        |         |         |         |         |         |         |         |         |         |        |        |
| BS SU 464     | [60.3] | 0.73    | 38.8    | .      | .       | .       | 0.05    | .       | 0.007   | 0.04    | 0.004   | .       | 0.001   | .      | .      |
| R C 32        | 59.4   | 0.17    | 34.8    | 1.57   | <0.01   | <0.01   | 0.18    | 1.79    | 0.75    | 0.82    | 0.41    | .       | 0.001   | .      | .      |
| <b>BRONZE</b> |        |         |         |        |         |         |         |         |         |         |         |         |         |        |        |
| R C 12        | Rem    | 0.2     | 0.34    | 0.09   | 0.01    | 0.04    | 0.1     | 0.04    | 0.08    | 0.08    | 0.08    | 0.06    | 0.04    | 0.002  | <0.002 |
| 165X PB10SUS  | Rem    | 11      | 0.05    | 0.001  | 0.02    | 0.001   | 0.002   | <0.001  | 0.06    | 0.04    | 0.001   | .       | 0.02    | .      | .      |
| BS SU 932A    | 83.5   | 6.88    | 2.29    | .      | 0.003   | .       | 0.008   | 0.002   | 0.19    | 6.9     | 0.011   | 0.0198  | 0.047   | .      | .      |
| BS SU 932B    | 83.1   | 6.15    | 2.77    | .      | .       | .       | 0.05    | 0.0005  | 0.52    | 7.1     | 0.004   | 0.0006  | 0.016   | .      | .      |
| BS SU 936     | 82.5   | 7.0     | 0.25    | 0.001  | .       | .       | 0.003   | 0.001   | 0.36    | 9.6     | 0.004   | .       | 0.002   | .      | .      |
| BS SU 936A    | 82.5   | 7.0     | 0.24    | 0.0003 | .       | .       | 0.0007  | 0.0006  | 0.35    | 9.7     | 0.004   | .       | 0.004   | .      | .      |
| BS SU 932     | 82.1   | 7.28    | 2.80    | .      | 0.002   | .       | 0.03    | 0.002   | 0.19    | 7.4     | 0.015   | 0.0107  | 0.049   | .      | .      |
| BS SU 936B    | 81.0   | 7.5     | 0.54    | <0.005 | .       | <0.005  | 0.006   | <0.001  | 0.51    | 10.2    | 0.003   | .       | 0.01    | .      | .      |
| R C 40        | Rem    | 0.04    | <0.01   | 8      | .       | <0.01   | 1.6     | 5       | 2       | 0.05    | 0.02    | .       | <0.01   | .      | .      |
| 165X ALB1 SUS | 82     | 0.03    | 0.06    | 9.0    | 0.015   | 0.01    | 2.8     | 0.08    | 5.3     | 0.20    | 0.10    | .       | 0.005   | .      | .      |
| R C 33        | 81.42  | 0.03    | 0.18    | 10.0   | 0.004   | 0.005   | 3.8     | 0.3     | 4.1     | <0.01   | 0.08    | <0.001  | 0.02    | .      | <0.001 |
| R C 36        | 76.98  | 7.70    | 0.68    | <0.01  | 0.009   | <0.001  | 0.016   | <0.01   | 1.68    | 12.86   | <0.01   | 0.02    | 0.01    | .      | <0.001 |
| BS SU 863     | 62.7   | 0.031   | 27.1    | 4.87   | .       | 0.0005  | 2.3     | 2.85    | 0.06    | 0.040   | 0.025   | .       | <0.005  | .      | .      |

| Number        | Cu     | Sn     | Zn      | Al      | Bi      | Cr       | Fe      | Mn      | Ni      | Pb      | Si      | Ag     | As     | Au                | Be |
|---------------|--------|--------|---------|---------|---------|----------|---------|---------|---------|---------|---------|--------|--------|-------------------|----|
| <b>COPPER</b> |        |        |         |         |         |          |         |         |         |         |         |        |        |                   |    |
| R C 11        | .      | .      | <0.0001 | <0.0010 | <0.0001 | (0.0010) | <0.0005 | <0.0001 | <0.0010 | <0.0001 | <0.0010 | .      | .      | 40 mm Ø x 40 mm   |    |
| BS SU Cu1     | 0.0003 | 0.0001 | .       | 0.0001  | 0.0001  | 0.0300   | 0.0001  | 0.0003  | 0.0001  | .       | 0.0001  | .      | .      | 45 mm Ø x 40+ mm  |    |
| R C 20        | .      | .      | .       | .       | .       | 0.038    | .       | .       | .       | .       | .       | .      | .      | 40 mm Ø x 40 mm   |    |
| R C 110       | .      | .      | 0.003   | 0.003   | 0.003   | .        | 0.003   | 0.004   | 0.006   | 0.005   | 0.007   | 0.001  | <0.002 | 40 mm Ø x 40 mm   |    |
| R C 14        | .      | .      | .       | .       | .       | .        | .       | <0.01   | .       | .       | .       | .      | 0.05   | 40 mm Ø x 40 mm   |    |
| C Cu 2        | .      | .      | .       | .       | .       | .        | .       | .       | 0.2840  | .       | .       | .      | last   | 40 mm Ø x 30 mm   |    |
| C Cu 3        | .      | .      | 0.0096  | 0.0496  | .       | .        | 0.0229  | .       | 0.0475  | 0.0194  | .       | .      | last   | 40 mm Ø x 30 mm   |    |
| R C 38        | .      | .      | <0.01   | 0.01    | <0.01   | .        | <0.01   | <0.01   | 0.04    | .       | .       | .      | 0.07   | 40 mm Ø x 40 mm   |    |
| <b>BRASS</b>  |        |        |         |         |         |          |         |         |         |         |         |        |        |                   |    |
| BS SU 464     | 0.0006 | .      | .       | .       | .       | 0.0009   | 0.005   | 0.001   | 0.006   | .       | .       | .      | .      | 38 mm Ø x 40 mm   |    |
| R C 32        | .      | .      | 0.001   | <0.01   | .       | .        | .       | .       | .       | .       | .       | .      | .      | 40 mm Ø x 40 mm   |    |
| <b>BRONZE</b> |        |        |         |         |         |          |         |         |         |         |         |        |        |                   |    |
| R C 12        | .      | .      | 0.06    | 0.05    | 0.002   | .        | 0.10    | 0.05    | 0.02    | 0.02    | 0.04    | 0.005  | 0.002  | 40 mm Ø x 40 mm   |    |
| 165X PB10SUS  | .      | .      | .       | 0.01    | .       | .        | 0.002   | 0.03    | 0.15    | 0.01    | .       | .      | .      | ~42 mm Ø x ~18 mm |    |
| BS SU 932A    | 0.001  | .      | .       | .       | .       | .        | 0.007   | 0.053   | 0.15    | .       | .       | .      | .      | 38 mm Ø x 40+ mm  |    |
| BS SU 932B    | 0.002  | .      | .       | .       | .       | .        | 0.008   | 0.046   | 0.19    | .       | .       | .      | .      | 38 mm Ø x 40+ mm  |    |
| BS SU 936     | 0.0008 | .      | .       | 0.009   | .       | 0.003    | 0.07    | 0.007   | 0.10    | .       | .       | .      | .      | 50 mm Ø x 19 mm   |    |
| BS SU 936A    | 0.009  | .      | .       | 0.008   | .       | 0.0037   | 0.031   | 0.007   | 0.13    | .       | .       | .      | .      | 50 mm Ø x 19 mm   |    |
| BS SU 932     | 0.002  | .      | .       | .       | .       | .        | 0.008   | 0.051   | 0.13    | .       | .       | .      | .      | 38 mm Ø x 40+ mm  |    |
| BS SU 936B    | <0.05  | .      | 0.01    | .       | .       | 0.01     | 0.03    | 0.03    | 0.14    | .       | .       | .      | .      | 38 mm Ø x 40+ mm  |    |
| R C 40        | .      | .      | .       | .       | <0.01   | .        | <0.01   | .       | .       | .       | .       | .      | .      | 40 mm Ø x 40 mm   |    |
| 165X ALB1 SUS | .      | .      | .       | .       | 0.04    | .        | 0.015   | .       | .       | .       | .       | .      | .      | 40 mm Ø x 18 mm   |    |
| R C 33        | .      | .      | <0.005  | 0.04    | <0.001  | .        | <0.01   | 0.002   | <0.001  | .       | .       | <0.01  | <0.001 | 40 mm Ø x 40 mm   |    |
| R C 36        | .      | .      | 0.001   | <0.001  | <0.001  | .        | <0.01   | 0.03    | 0.25    | .       | .       | <0.001 | <0.001 | 40 mm Ø x 40 mm   |    |
| BS SU 863     | 0.002  | .      | .       | <0.005  | <0.005  | .        | 0.0081  | 0.0003  | 0.009   | .       | .       | .      | <0.005 | 38 mm Ø x 40+ mm  |    |

| Number | C | Ca | Cd | Co | Mg | O | P | S | Sb | Se | Te | Ti | Zr | Units |
|--------|---|----|----|----|----|---|---|---|----|----|----|----|----|-------|
|--------|---|----|----|----|----|---|---|---|----|----|----|----|----|-------|

## LEAD BASE SETTING-UP SAMPLES

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

| Number         | Sn      | Sb      | Ag      | As      | Bi     | Cd      | Cu      | Fe      | In      | Ni      | S       | Te      | Tl     | Zn      |
|----------------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|--------|---------|
| R Pb 15        | 33.2    | 2.0     | 2.7     | 0.03    | 0.13   | 0.01    | (2.0)   | <0.01   | <0.01   | (0.003) | .       | 0.01    | <0.001 | 0.14    |
| R Pb 17        | 3.24    | 10.9    | 2.01    | 0.15    | 0.11   | 0.002   | 1.38    | <0.001  | 0.0001  | 0.002   | <0.001  | 0.006   | <0.001 | <0.001  |
| 168X Pb SUS1   | 1.3     | 6.2     | 0.01    | 0.37    | 0.04   | 0.015   | 0.03    | 0.002   | 0.01    | 0.003   | 0.002   | 0.01    | 0.001  | 0.001   |
| R Pb 16        | 0.22    | 0.003   | 0.004   | <0.001  | 0.02   | <0.01   | <0.01   | <0.001  | <0.0005 | <0.0001 | <0.0005 | <0.001  | <0.001 | 0.001   |
| R Pb 13        | 0.17    | 0.18    | 0.04    | 0.04    | 0.23   | 0.03    | 0.11    | .       | <0.0001 | 0.002   | .       | 0.03    | 0.02   | 0.11    |
| 168X Pb SUS6   | 0.15    | 0.12    | 0.04    | 0.025   | 0.22   | 0.015   | 0.10    | <0.001  | 0.01    | 0.003   | 0.0005  | 0.0005  | 0.03   | 0.002   |
| R Pb 18        | 0.07    | 1.28    | 0.11    | 3.32    | >3.34  | 0.02    | 0.05    | <0.0001 | 0.02    | <0.001  | 0.003   | 0.02    | 0.019  | 0.0001  |
| R Pb 14        | 0.006   | 12.0    | 0.008   | 1.3     | 0.03   | 0.003   | 0.07    | <0.001  | 0.001   | <0.001  | 0.008   | <0.005  | <0.001 | <0.001  |
| R Pb 11        | <0.0005 | <0.0005 | <0.0010 | <0.0005 | 0.0010 | <0.0005 | <0.0005 | <0.0005 | .       | <0.0005 | .       | <0.0005 | .      | <0.0005 |
| 168X Pb SUSPM1 | .       | 0.0001  | 0.0040  | 0.0002  | 0.0100 | .       | 0.0005  | 0.0001  | .       | 0.0003  | 0.0002  | 0.0001  | 0.0010 | .       |
| R Pb PM        | .       | .       | 0.0100  | .       | .      | .       | .       | .       | .       | .       | .       | .       | .      | .       |

continued

R Pb: 40 mm Ø x 30 mm      168X: ~45-50 mm Ø x ~20-40 mm

| Number         | Al      | Au      | Ba     | Ca      | Co* | Cr* | Ge      | Hg | Ir* | Mg*  | Mn* | Na      | Pd     | Pt      | Rh*     | Ru* | Se     |
|----------------|---------|---------|--------|---------|-----|-----|---------|----|-----|------|-----|---------|--------|---------|---------|-----|--------|
| R Pb 15        | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .       | .      | .       | .       | .   | .      |
| R Pb 17        | <0.001  | (0.002) | .      | .       | 20  | <10 | (0.001) | .  | .   | .    | .   | .       | .      | (0.001) | (0.001) | .   | .      |
| 168X Pb SUS1   | .       | 0.001   | .      | .       | .   | .   | .       | .  | .   | .    | .   | .       | .      | .       | .       | .   | 0.01   |
| R Pb 16        | 0.002   | .       | (0.01) | 0.23    | <1  | <1  | .       | .  | .   | (10) | <1  | (0.004) | .      | .       | .       | .   | .      |
| R Pb 13        | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .       | .      | .       | .       | .   | 0.004  |
| 168X Pb SUS6   | .       | 0.001   | .      | .       | .   | .   | .       | .  | .   | .    | .   | .       | .      | .       | .       | .   | 0.003  |
| R Pb 18        | <0.0001 | .       | .      | <0.0001 | <1  | 1   | .       | .  | .   | .    | <10 | .       | .      | .       | .       | .   | (0.01) |
| R Pb 14        | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | <10 | .       | .      | .       | .       | .   | .      |
| R Pb 11        | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .       | .      | .       | .       | .   | .      |
| 168X Pb SUSPM1 | .       | 0.0035  | .      | .       | 0.5 | .   | .       | .  | 2   | .    | .   | .       | 0.0020 | 0.0055  | 12      | 1   | .      |
| R Pb PM        | .       | 0.0100  | .      | .       | .   | .   | .       | .  | 3   | .    | .   | .       | 0.0050 | 0.0050  | 50      | 50  | .      |

## MAGNESIUM BASE SETTING-UP SAMPLES

cast typical analysis listed in mass %

| Number       | Mg   | Al    | Cd     | Cu     | Fe     | Mn    | Ni       | Pb    | Si    | Sn    | Zn     | Zr     |
|--------------|------|-------|--------|--------|--------|-------|----------|-------|-------|-------|--------|--------|
| R Mg 11      | 99.9 | 0.022 | .      | <0.003 | <0.004 | 0.022 | <0.005   | .     | 0.037 | .     | <0.005 | .      |
| 166X MG SUS3 | Rem  | 0.4   | 0.005  | 0.07   | <0.005 | 0.8   | 0.02     | 0.04  | 0.01  | 0.005 | 0.09   | .      |
| 58A ST6310   | Rem  | 2.84  | .      | 0.017  | 0.0057 | 0.437 | (0.0018) | .     | 0.052 | .     | 0.865  | .      |
| 58A ST6420   | Rem  | 3.37  | 1.39   | 0.02   | 0.0048 | 0.079 | (0.0019) | .     | 0.026 | .     | 0.324  | .      |
| R Mg 13 *    | Rem  | 5.7   | 0.0001 | 0.006  | 0.001  | 0.2   | 0.001    | 0.001 | 0.01  | 0.001 | 0.8    | 0.004  |
| C Mg 2 *     | Rem  | 5.7   | 0.0001 | 0.006  | 0.001  | 0.2   | 0.001    | 0.001 | 0.01  | 0.001 | 0.8    | 0.004  |
| R Mg 16      | Rem  | .     | .      | 0.001  | .      | .     | .        | .     | .     | .     | .      | 0.06   |
| 58A ST7310   | Rem  | 0.004 | .      | 1.64   | 0.0098 | 0.967 | 0.002    | .     | 0.025 | .     | 7.2    | .      |
| R Mg 14      | Rem  | 8     | <0.01  | 0.3    | 0.01   | (0.5) | 0.05     | .     | 0.8   | 0.1   | 1      | <0.001 |

continued \* currently R Mg 13 and C Mg 2 have the same chemsistry

| Number       | Ag   | Be     | Ca | Ce    | Na    | Nd  | P      | Pr   | Sr | Ti     | Y   | Units                         |
|--------------|------|--------|----|-------|-------|-----|--------|------|----|--------|-----|-------------------------------|
| R Mg 11      | .    | .      | .  | .     | .     | .   | .      | .    | .  | .      | .   | 50 mm Ø x 40-50 mm            |
| 166X MG SUS3 | 0.02 | 0.0005 | .  | .     | .     | .   | <0.001 | .    | .  | <0.001 | .   | ~50 mm Ø x ~20 mm             |
| 58A ST6310   | .    | .      | .  | .     | .     | .   | .      | .    | .  | .      | .   | 45 mm Ø x 25 mm               |
| 58A ST6420   | .    | .      | .  | .     | .     | .   | .      | .    | .  | .      | .   | 45 mm Ø x 25 mm               |
| R Mg 13 *    | .    | .      | .  | .     | 0.001 | .   | .      | .    | .  | .      | .   | 50 mm Ø x 40-50 mm            |
| C Mg 2 *     | .    | .      | .  | .     | 0.001 | .   | .      | .    | .  | .      | .   | 50 mm Ø x 40-50 mm            |
| R Mg 16      | .    | .      | .  | 2.2   | .     | 1.6 | .      | 0.26 | .  | .      | 2.2 | 50 mm Ø x 40 mm               |
| 58A ST7310   | .    | .      | .  | .     | .     | .   | .      | .    | .  | .      | .   | 45 mm Ø x 25 mm               |
| R Mg 14      | .    | .      | .  | <0.01 | .     | .   | .      | .    | .  | .      | .   | 50 mm Ø x 50 mm last of stock |

## NICKEL BASE SETTING-UP SAMPLES

typical analysis

| Number     | Ni     | Al     | C      | Co     | Cr    | Cu    | Fe    | Mn    | Mo    | Nb    | P       | S       | Si     | Ti    | W    |
|------------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|---------|---------|--------|-------|------|
| R Ni 10    | >99.90 | <0.001 | <0.001 | <0.001 | .     | <0.01 | <0.03 | .     | .     | .     | .       | <0.005  | <0.001 | .     | .    |
| R Ni 11    | 99.4   | <0.01  | 0.02   | 0.05   | <0.01 | .     | 0.06  | 0.27  | .     | .     | <0.01   | <0.01   | 0.18   | <0.01 | .    |
| PV 202/1   | .      | .      | 0.085  | .      | 14.48 | 0.253 | 7.48  | 0.217 | .     | .     | (<0.01) | (<0.01) | 0.472  | .     | .    |
| BS SU 750  | 71.0   | 0.92   | 0.05   | 0.11   | 15.3  | 0.027 | 8.22  | 0.155 | 0.147 | 1.05  | 0.006   | 0.002   | 0.148  | 2.56  | <0.5 |
| R Ni 17    | Rem    | 0.01   | 0.20   | 0.2    | 0.8   | 0.3   | 18    | 0.25  | 0.2   | 0.2   | <0.01   | <0.01   | 0.32   | 0.3   | 10   |
| R Ni 12    | 65.0   | 3.2    | 0.12   | <0.01  | 0.12  | 29.0  | 1.0   | 0.74  | .     | .     | <0.01   | <0.01   | 0.17   | 0.51  | .    |
| BS SU H230 | 60     | 0.26   | 0.087  | 0.26   | 22.4  | 0.08  | 1.2   | 0.47  | 1.44  | 0.016 | 0.0004  | 0.0002  | 0.42   | 0.016 | 12.7 |
| R Ni 13    | 55.7   | 0.32   | <0.01  | 0.14   | 16.0  | 0.01  | 6.1   | 0.5   | 17.5  | 0.01  | <0.002  | <0.001  | .      | <0.02 | 3.4  |
| R Ni 15    | 52.6   | 0.5    | 0.02   | 0.2    | 18.8  | 0.06  | 18.2  | 0.11  | 2.9   | 5.2   | <0.01   | <0.01   | 0.11   | 0.9   | 0.2  |
| R Ni 14    | 50.0   | 0.6    | 0.06   | 19.9   | 19.89 | 0.018 | 0.54  | 0.44  | 6.25  | 0.05  | <0.01   | <0.01   | 0.10   | 2.03  | 0.09 |
| PV 204/1   | 39.46  | .      | 0.017  | .      | 22.49 | 1.93  | 30.35 | 0.773 | 3.27  | .     | 0.014   | (<0.01) | 0.268  | .     | .    |

| Number     | As     | B     | Mg    | N     | O      | Ta     | V     | Zr    | Units            |
|------------|--------|-------|-------|-------|--------|--------|-------|-------|------------------|
| R Ni 10    | .      | .     | .     | .     | .      | .      | .     | .     | 40 mm Ø x 40 mm  |
| R Ni 11    | .      | .     | 0.02  | .     | .      | .      | .     | .     | 40 mm Ø x 40 mm  |
| PV 202/1   | .      | .     | .     | .     | .      | .      | .     | .     | 40 mm Ø x 25 mm  |
| BS SU 750  | <0.005 | 0.005 | 0.003 | 0.005 | <0.05  | <0.05  | 0.04  | 0.035 | 38 mm Ø x 40+ mm |
| R Ni 17    | .      | 0.02  | .     | .     | .      | 0.02   | 0.06  | .     | 40 mm Ø x 30 mm  |
| R Ni 12    | .      | .     | .     | .     | .      | <0.01  | .     | .     | 40 mm Ø x 40 mm  |
| BS SU H230 | 0.0040 | 0.010 | .     | 0.059 | 0.0003 | 0.079  | 0.005 | 0.004 | 38 mm Ø x 40+ mm |
| R Ni 13    | .      | 0.007 | .     | .     | .      | <0.003 | 0.18  | .     | 40 mm Ø x 40 mm  |
| R Ni 15    | .      | 0.003 | .     | .     | .      | <0.01  | 0.09  | 0.02  | 40 mm Ø x 40 mm  |
| R Ni 14    | .      | 0.003 | .     | .     | .      | .      | <0.01 | <0.01 | 40 mm Ø x 40 mm  |
| PV 204/1   | .      | .     | .     | .     | .      | .      | .     | .     | 40 mm Ø x 25 mm  |

## NICKEL-PHOSPHORUS LAYER ON STEEL

| Number       | Ni  | P%  | Pb%  | Layer | Intended For | Unit                       |
|--------------|-----|-----|------|-------|--------------|----------------------------|
| JK SUS NiP-1 | Rem | 5.8 | 0.26 | 8.7µm | GD-OES       | plate 102mm x 68mm x 0.5mm |

## ROHS/WEEE DIRECTIVE XRF DISCS

available individually or in SET/3

typical analysis

40 mm Ø x 5 mm

| Number      | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | Br    | CaO  | CdO   | Cl  | Cr <sub>2</sub> O <sub>3</sub> | MgO | Na <sub>2</sub> O | PbO   | Sb <sub>2</sub> O <sub>3</sub> | SiO <sub>2</sub> |
|-------------|--------------------------------|-------------------------------|-------|------|-------|-----|--------------------------------|-----|-------------------|-------|--------------------------------|------------------|
| BR ROHS 1/3 | 7.0                            | 5.5                           | 0     | 10.0 | 0     | 0   | 0                              | 6.5 | 17.0              | 0     | 1.0                            | 53.0             |
| BR ROHS 2/3 | 7.0                            | 4.536                         | 0.100 | 10.0 | 0.011 | 0.5 | 0.146                          | 6.5 | 17.0              | 0.107 | 1.1                            | 53.0             |
| BR ROHS 3/3 | 7.0                            | 2.118                         | 0.5   | 10.0 | 0.114 | 1.0 | 0.73                           | 6.5 | 17.0              | 0.538 | 1.5                            | 53.0             |

## TIN BASE SETTING-UP SAMPLES

typical analysis

| Number         | Sn     | As      | Bi      | Cu      | Fe      | Pb      | Sb      | Ag      | Al      | Au    | Cd      | Co     | Ge  |
|----------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|-------|---------|--------|-----|
| R Sn 10        | >99.99 | <0.0010 | <0.0005 | <0.0005 | <0.0005 | <0.0010 | <0.0020 | <0.0001 | <0.0005 | .     | <0.0001 | .      | .   |
| R Sn 11        | 99.9   | <0.001  | <0.001  | 0.003   | 0.003   | <0.001  | 0.012   | .       | .       | .     | .       | .      | .   |
| 1611X Sn SUS 6 | .      | 0.3     | 0.08    | 0.4     | 0.03    | 1.0     | 0.15    | 0.1     | .       | 0.001 | 0.01    | 0.02   | .   |
| 1611X SAC305   | .      | .       | .       | 0.47    | .       | 0.11    | .       | 2.9     | .       | .     | 0.35    | .      | .   |
| R Sn 21        | Rem    | 0.006   | 0.1     | 0.4     | 0.1     | 0.09    | 0.06    | 10      | 0.02    | .     | <0.001  | 0.1    | 0.1 |
| R Sn 13        | 84.7   | <0.01   | 0.05    | 0.2     | 0.13    | 1.3     | 13.4    | <0.01   | 0.04    | .     | 0.02    | 0.05   | .   |
| 1611X Sn SUS 7 | .      | 2.1     | 2.3     | 11      | (0.06)  | 0.35    | 9       | 0.3     | <0.001  | 0.005 | 0.03    | 0.005  | .   |
| R Sn 15        | Rem    | .       | 0.3     | 7.0     | 0.04    | .       | 8       | 2.5     | 0.04    | 0.01  | .       | .      | 0.8 |
| R Sn 20        | Rem    | <0.001  | 10      | <0.01   | <0.01   | 0.07    | 0.02    | <0.001  | <0.001  | .     | <0.001  | <0.001 | .   |
| R Sn 12        | Rem    | 0.32    | 0.11    | 0.97    | <0.01   | 35      | 1.6     | 0.20    | <0.001  | .     | 0.17    | 0.001  | .   |
| R Sn 14        | 45     | .       | 40      | .       | .       | .       | .       | .       | .       | .     | 12      | .      | .   |

| Number         | In      | Ni      | P       | Pt | S       | Se    | Te    | Tl      | Zn      | Units             |
|----------------|---------|---------|---------|----|---------|-------|-------|---------|---------|-------------------|
| R Sn 10        | <0.0005 | <0.0005 | <0.0003 | .  | <0.0003 | .     | .     | <0.0005 | <0.0001 | 40 mm Ø x 40 mm   |
| R Sn 11        | .       | .       | .       | .  | .       | .     | .     | .       | <0.002  | 40 mm Ø x 40 mm   |
| 1611X Sn SUS 6 | 0.005   | 0.03    | (0.005) | .  | (0.001) | 0.003 | 0.001 | 0.005   | 0.005   | 50 mm Ø x 20 mm   |
| 1611X SAC305   | .       | .       | .       | .  | .       | .     | .     | .       | .       | 40 mm Ø x 6-10 mm |
| R Sn 21        | 0.08    | 0.4     | <0.001  | .  | .       | .     | .     | <0.001  | 0.3     | 40 mm Ø x 40 mm   |
| R Sn 13        | <0.01   | 0.23    | .       | .  | .       | .     | .     | <0.001  | 0.02    | 40 mm Ø x 40 mm   |
| 1611X Sn SUS 7 | 0.03    | 0.05    | .       | .  | .       | 0.005 | 0.003 | 0.03    | 0.005   | 50 mm Ø x 20 mm   |
| R Sn 15        | .       | 0.03    | .       | .  | .       | .     | .     | .       | 0.06    | 40 mm Ø x 40 mm   |
| R Sn 20        | 7.7     | <0.01   | <0.01   | .  | .       | .     | .     | <0.001  | 25      | 40 mm Ø x 40 mm   |
| R Sn 12        | 0.12    | <0.001  | .       | .  | .       | .     | .     | 0.02    | 0.02    | 40 mm Ø x 40 mm   |
| R Sn 14        | .       | .       | 0.05    | .  | .       | .     | .     | .       | .       | 40 mm Ø x 40 mm   |

**TITANIUM BASE SETTING-UP SAMPLES**

| typical analysis |      |    |       |      |    |     |    |   |    | 40 mm Ø x 40 mm |  |  |  |  |  |  |  |  |  |
|------------------|------|----|-------|------|----|-----|----|---|----|-----------------|--|--|--|--|--|--|--|--|--|
| Number           | Ti   | Al | C     | Fe   | Mo | Pd  | Sn | V | Zr |                 |  |  |  |  |  |  |  |  |  |
| R Ti 11          | 99.9 | .  | 0.01  | 0.05 | .  | .   | .  | . | .  |                 |  |  |  |  |  |  |  |  |  |
| R Ti 12          | Rem. | .  | 0.02  | 0.2  | .  | 0.2 | .  | . | .  |                 |  |  |  |  |  |  |  |  |  |
| R Ti 13          | Rem. | 6  | <0.01 | 0.2  | .  | .   | .  | . | 4  |                 |  |  |  |  |  |  |  |  |  |
| R Ti 14          | Rem. | 6  | <0.01 | 0.03 | 2  | .   | 2  | . | 4  |                 |  |  |  |  |  |  |  |  |  |

**ZINC BASE SETTING-UP SAMPLES**

| typical analysis |       |        |         |       |         |         |         |        |         | 169X, 1690X: 50 mm Ø x 20 mm |         |         |        |         |         |        |      |  |  | C: 40 mm Ø x 30-40 mm |  |  |  |  |  |  |  |  |  | R: 40 mm Ø x 30 mm |  |  |  |  |  |  |  |      |  |
|------------------|-------|--------|---------|-------|---------|---------|---------|--------|---------|------------------------------|---------|---------|--------|---------|---------|--------|------|--|--|-----------------------|--|--|--|--|--|--|--|--|--|--------------------|--|--|--|--|--|--|--|------|--|
| Number           | Zn    | Ag     | Al      | Bi    | Cd      | Cu      | Fe      | In     | Mg      | Mn                           | Ni      | Pb      | Sb     | Sn      | Ti      | Tl     |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 14          | 87    | <0.001 | 9.8     | .     | 0.02    | 2.8     | 0.06    | <0.005 | 0.10    | 0.02                         | <0.005  | 0.05    | <0.001 | 0.04    | 0.03    | <0.005 |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| C Zn 3/4         | .     | .      | 3.93    | .     | 0.001   | 0.071   | 0.016   | .      | 0.055   | .                            | .       | 0.0056  | .      | 0.001   | .       | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| C Zn 3/3         | .     | .      | 3.92    | .     | 0.0001  | 0.064   | 0.0106  | .      | 0.046   | .                            | .       | 0.0054  | .      | 0.0010  | .       | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  | last |  |
| C Zn 4/8         | .     | .      | 0.93    | .     | 0.10    | 0.51    | .       | .      | .       | .                            | .       | 1.26    | .      | 0.99    | .       | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| 169X ZnSUS1 *    | .     | 0.04   | 0.35    | 0.005 | 0.3     | 0.35    | 0.05    | 0.25   | 0.002   | 0.001                        | 0.06    | 0.6     | 0.2    | 0.3     | 0.001   | 0.06   | last |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 13          | 97.5  | 0.05   | 0.3     | .     | 0.3     | 0.3     | 0.009   | 0.26   | <0.01   | <0.01                        | 0.05    | 0.6     | 0.2    | 0.3     | <0.01   | 0.03   |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 15          | Rem   | .      | 0.20    | .     | 0.5     | 0.23    | 0.2     | .      | .       | 0.01                         | .       | 0.14    | 0.03   | 0.05    | .       | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 16          | .     | .      | 0.23    | .     | 0.049   | 0.011   | 0.092   | .      | .       | .                            | .       | 0.23    | .      | 0.009   | .       | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 12          | 99.9  | 0.004  | 0.006   | 0.006 | 0.008   | 0.009   | 0.024   | 0.009  | 0.005   | 0.002                        | 0.008   | 0.009   | (0.01) | 0.007   | 0.006   | 0.007  |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |
| R Zn 11          | 99.99 | .      | <0.0005 | .     | <0.0005 | <0.0005 | <0.0005 | .      | <0.0005 | <0.0005                      | <0.0005 | <0.0005 | .      | <0.0005 | <0.0010 | .      |      |  |  |                       |  |  |  |  |  |  |  |  |  |                    |  |  |  |  |  |  |  |      |  |

\* 169X ZN SUS1 also contains Cr: 0.001 and Si: 0.003

**RM ZINC BINARY**

cast typical analysis listed in mass %

| Number   | Mn   | Sb   | Zn        | Size            |
|----------|------|------|-----------|-----------------|
| 41X ZMn1 | 1.06 | .    | Remainder | 50 mm Ø x 20 mm |
| 41X ZSb1 | .    | 1.03 | Remainder | 40 mm Ø x 15 mm |
| 41X ZSb4 | .    | 3.78 | Remainder | 40 mm Ø x 15 mm |
| 41X ZSb8 | .    | 7.68 | Remainder | 40 mm Ø x 15 mm |



CAST IRON SETTING-UP SAMPLES

chill cast typical analysis

| Number       | C     | Mn    | P     | S     | Si   | Cu    | Ni    | Cr    | Mo     | Al     | Nb      | Sn     | Ti     | V     | W     | Mg     | Ce       |
|--------------|-------|-------|-------|-------|------|-------|-------|-------|--------|--------|---------|--------|--------|-------|-------|--------|----------|
| C Fe 5       | 4.12  | 0.2   | 0.09  | 0.03  | 0.36 | 0.08  | 0.08  | 0.11  | 0.11   | 0.05   | <0.0015 | 0.003  | 0.02   | 0.13  | .     | .      | .        |
| NCS AH11355a | 4.07  | 0.220 | 0.054 | 0.041 | 1.45 | 0.266 | 1.46  | 2.12  | 0.724  | 0.073  | 0.022   | 0.146  | 0.042  | 0.090 | 0.039 | 0.0024 | (0.0006) |
| SUS 5/56     | 3.8   | 0.59  | .     | 0.018 | 2.0  | 0.003 | 1.00  | 0.01  | .      | 0.04   | .       | 0.07   | 0.009  | 0.52  | .     | 0.10   | 0.03     |
| C Fe 7       | (3.7) | 0.07  | 0.015 | 0.005 | 3.15 | 0.14  | 0.05  | 0.03  | <0.01  | 0.015  | .       | 0.003  | 0.010  | 0.018 | .     | 0.035  | .        |
| SUS 2/48     | 3.6   | 0.73  | 0.17  | 0.12  | 1.8  | 0.23  | 0.49  | 0.07  | 0.11   | 0.01   | .       | 0.10   | 0.06   | 0.53  | .     | .      | .        |
| SUS GGG      | 3.45  | 0.18  | 0.02  | 0.005 | 2.35 | 0.088 | 0.022 | 0.045 | .      | 0.004  | .       | .      | .      | .     | .     | 0.035  | .        |
| R G 13+Se    | 3.4   | 1.0   | 0.6   | 0.06  | 2.1  | 0.7   | 0.5   | 1.0   | 0.3    | 0.05   | <0.01   | 0.3    | 0.03   | 0.3   | 0.01  | .      | .        |
| SUS 3/21     | 3.4   | 0.90  | 1.0   | 0.10  | 2.2  | 0.01  | 0.01  | 0.25  | <0.005 | <0.005 | .       | <0.005 | 0.11   | 0.27  | .     | .      | .        |
| C Fe 6       | (3.3) | 0.7   | 0.04  | 0.03  | 2.6  | 0.8   | 0.03  | 0.03  | <0.01  | 0.004  | .       | 0.002  | 0.02   | 0.007 | .     | .      | .        |
| R G 14       | 3.3   | 0.2   | 0.06  | <0.01 | 2.0  | 0.06  | 1.1   | 1.0   | .      | 0.03   | .       | 0.2    | <0.01  | 0.1   | .     | 0.04   | 0.02     |
| R G 16       | 3.3   | 0.2   | 0.3   | <0.01 | 2.0  | 0.06  | 1.1   | 1.0   | .      | 0.03   | .       | 0.2    | <0.01  | 0.1   | .     | 0.04   | 0.02     |
| BS SU CCD    | 3.28  | 0.59  | 0.020 | 0.008 | 2.53 | 0.050 | 0.020 | 0.030 | 0.002  | 0.015  | .       | 0.002  | 0.006  | 0.014 | .     | 0.032  | .        |
| C Fe 8       | 3.2   | 0.42  | 0.025 | 0.02  | 1.3  | 0.062 | 0.11  | 0.05  | <0.01  | 0.05   | <0.001  | 0.01   | 0.05   | 0.04  | <0.01 | .      | .        |
| SUS 4/28     | 3.2   | 0.15  | .     | 0.02  | 2.7  | 0.79  | 0.11  | 0.08  | .      | 0.02   | .       | <0.005 | 0.06   | 0.50  | .     | 0.03   | .        |
| R G 13       | 3.1   | 0.9   | 0.4   | 0.05  | 2.1  | 0.5   | 0.5   | 1.1   | 0.3    | 0.04   | .       | 0.3    | 0.01   | 0.3   | 0.01  | .      | .        |
| SUS 1/19     | 3.1   | 0.44  | 0.05  | 0.07  | 2.8  | 0.47  | 0.19  | 0.50  | 0.33   | 0.02   | .       | 0.05   | <0.005 | 0.04  | .     | .      | .        |
| R N 15       | 2.9   | 1.6   | 0.008 | 0.07  | <0.1 | .     | 2.3   | 0.05  | .      | 0.14   | .       | 0.05   | 0.06   | 0.01  | .     | .      | .        |
| CKD T        | 2.8   | 1.3   | 0.15  | 0.18  | 1.6  | 0.3   | 0.2   | 0.1   | 0.2    | .      | .       | 0.04   | 0.05   | 0.05  | .     | .      | .        |
| SUS 7/8      | 2.8   | 0.29  | 0.09  | 0.18  | 0.94 | 0.21  | .     | 0.07  | .      | 0.02   | .       | <0.01  | .      | 0.06  | .     | .      | .        |
| BS DNR-2     | 2.72  | 0.85  | 0.031 | 0.006 | 2.52 | 0.02  | 18.9  | 1.62  | 0.007  | <0.1   | <0.05   | <0.1   | <0.05  | <0.1  | .     | 0.05   | .        |
| BS DNR-1     | 2.52  | 0.88  | 0.031 | 0.005 | 2.79 | 0.016 | 18.6  | 1.56  | 0.006  | <0.1   | <0.1    | <0.1   | <0.1   | <0.1  | .     | 0.04   | .        |
| SUS 6/6      | 2.5   | 0.65  | 0.05  | 0.12  | 1.8  | 0.02  | .     | 0.10  | .      | <0.005 | .       | 0.05   | 0.02   | 0.02  | .     | .      | .        |
| NCS AH11354a | 2.25  | 1.17  | 0.375 | 0.095 | 2.66 | 1.65  | 0.623 | 0.493 | 0.253  | 0.072  | 0.117   | 0.046  | 0.184  | 0.518 | 0.434 | 0.0056 | (0.0033) |
| R G 15       | 2.0   | 0.7   | 0.3   | 0.1   | 4.2  | <0.01 | 0.5   | 0.5   | 0.8    | 0.06   | .       | 0.1    | .      | .     | .     | .      | .        |
| C Fe 4       | 1.53  | 0.40  | 0.012 | 0.012 | 0.31 | 0.06  | 0.27  | 11.4  | 0.75   | <0.005 | <0.02   | <0.02  | <0.02  | 0.90  | <0.02 | .      | .        |

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

| Number       | As     | B      | Bi     | Ca     | Co    | La         | N     | Pb     | Sb | Se    | Te | Zn   | Zr | Units                 |
|--------------|--------|--------|--------|--------|-------|------------|-------|--------|----|-------|----|------|----|-----------------------|
| C Fe 5       | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 40 mm Ø x 30 mm       |
| NCS AH11355a | .      | 0.013  | .      | .      | 0.027 | (0.0003)   | .     | .      | .  | .     | .  | .    | .  | 31 mm Ø x 24 mm       |
| SUS 5/56     | 0.001  | .      | .      | .      | .     | .          | .     | 0.02   | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| C Fe 7       | .      | .      | .      | .      | .     | .          | .     | <0.001 | .  | .     | .  | .    | .  | 40 mm Ø x 49 mm last  |
| SUS 2/48     | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| SUS GGG      | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 40 mm Ø x 25 mm       |
| R G 13+Se    | .      | .      | .      | .      | <0.01 | .          | .     | <0.001 | .  | ~0.02 | .  | .    | .  | ~40 mm Ø x 20 mm      |
| SUS 3/21     | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| C Fe 6       | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 40 mm Ø x 50 mm last  |
| R G 14       | .      | 0.02   | .      | .      | .     | <0.01      | .     | .      | .  | .     | .  | .    | .  | ~40 mm Ø x 20 mm      |
| R G 16       | .      | 0.04   | .      | .      | .     | <0.01      | .     | .      | .  | .     | .  | .    | .  | 40 mm Ø x 20 mm       |
| BS SU CCD    | 0.001  | .      | .      | 0.0027 | 0.009 | .          | .     | .      | .  | .     | .  | .    | .  | 33 mm Ø x 17 mm last  |
| C Fe 8       | .      | 0.03   | .      | .      | 0.005 | .          | .     | .      | .  | 0.003 | .  | .    | .  | 38 mm Ø x 25 mm       |
| SUS 4/28     | <0.005 | .      | .      | .      | .     | .          | .     | <0.005 | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| R G 13       | .      | .      | .      | .      | <0.01 | .          | .     | .      | .  | .     | .  | .    | .  | 40 mm Ø x 20 mm       |
| SUS 1/19     | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| R N 15       | .      | 0.01   | .      | .      | .     | .          | .     | 0.03   | .  | .     | .  | .    | .  | 35-40 mm Ø x 40 mm    |
| CKD T        | 0.03   | .      | .      | .      | 0.05  | .          | .     | 0.1    | .  | 0.02  | .  | 0.01 | .  | 39 mm x 39 mm x 20 mm |
| SUS 7/8      | .      | 0.004  | <0.001 | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| BS DNR-2     | .      | .      | .      | .      | <0.1  | Fe: [73.3] | .     | <0.1   | .  | .     | .  | .    | .  | 33 mm Ø x 21 mm       |
| BS DNR-1     | .      | .      | .      | .      | <0.1  | Fe: [73.5] | .     | <0.1   | .  | .     | .  | .    | .  | 33 mm Ø x 21 mm       |
| SUS 6/6      | .      | <0.001 | 0.01   | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | 60 mm x 35 mm x 18 mm |
| NCS AH11354a | .      | 0.055  | .      | .      | 0.094 | (0.0013)   | .     | .      | .  | .     | .  | .    | .  | 31 mm Ø x 24 mm       |
| R G 15       | .      | .      | .      | .      | .     | .          | .     | .      | .  | .     | .  | .    | .  | ~40 mm Ø x 20 mm      |
| C Fe 4       | .      | .      | .      | .      | 0.02  | .          | 0.047 | <0.02  | .  | .     | .  | .    | .  | 40 mm Ø x 40 mm       |

| Number | As | B | Bi | Ca | Co | La | N | Pb | Sb | Se | Te | Zn | Zr | Units |
|--------|----|---|----|----|----|----|---|----|----|----|----|----|----|-------|
|--------|----|---|----|----|----|----|---|----|----|----|----|----|----|-------|

CAST IRON SETTING-UP SET

DUCTILE IRON SETTING-UP SET

| Number   | typical analysis |      |       | available in SET/6 only |      |      |      |      | 34 mm Ø x 5 mm |  |
|----------|------------------|------|-------|-------------------------|------|------|------|------|----------------|--|
|          | C                | Mn   | P     | S                       | Si   | Cu   | Ni   | Cr   | Mo             |  |
| KTC-9 B1 | 2.40             | 0.04 | 0.005 | 0.11                    | 3.03 | 0.04 | 1.03 | 0.99 | 0.049          |  |
| KTC-9 B2 | 2.61             | 0.23 | 0.024 | 0.082                   | 2.69 | 0.20 | 0.81 | 0.81 | 0.20           |  |
| KTC-9 B3 | 3.05             | 0.37 | 0.049 | 0.059                   | 2.28 | 0.40 | 0.60 | 0.62 | 0.43           |  |
| KTC-9 B4 | 3.36             | 0.55 | 0.069 | 0.039                   | 1.91 | 0.61 | 0.41 | 0.42 | 0.62           |  |
| KTC-9 B5 | 3.70             | 0.83 | 0.094 | 0.021                   | 1.49 | 0.82 | 0.21 | 0.21 | 0.83           |  |
| KTC-9 B6 | 4.08             | 0.99 | 0.12  | 0.003                   | 0.94 | 1.01 | 0.05 | 0.06 | 1.06           |  |

| Number     | sold in set/5 only |     |     | typical analysis |       |     | 45 mm Ø x 5 mm |  |
|------------|--------------------|-----|-----|------------------|-------|-----|----------------|--|
|            | Mg                 | C   | Mn  | P                | S     | Si  |                |  |
| KTC-10 M-1 | 0.05               | 3.4 | 0.1 | 0.015            | 0.002 | 2.5 |                |  |
| KTC-10 M-2 | 0.04               | 3.4 | 0.1 | 0.015            | 0.002 | 2.5 |                |  |
| KTC-10 M-3 | 0.03               | 3.4 | 0.1 | 0.015            | 0.002 | 2.5 |                |  |
| KTC-10 M-4 | 0.02               | 3.4 | 0.1 | 0.015            | 0.002 | 2.5 |                |  |
| KTC-10 M-5 | 0.01               | 3.4 | 0.1 | 0.015            | 0.002 | 2.5 |                |  |





## CARBON AND LOW ALLOY STEEL SETTING-UP SAMPLES - CONTINUED FROM PREVIOUS

## typical analysis

| Number        | As     | B       | Bi     | Ca      | Nb      | O          | Pb       | Sb        | Ta        | Te        | Zn         | Zr      | Units                          |                      |
|---------------|--------|---------|--------|---------|---------|------------|----------|-----------|-----------|-----------|------------|---------|--------------------------------|----------------------|
| BS SU D2      | 0.003  | 0.0002  | .      | .       | 0.004   | .          | 0.0006   | 0.003     | .         | .         | .          | .       | 38 mm Ø x 40 mm                |                      |
| R H 18        | .      | .       | .      | .       | 0.02    | Fe:69      | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| BR ST2        | 0.027  | 0.0018  | .      | .       | 0.086   | .          | (0.001)  | (0.002)   | .         | .         | .          | 0.005   | 45 mm Ø x 30 mm last           |                      |
| KUT K3        | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 30-35 mm Ø x 39 mm             |                      |
| BS SU E52100  | 0.004  | 0.0001  | .      | <0.0005 | 0.0008  | 0.001      | <0.0005  | .         | .         | .         | .          | 0.0004  | 38 mm Ø x 40 mm Fe: [96.7]     |                      |
| R N 13        | <0.01  | <0.001  | <0.005 | <0.001  | <0.01   | .          | <0.01    | 0.04      | <0.01     | <0.01     | .          | 0.17    | 40 mm Ø x 40 mm                |                      |
| R H 13        | .      | .       | .      | .       | 0.02    | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| R N 16        | <0.01  | <0.001  | <0.001 | <0.001  | <0.01   | .          | <0.01    | 0.04      | <0.01     | <0.01     | .          | 0.18    | 40 mm Ø x 40 mm                |                      |
| R N 19        | 0.07   | <0.01   | 0.02   | <0.001  | 0.5     | .          | 0.03     | 0.06      | 0.27      | 0.05      | 0.02       | 0.09    | 40 mm Ø x 40 mm                |                      |
| BAM SUS-1 R   | .      | .       | .      | .       | 0.6     | .          | .        | .         | .         | .         | .          | .       | 50 mm Ø x 42 mm                |                      |
| R Fe D        | 0.007  | <0.01   | <0.01  | <0.001  | >0.42   | .          | <0.01    | 0.09      | 0.07      | 0.01      | .          | 0.04    | 40 mm Ø x 40 mm                |                      |
| NCS AH21311   | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| SUS D         | .      | <0.001  | .      | .       | 0.05    | .          | .        | .         | .         | .         | .          | .       | 44 mm Ø x 25, 75, or 150 mm    |                      |
| NCS AH21313   | 0.027  | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| BS SU LAS-14  | 0.004  | 0.0006  | 0.0025 | 0.0008  | 0.0069  | .          | <0.001   | 0.023     | 0.004     | 0.0045    | <0.001     | 0.001   | 40 mm Ø x 40 mm Fe: [95.4]     |                      |
| NCS AH21309   | 0.017  | 0.0041  | .      | 0.0009  | 0.313   | .          | .        | 0.0034    | 0.098     | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| KUT K4        | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 30-35 mm Ø x 39 mm             |                      |
| KUT K6        | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 30-35 mm Ø x 39 mm             |                      |
| IMZ S-04      | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 43 mm Ø x ~35 mm               |                      |
| BS 02H        | 0.006  | 0.0004  | .      | 0.0012  | <0.001  | .          | <0.001   | <0.001    | <0.001    | .         | .          | <0.001  | 38 mm Ø x 150 mm               |                      |
| PV 101/1      | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 25 mm                |                      |
| BS SU 4340    | 0.005  | 0.0002  | .      | 0.0002  | 0.004   | 0.0007     | 0.0001   | .         | .         | .         | .          | 0.002   | 38 mm Ø x 40 mm Fe: 95.5       |                      |
| BS SU 8740    | .      | .       | .      | .       | .       | 0.0016     | .        | .         | .         | .         | .          | .       | 38 mm Ø x 40 mm                |                      |
| BS SU41L40    | <0.05  | <0.005  | .      | <0.005  | <0.05   | <0.05      | 0.14     | .         | .         | .         | .          | <0.05   | 41 mm Ø x 40+ mm Fe: 96.6      |                      |
| BS SU 4942    | 0.0009 | <0.0005 | .      | <0.005  | 0.001   | 0.001      | <0.005   | .         | .         | .         | .          | <0.005  | 38 mm Ø x 40 mm Fe: [96.7]     |                      |
| BS SU P-20B   | 0.007  | <0.001  | .      | 0.0022  | 0.003   | .          | <0.005   | <0.01     | .         | .         | .          | 0.0032  | 38 mm Ø x 40 mm last           |                      |
| C Fe 2 50mm   | 0.053  | 0.0032  | .      | 0.0006  | 0.015   | .          | (0.0006) | 0.02      | 0.02      | .         | .          | .       | 40 mm Ø x 50 mm                |                      |
| BS SU 4130A   | 0.005  | .       | .      | <0.001  | 0.002   | .          | <0.0005  | <0.01     | 0.009     | .         | .          | 0.001   | 38 mm Ø x 40 mm Fe: [97.4]     |                      |
| C Fe 2        | 0.045  | 0.0015  | .      | <0.001  | 0.018   | .          | (0.0009) | 0.005     | 0.03      | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| BS SU 4130    | .      | .       | .      | .       | .       | 0.002      | .        | .         | .         | .         | .          | .       | 44 mm Ø x 40 mm last           |                      |
| Number        | As     | B       | Bi     | Ca      | Nb      | O          | Pb       | Sb        | Ta        | Te        | Zn         | Zr      | Units                          |                      |
| BS 210        | .      | .       | .      | .       | 0.016   | .          | .        | .         | .         | .         | .          | .       | .                              | 32 mm Ø x 17 mm last |
| BS SU LF-1a   | <0.005 | <0.005  | .      | 0.002   | <0.005  | 0.012      | 0.001    | .         | .         | .         | .          | <0.005  | ~36 mm Ø x ~40 mm Fe: 98.69    |                      |
| BS SU8620MOD  | 0.005  | 0.0002  | .      | 0.0007  | 0.001   | 0.0009     | .        | Fe:[97.6] | Mg:0.0002 | .         | .          | .       | 38 mm Ø x 40 or 150 mm         |                      |
| BS SU LF-1    | <0.005 | <0.005  | .      | 0.002   | <0.005  | 0.010      | 0.001    | .         | .         | .         | .          | <0.005  | ~36 mm Ø x ~40 mm Fe: 98.71    |                      |
| BS SU 8620A   | 0.005  | 0.0003  | .      | 0.0006  | 0.003   | 0.0019     | 0.0005   | .         | .         | .         | Mg: 0.0002 | 0.0007  | 38 mm Ø x 40 mm Fe: 97.1       |                      |
| BS SU 4620    | .      | .       | .      | .       | .       | 0.002      | .        | .         | .         | .         | .          | .       | 44 mm Ø x 40 mm                |                      |
| BS SU 4820    | 0.006  | <0.0005 | .      | 0.0003  | 0.003   | 0.0016     | <0.0005  | 0.003     | 0.006     | Mg:0.0004 | .          | <0.0005 | 38 mm Ø x 40 mm Fe: [95.2]     |                      |
| BS SU LF-2A   | 0.003  | .       | .      | <0.0002 | .       | 0.002      | .        | .         | .         | .         | .          | 0.001   | 48 mm Ø x 150 mm               |                      |
| PV 102/1      | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 25 mm                |                      |
| BS 03D        | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 41 mm Ø x 150 mm               |                      |
| IMZ S-07      | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x ~30 mm               |                      |
| BS SU LF-2    | .      | .       | .      | .       | .       | 0.002      | .        | .         | .         | .         | .          | .       | 38 mm Ø x 40 mm                |                      |
| BS SU LF-3    | .      | .       | .      | .       | .       | 0.002      | .        | .         | .         | .         | .          | .       | 44 mm Ø x 40 mm                |                      |
| BS SU 11L17   | .      | <0.0005 | .      | <0.0005 | 0.002   | 0.016      | 0.27     | .         | .         | .         | .          | .       | 41 mm Ø x 40 mm Fe: [98.1]     |                      |
| BS SU 1018E   | 0.006  | 0.0003  | .      | 0.0010  | 0.001   | Mg:<0.0005 | 0.0011   | <0.01     | <0.01     | .         | .          | 0.0015  | 38 mm Ø x 150 mm Fe: [98.3]    |                      |
| R N 17        | 0.04   | 0.003   | 0.01   | 0.003   | 0.5     | .          | 0.01     | 0.01      | 0.11      | 0.02      | .          | 0.002   | 40 mm Ø x 40 mm                |                      |
| BS 213        | .      | .       | .      | .       | 0.013   | .          | .        | .         | .         | .         | .          | .       | 32 mm Ø x 17 mm Tl: (0.002)    |                      |
| R Fe C        | 0.05   | <0.001  | 0.02   | <0.01   | 0.07    | .          | 0.03     | 0.01      | 0.13      | 0.03      | 0.016      | <0.01   | 40 mm Ø x 40 mm                |                      |
| BS 207        | .      | .       | .      | .       | 0.024   | .          | .        | .         | .         | .         | .          | .       | 32 mm Ø x 17 mm                |                      |
| IMZ 501       | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 48 mm Ø x 25 mm                |                      |
| NCS AH11357   | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 38 mm Ø x 40 mm                |                      |
| IMZ S-13      | .      | .       | .      | .       | 0.45    | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x ~29 mm               |                      |
| IMZ 503       | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 48 mm Ø x 25 mm                |                      |
| BS SU 9310    | .      | .       | .      | .       | 0.006   | 0.002      | .        | .         | .         | .         | .          | .       | 38 mm Ø x 40 mm                |                      |
| BS SU 9310A   | 0.004  | <0.005  | .      | <0.005  | 0.008   | 0.0016     | <0.005   | .         | .         | .         | .          | <0.005  | 38 mm Ø x 40+ mm Fe: [94.1]    |                      |
| BS SU LAS13-2 | 0.04   | 0.005   | 0.02   | 0.0005  | 0.05    | <0.05      | 0.003    | 0.005     | 0.008     | Ce:0.004  | 0.01       | 0.02    | 36 mm Ø x 40 mm also Fe and Mg |                      |
| BS 214        | .      | .       | .      | .       | (0.007) | .          | .        | .         | .         | .         | .          | .       | 32 mm Ø x 17 mm Tl: (0.002)    |                      |
| KUT K9        | .      | .       | .      | .       | (0.04)  | .          | .        | .         | .         | .         | .          | .       | 30-35 mm Ø x 18 or 39 mm       |                      |
| IMZ S-11      | .      | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x ~25 mm               |                      |
| C Fe 9        | 0.003  | 0.0001  | .      | .       | .       | .          | 0.3      | 0.0005    | .         | .         | .          | .       | 40 mm Ø x 30, 40, or 50 mm     |                      |
| IARM 218A     | 0.1    | 0.0004  | .      | <0.0001 | <0.0001 | .          | <0.001   | 0.02      | 0.02      | .         | <0.001     | <0.001  | 38 mm Ø x 38 mm                |                      |
| SUS A         | .      | .       | .      | .       | <0.005  | .          | .        | .         | .         | .         | .          | .       | 44 mm Ø x 75 mm or 150 mm      |                      |
| IARM 217A     | 0.003  | <0.0001 | .      | 0.0001  | 0.001   | .          | 0.004    | 0.006     | 0.01      | .         | <0.0001    | 0.005   | 38 mm Ø x ~20-30 mm            |                      |
| R N 14        | 0.06   | 0.005   | <0.01  | <0.001  | >0.4    | .          | 0.01     | 0.02      | 0.2       | 0.02      | .          | <0.005  | 40 mm Ø x 40 mm                |                      |
| DSZU SUS 40L  | 0.0006 | .       | 0.0004 | 0.003   | 0.0006  | .          | 0.0005   | 0.002     | .         | .         | .          | 0.001   | 40 mm Ø x 50 mm                |                      |
| NCS AH21308   | .      | 0.0011  | .      | 0.0005  | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| SAG 0203      | 0.002  | <0.0005 | .      | <0.001  | <0.001  | .          | <0.001   | <0.001    | <0.001    | <0.001    | .          | .       | 32 mm Ø x 40 mm                |                      |
| SAG 0204      | 0.002  | <0.0005 | .      | <0.001  | <0.001  | .          | <0.001   | <0.001    | <0.001    | <0.001    | .          | .       | 40 mm Ø x 40 mm                |                      |
| SAG 0202      | 0.001  | .       | .      | .       | .       | .          | .        | .         | .         | .         | .          | .       | 40 mm Ø x 40 mm                |                      |
| Number        | As     | B       | Bi     | Ca      | Nb      | O          | Pb       | Sb        | Ta        | Te        | Zn         | Zr      | Units                          |                      |

\* NCS 28301 also contains Al(ins): 0.0049 and Al(sol): 0.0056.

## LOW ALLOY STEEL SETTING-UP SETS WITH SOLUBLE/INSOLUBLE VALUES

| available in SETS only, as grouped |        |      |       |        |       |      |      |      |        |       |        |        |        |        | Sol. = soluble |        | Ins. = insoluble |  | typical analysis |  |  |  | 35 mm Ø x 20 mm |  |
|------------------------------------|--------|------|-------|--------|-------|------|------|------|--------|-------|--------|--------|--------|--------|----------------|--------|------------------|--|------------------|--|--|--|-----------------|--|
| Number                             | C      | Mn   | P     | S      | Si    | Cu   | Ni   | Cr   | Mo     | Al    | Sol.Al | Ins.Al | B      | Ca     | Sol.N          | Ins.N  |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 01                         | 0.0008 | 0.01 | 0.001 | <0.001 | <0.01 | 0.01 | 0.01 | 0.01 | <0.001 | .     | <0.001 | <0.001 | 0.0002 | 0.0001 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 02                         | 0.10   | 0.21 | 0.003 | 0.005  | 0.61  | 0.07 | 0.05 | 3.99 | 0.50   | .     | 0.003  | 0.001  | .      | .      | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 03                         | 0.16   | 0.76 | 0.002 | 0.009  | 0.40  | 0.70 | 0.10 | 3.24 | 0.40   | .     | 0.012  | <0.001 | .      | .      | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 04                         | 0.20   | 2.01 | 0.010 | 0.016  | 0.05  | 0.10 | 0.52 | 2.51 | 0.32   | .     | 0.083  | <0.001 | .      | .      | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 05                         | 0.24   | 1.63 | 0.013 | <0.001 | 0.26  | 0.40 | 1.02 | 2.04 | 0.10   | .     | 0.036  | 0.002  | .      | 0.0002 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 06                         | 0.36   | 1.33 | 0.049 | 0.001  | 0.36  | 0.50 | 1.53 | 1.54 | 0.20   | .     | 0.020  | 0.001  | 0.0005 | 0.0006 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 07                         | 0.51   | 1.02 | 0.040 | 0.029  | 0.30  | 0.20 | 2.05 | 1.02 | 0.62   | .     | 0.029  | 0.001  | 0.0009 | 0.0018 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 08                         | 0.66   | 0.50 | 0.031 | 0.023  | 0.16  | 0.31 | 2.54 | 0.51 | 1.01   | .     | 0.056  | <0.001 | 0.0020 | 0.0030 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 09                         | 0.80   | 0.31 | 0.019 | <0.001 | 0.20  | 0.15 | 3.26 | 0.10 | 0.84   | .     | 0.064  | <0.001 | 0.0038 | 0.0031 | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-1/5 10                         | 1.05   | 0.10 | 0.006 | 0.022  | 0.10  | 0.07 | 4.06 | 0.07 | 0.050  | .     | 0.090  | 0.001  | 0.0088 | .      | .              | .      |                  |  |                  |  |  |  |                 |  |
| KTC-15 N-1                         | 0.015  | 0.10 | 0.002 | 0.003  | 0.10  | .    | .    | 0.21 | .      | 0.050 | .      | .      | .      | .      | 0.0012         | 0.0001 |                  |  |                  |  |  |  |                 |  |
| KTC-15 N-2                         | 0.014  | 0.10 | 0.002 | 0.003  | 0.10  | .    | .    | 0.29 | .      | 0.048 | .      | .      | .      | .      | 0.0048         | 0.0002 |                  |  |                  |  |  |  |                 |  |
| KTC-15 N-3                         | 0.012  | 0.10 | 0.002 | 0.003  | 0.10  | .    | .    | 0.19 | .      | 0.048 | .      | .      | .      | .      | 0.0076         | 0.0003 |                  |  |                  |  |  |  |                 |  |
| KTC-15 N-4                         | 0.012  | 0.10 | 0.003 | 0.004  | 0.10  | .    | .    | 0.20 | .      | 0.048 | .      | .      | .      | .      | 0.0110         | 0.0002 |                  |  |                  |  |  |  |                 |  |
| KTC-15 N-5                         | 0.012  | 0.11 | 0.003 | 0.004  | 0.10  | .    | .    | 0.41 | .      | 0.050 | .      | .      | .      | .      | 0.0194         | 0.0008 |                  |  |                  |  |  |  |                 |  |

| Number     | As     | Co     | Nb    | Sn    | Ti    | V     | W     |
|------------|--------|--------|-------|-------|-------|-------|-------|
| KTC-1/5 01 | <0.001 | <0.001 | 0.001 | 0.001 | 0.001 | 0.001 | <0.01 |
| KTC-1/5 02 | .      | 0.010  | 0.10  | 0.062 | 0.021 | 0.40  | .     |
| KTC-1/5 03 | 0.010  | 0.15   | 0.069 | 0.042 | 0.10  | 0.022 | .     |
| KTC-1/5 04 | 0.021  | 0.050  | 0.019 | 0.021 | 0.31  | .     | .     |
| KTC-1/5 05 | 0.044  | 0.10   | 0.040 | 0.010 | 0.011 | 0.31  | .     |
| KTC-1/5 06 | 0.062  | 0.20   | 0.010 | .     | 0.054 | 0.052 | .     |
| KTC-1/5 07 | .      | .      | .     | .     | 0.20  | 0.11  | 0.05  |
| KTC-1/5 08 | .      | .      | .     | .     | 0.16  | 0.15  | 0.12  |
| KTC-1/5 09 | .      | .      | .     | .     | .     | 0.21  | 0.22  |
| KTC-1/5 10 | .      | .      | .     | .     | .     | 0.50  | 0.15  |
| KTC-15 N-1 | .      | .      | .     | .     | .     | .     | .     |
| KTC-15 N-2 | .      | .      | .     | .     | .     | .     | .     |
| KTC-15 N-3 | .      | .      | .     | .     | .     | .     | .     |
| KTC-15 N-4 | .      | .      | .     | .     | .     | .     | .     |
| KTC-15 N-5 | .      | .      | .     | .     | .     | .     | .     |

## LOW ALLOY STEEL SETTING-UP SET

| SOLD AS SET/3 ONLY |      |      |       |       |      |      |      |      |      | typical analysis |        |        |      | formerly known as set ST A-C |      |      |       |        |        | 35 mm Ø x 20 mm |  |
|--------------------|------|------|-------|-------|------|------|------|------|------|------------------|--------|--------|------|------------------------------|------|------|-------|--------|--------|-----------------|--|
| Number             | C    | Mn   | P     | S     | Si   | Cu   | Ni   | Cr   | Mo   | Sn               | Sol.Al | Ins.Al | Nb   | Ti                           | V    | W    | As    | B      | Ca     | Co              |  |
| KTC-2 A            | 1.00 | 0.01 | 0.002 | 0.001 | 0.05 | 0.11 | 4.09 | .    | .    | .                | 0.086  | <0.001 | 0.10 | 0.36                         | 0.03 | 0.19 | .     | .      | .      | .               |  |
| KTC-2 B            | 0.01 | 0.52 | 0.045 | .     | 0.57 | 0.69 | 0.50 | 3.98 | 0.20 | 0.093            | .      | .      | .    | 0.03                         | .    | .    | 0.050 | 0.0085 | 0.0035 | 0.01            |  |
| KTC-2 C            | 0.11 | 1.96 | .     | 0.028 | .    | .    | .    | 0.50 | 1.00 | .                | 0.019  | 0.001  | .    | .                            | 0.50 | .    | .     | .      | .      | 0.20            |  |

## STAINLESS STEEL SETTING-UP SAMPLE SETS

| available in SETS only, as grouped |       |      |       |       |      |       |      |       |       |        |        |        |       |        | Sol. = soluble |  | Ins. = insoluble |  | typical analysis |  |  |  | 35 mm Ø x 20 mm |  |
|------------------------------------|-------|------|-------|-------|------|-------|------|-------|-------|--------|--------|--------|-------|--------|----------------|--|------------------|--|------------------|--|--|--|-----------------|--|
| Number                             | C     | Mn   | P     | S     | Si   | Cu    | Ni   | Cr    | Mo    | Sol.Al | Ins.Al | As     | Co    | Nb     | Ti             |  |                  |  |                  |  |  |  |                 |  |
| ST I                               | 0.26  | 0.21 | 0.008 | 0.024 | 0.19 | 0.01  | 0.01 | 26.78 | 0.046 | 0.002  | 0.004  | <0.001 | 0.003 | 0.013  | 0.010          |  |                  |  |                  |  |  |  |                 |  |
| ST H                               | 0.088 | 0.47 | 0.009 | 0.010 | 0.50 | 0.04  | 0.57 | 17.95 | 0.49  | 0.031  | 0.005  | 0.011  | 0.054 | 0.094  | 0.094          |  |                  |  |                  |  |  |  |                 |  |
| ST G                               | 0.031 | 1.37 | 0.029 | 0.005 | 1.26 | 0.19  | 3.87 | 11.85 | 1.14  | 0.086  | 0.005  | 0.075  | 0.19  | 0.98   | 0.30           |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 31                           | 0.068 | 0.51 | 0.023 | 0.005 | 1.24 | 0.19  | 3.91 | 11.23 | 0.71  | 0.10   | 0.003  | 0.10   | 0.19  | 0.90   | 0.31           |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 32                           | 0.040 | 1.16 | 0.030 | 0.007 | 0.52 | 0.01  | 2.56 | 12.71 | 1.01  | 0.013  | 0.004  | 0.008  | 0.014 | 0.082  | 0.051          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 33                           | 0.044 | 0.30 | 0.008 | 0.022 | 0.32 | 0.10  | 1.03 | 15.12 | 1.19  | 0.031  | 0.004  | 0.001  | 0.10  | 0.30   | 0.007          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 34                           | 0.084 | 0.99 | 0.025 | 0.004 | 0.78 | 0.04  | 0.48 | 16.99 | 0.48  | 0.045  | 0.006  | 0.009  | 0.051 | 0.083  | 0.098          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 35                           | 0.22  | 1.35 | 0.002 | 0.029 | 0.58 | <0.01 | 0.05 | 24.14 | 0.029 | 0.057  | 0.007  | <0.001 | 0.005 | 0.007  | 0.005          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 36                           | 0.15  | 0.43 | 0.014 | 0.009 | 0.14 | <0.01 | 0.11 | 22.31 | 0.043 | 0.001  | 0.008  | <0.001 | 0.003 | 0.001  | 0.005          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 37                           | 0.11  | 0.74 | 0.007 | 0.019 | 0.99 | <0.01 | 0.20 | 19.51 | 0.20  | 0.001  | 0.002  | <0.001 | 0.002 | <0.001 | 0.003          |  |                  |  |                  |  |  |  |                 |  |
| KTC-5 38                           | 0.30  | 0.19 | 0.010 | 0.013 | 0.40 | <0.01 | 0.01 | 25.52 | 0.004 | 0.001  | 0.002  | <0.001 | 0.002 | <0.001 | 0.003          |  |                  |  |                  |  |  |  |                 |  |



ALUMINUM IN XRF DISCS

typical analysis

30-40 mm Ø x 5 mm

Table with 19 columns: Number, Al2O3, As2O3, B2O3, BaO, Bi2O3, CaO, Fe2O3, GeO2, K2O, MgO, MoO3, Na2O, P2O5, PbO, Sb2O3, SiO2, TiO2, V2O5, WO3. Rows include BR CH1, SV C, BR PC 3, BR CS1, BR CH2/1, BR ACEM, FLX PR3, FLX S7.

Table with 17 columns: Number, CdO, Ce2O3, Cr2O3, La2O3, MnO, Mn2O3, Nb2O5, Nd2O3, NiO, Pr2O3, Rb2O, SO3, SrO, U3O8, ZrO2. Rows include BR CH1, SV C, BR PC 3, BR CS1, BR CH2/1, BR ACEM, FLX PR3, FLX S7.

ANTIMONY AND ARSENIC IN XRF DISC

typical analysis

40 mm Ø x 6 mm

Table with 9 columns: Number, As2O3, CaO, Co3O4, K2O, MnO, MoO3, Na2O, Sb2O3, SiO2. Row includes FLX K04.

BARIUM IN XRF DISCS

typical analysis

40 mm Ø x 5 mm

Table with 19 columns: Number, BaO, SiO2, TiO2, Al2O3, As2O3, B2O3, CaO, CeO2, Cr2O3, CuO, Fe2O3, K2O, MgO, Na2O, PbO, Sb2O3, SrO, ZnO, ZrO2. Rows include BR M 1, BR 4/L, BR BG18.

BORON IN XRF DISCS

typical analysis

30-40 mm Ø x 5 mm

Table with 20 columns: Number, B2O3, Al2O3, As2O3, CaO, CdO, Cr2O3, Fe2O3, K2O, MgO, MnO, Na2O, NiO, P2O5, PbO, SO3, Sb2O3, SiO2, SnO, SnO2, TiO2, ZnO. Rows include BR AN1/1, BR DSH2, BR DSH1, FLX PR2, BR WR2, BR BP2, BR MM1, BR WR1, BR OS1, SV D, BR DS1, BR AX3, BR PD 3, BR U 30, BR WIE3/II, BR KA1, BR WIE3/I, BR ARL2.

Table with 18 columns: Number, Ag2O, BaO, Bi2O3, CuO, CeO2, Ce2O3, Cl, Ga2O3, GeO2, In2O3, La2O3, Nb2O5, MoO, MoO3, Se, SrO, Ta2O5, Te2O3, V2O5, WO3, ZrO2. Rows include BR AN1/1, BR DSH2, BR DSH1, FLX PR2, BR WR2, BR BP2, BR MM1, BR WR1, BR OS1, SV D, BR DS1, BR AX3, BR PD 3, BR U 30, BR WIE3/II, BR KA1, BR WIE3/I, BR ARL2.

## CARBONATE IN XRF DISC

typical analysis 38-40 mm Ø x 5-8 mm

| Number  | CO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | BaO  | CaO   | Cl    | F     | Fe <sub>2</sub> O <sub>3</sub> | MgO   | Na <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | SO <sub>3</sub> | SiO <sub>2</sub> | SrO   |
|---------|-----------------|--------------------------------|------|-------|-------|-------|--------------------------------|-------|-------------------|-------------------------------|-----------------|------------------|-------|
| FLX MB2 | Rem             | 0.02                           | 0.03 | 50.04 | .     | .     | .                              | 0.91  | 0.07              | .                             | .               | 0.02             | 0.02  |
| ASO TUD | 47.51           | 0.207                          | .    | 30.28 | 0.013 | <0.01 | 0.023                          | 21.76 | 0.046             | 0.012                         | 0.023           | 0.093            | 0.004 |

## CALCIUM AND FLUORITE IN XRF DISCS

typical analysis 38-40 mm Ø x 5-8 mm

| Number    | CaO   | CaF <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | Cr <sub>2</sub> O <sub>3</sub> | F    | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO   | MnO  | Mn <sub>2</sub> O <sub>3</sub> | Na <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | SO <sub>3</sub> | SiO <sub>2</sub> | TiO <sub>2</sub> |
|-----------|-------|------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|------|--------------------------------|------------------|-------|------|--------------------------------|-------------------|-------------------------------|-----------------|------------------|------------------|
| BR U 33   | 56    | .                | 0.25                           | .                              | .                             | .                              | .    | 0.2                            | .                | .     | .    | .                              | .                 | .                             | .               | 0.3              | .                |
| FLX C1    | 44.11 | .                | 10.09                          | .                              | 23.8                          | 0.07                           | .    | 2.27                           | 0.76             | 1.51  | 0.16 | .                              | 0.80              | 0.17                          | 0.53            | 16.59            | 0.14             |
| BR SP1/1  | 40.60 | .                | 5.0                            | .                              | 25.65                         | .                              | .    | 2.0                            | 2.0              | 8.0   | .    | .                              | 1.0               | .                             | 0.05            | 15.0             | .                |
| BR BF2    | 37.0  | .                | 10.0                           | .                              | 3.43                          | .                              | .    | 1.0                            | 0.4              | 8.0   | 0.77 | .                              | .                 | 2.0                           | 0.2             | 36.0             | 1.0              |
| BR BCEM   | 35.00 | .                | 4.88                           | .                              | 2.40                          | .                              | .    | 2.25                           | 0.99             | 2.37  | .    | 0.01                           | 2.12              | 0.01                          | 0.50            | 49.15            | 0.01             |
| FLX C2    | 33.69 | .                | 2.75                           | .                              | 18.1                          | 0.18                           | 1.63 | 1.6                            | 0.51             | 1.27  | 0.07 | .                              | 0.3               | 0.45                          | 0.18            | 36.16            | 0.12             |
| FLX Z1    | 32.77 | .                | 0.42                           | .                              | 41.6                          | .                              | 3.54 | 0.09                           | 0.09             | 0.29  | 0.05 | .                              | 5.51              | 0.23                          | 3.59            | 12.18            | 0.08             |
| BR SP2    | 30.0  | .                | 9.0                            | .                              | 19.50                         | .                              | .    | 5.0                            | 2.0              | 6.0   | .    | .                              | 2.0               | .                             | 0.30            | 25.0             | .                |
| BR WR1    | 30.0  | .                | 13.0                           | .                              | 30.0                          | 1.5                            | .    | 0.1                            | 2.0              | 5.0   | 0.2  | .                              | 5.0               | 0.1                           | 0.1             | 12.5             | .                |
| FLX C3    | 29.36 | .                | 11.16                          | .                              | 31.0                          | 0.09                           | .    | 1.87                           | 0.733            | 2.87  | 0.16 | .                              | 2.22              | 0.58                          | 0.40            | 19.76            | 0.19             |
| FLX SP1   | 28.61 | .                | .                              | 3.53                           | .                             | .                              | .    | 2.72                           | .                | .     | .    | .                              | 14.84             | .                             | .               | 45.57            | .                |
| FLX SLAG2 | 27.8  | .                | 6.0                            | .                              | .                             | 0.28                           | 1.05 | 5.68                           | 0.14             | 10.8  | 2.53 | .                              | .                 | 1.59                          | 1.61            | 31.4             | 1.41             |
| FLX D1    | 26.52 | .                | 0.51                           | .                              | 21.5                          | .                              | .    | .                              | 0.44             | 19.14 | 0.35 | .                              | .                 | 0.47                          | 0.01            | 30.46            | 0.43             |
| BR B 1    | 25.0  | .                | .                              | .                              | .                             | .                              | .    | 19.0                           | .                | .     | .    | .                              | .                 | .                             | .               | 51.0             | .                |
| FLX Z4    | 24.93 | .                | 16.07                          | 0.147                          | .                             | .                              | 0.37 | 0.179                          | 0.249            | 0.701 | .    | .                              | .                 | .                             | .               | 56.94            | 0.253            |
| BR SS3    | 24.0  | .                | 17.6                           | .                              | 16.6                          | 0.2                            | .    | 10.5                           | 0.4              | 4.1   | 3.5  | .                              | .                 | 0.9                           | .               | 21.4             | 0.8              |
| FLX Z5    | 22.67 | .                | 18.16                          | .                              | .                             | 0.19                           | .    | 9.39                           | 0.41             | 4.07  | 2.7  | .                              | .                 | 0.89                          | .               | 25.63            | 0.73             |
| FLX SLAG1 | 19.12 | .                | 1.02                           | .                              | Rem                           | 0.09                           | 0.91 | 0.46                           | 0.55             | 2.04  | 0.07 | .                              | 0.57              | 0.54                          | 0.51            | 41.95            | 0.49             |
| BR VA2/2  | 15.0  | .                | 10.0                           | .                              | 8.7                           | .                              | .    | 12.0                           | 5.0              | 15.0  | 4.0  | .                              | 14.0              | 3.0                           | 0.1             | 13.2             | .                |
| FLX S10   | 12.15 | .                | 4.25                           | .                              | .                             | .                              | .    | 0.285                          | 0.223            | 2.29  | .    | .                              | 9.09              | 0.104                         | .               | 65.94            | 0.116            |
| BR U 29   | .     | 71.0             | .                              | .                              | .                             | .                              | 48   | .                              | .                | .     | .    | .                              | .                 | .                             | .               | .                | .                |
| BR WC     | .     | 20.00            | 25.00                          | .                              | .                             | .                              | .    | 0.80                           | .                | 5.00  | .    | .                              | 10.00             | 0.15                          | .               | 38.10            | 0.80             |

| Number    | BaO  | Cl   | Cr <sub>2</sub> O <sub>3</sub> | CuO  | FeO | GeO <sub>2</sub> | Li <sub>2</sub> O | MoO <sub>3</sub> | Nb <sub>2</sub> O <sub>5</sub> | NiO  | PbO  | Sb <sub>2</sub> O <sub>3</sub> | SrO  | V <sub>2</sub> O <sub>5</sub> | ZnO  | ZrO <sub>2</sub> |
|-----------|------|------|--------------------------------|------|-----|------------------|-------------------|------------------|--------------------------------|------|------|--------------------------------|------|-------------------------------|------|------------------|
| BR U 33   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | 0.17 | .                             | 0.07 | .                |
| FLX C1    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR SP1/1  | .    | 0.20 | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | 0.50                           | .    | .                             | .    | .                |
| BR BF2    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR BCEM   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | 0.31                           | .    | .                             | .    | .                |
| FLX C2    | .    | 0.15 | .                              | .    | .   | .                | 3.9               | .                | .                              | .    | .    | .                              | 0.1  | .                             | 0.08 | .                |
| FLX Z1    | .    | 1.15 | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | 0.01 | .                             | .    | .                |
| BR SP2    | .    | 0.70 | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | 0.50                           | .    | .                             | .    | .                |
| BR WR1    | .    | .    | 1.5                            | .    | .   | .                | .                 | .                | .                              | .    | .    | 0.5                            | .    | .                             | .    | .                |
| FLX C3    | .    | 0.21 | .                              | .    | .   | .                | 1.5               | .                | .                              | .    | .    | .                              | 0.21 | .                             | 0.09 | .                |
| FLX SP1   | .    | .    | .                              | .    | .   | .                | .                 | 5.37             | .                              | .    | .    | .                              | .    | 3.76                          | .    | 0.08             |
| FLX SLAG2 | 0.09 | .    | .                              | 0.09 | .   | 0.11             | Rem               | .                | 0.08                           | 0.06 | 0.08 | .                              | .    | 1.61                          | 0.09 | 0.08             |
| FLX D1    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR B 1    | .    | .    | .                              | 0.5  | 3.0 | .                | .                 | .                | .                              | 1.0  | .    | .                              | .    | .                             | .    | last of stock    |
| FLX Z4    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR SS3    | .    | .    | 0.2                            | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| FLX Z5    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| FLX SLAG1 | 0.11 | .    | .                              | 0.09 | .   | .                | 5.0               | .                | 0.11                           | 0.09 | 0.09 | .                              | 0.09 | 0.49                          | 0.09 | 0.10             |
| BR VA2/2  | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| FLX S10   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR U 29   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | 0.15                          | .    | .                |
| BR WC     | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |

## CLASSIC XRF DISC SET

available in set/6 or individually

typical analysis

40 mm Ø x 5 mm

| Number | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub>  | BaO  | CaO                            | CoO                            | CuO               | F                | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O               | MgO              | MnO                            | Na <sub>2</sub> O              | NiO                            | P <sub>2</sub> O <sub>5</sub> | PbO                            | Sb <sub>2</sub> O <sub>3</sub> | SiO <sub>2</sub> | TiO <sub>2</sub>               | V <sub>2</sub> O <sub>5</sub> | WO <sub>3</sub>               | ZnO              |   |
|--------|--------------------------------|--------------------------------|--------------------------------|------|--------------------------------|--------------------------------|-------------------|------------------|--------------------------------|--------------------------------|------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|--------------------------------|--------------------------------|------------------|--------------------------------|-------------------------------|-------------------------------|------------------|---|
| BR PA  | 15.8                           | .                              | 4.2                            | 2.0  | 0.83                           | .                              | .                 | 0.17             | 1.16                           | 2.16                           | 3.2              | 20.3                           | 0.13                           | .                              | 0.58                          | .                              | .                              | 36.52            | 3.9                            | 0.01                          | .                             | 7.4              |   |
| BR PB  | 6.75                           | .                              | 0.04                           | 21.3 | 1.62                           | 0.25                           | 1.4               | 12.2             | 0.04                           | 0.23                           | 0.89             | 0.09                           | 0.79                           | 2.1                            | 4.4                           | .                              | .                              | 42.54            | 1.2                            | .                             | 1.85                          | 0.45             |   |
| BR PC  | 27.18                          | 0.78                           | 19.1                           | 1.0  | 0.03                           | .                              | .                 | .                | 5.4                            | 6.9                            | .                | 0.47                           | 7.9                            | 0.29                           | 15.6                          | .                              | .                              | 9.9              | 0.10                           | 0.26                          | 0.90                          | .                |   |
| BR PD  | 20.22                          | 1.86                           | 22.2                           | .    | 14.3                           | .                              | .                 | .                | 0.58                           | 0.09                           | 7.3              | .                              | 9.6                            | .                              | 5.8                           | 1.7                            | 1.85                           | 5.48             | 0.03                           | 0.86                          | 0.32                          | 3.7              |   |
| BR PE  | 8.5                            | 0.44                           | 4.0                            | 4.6  | 0.60                           | 0.74                           | 0.82              | 1.3              | 0.03                           | 0.95                           | .                | 6.5                            | 15.3                           | 1.85                           | .                             | 0.45                           | 0.43                           | 50.07            | 0.02                           | .                             | .                             | 0.92             |   |
| BR PF  | 3.85                           | .                              | 2.0                            | 0.34 | 2.84                           | 0.25                           | 1.8               | 5.0              | 0.07                           | 18.3                           | 0.82             | .                              | 1.2                            | .                              | .                             | 0.05                           | 0.86                           | 56.31            | 0.04                           | 1.7                           | .                             | .                |   |
| Number | Ag <sub>2</sub> O              | Ga <sub>2</sub> O <sub>3</sub> | Bi <sub>2</sub> O <sub>3</sub> | CdO  | Ce <sub>2</sub> O <sub>3</sub> | Cr <sub>2</sub> O <sub>3</sub> | Cs <sub>2</sub> O | GeO <sub>2</sub> | In <sub>2</sub> O <sub>3</sub> | La <sub>2</sub> O <sub>3</sub> | MoO <sub>3</sub> | Nb <sub>2</sub> O <sub>5</sub> | Nd <sub>2</sub> O <sub>3</sub> | Pr <sub>2</sub> O <sub>3</sub> | Rb <sub>2</sub> O             | Sm <sub>2</sub> O <sub>3</sub> | SnO <sub>2</sub>               | SrO              | Ta <sub>2</sub> O <sub>5</sub> | TeO <sub>2</sub>              | Y <sub>2</sub> O <sub>3</sub> | ZrO <sub>2</sub> |   |
| BR PA  | .                              | .                              | .                              | 0.39 | .                              | 0.15                           | 0.04              | 0.08             | 0.04                           | .                              | .                | .                              | .                              | .                              | 0.04                          | .                              | .                              | 0.71             | .                              | 0.04                          | .                             | 0.15             |   |
| BR PB  | .                              | .                              | .                              | .    | .                              | .                              | .                 | .                | .                              | .                              | .                | .                              | .                              | .                              | .                             | .                              | .                              | 0.92             | 0.008                          | 0.85                          | 0.08                          | .                | . |
| BR PC  | .                              | .                              | 0.50                           | 0.16 | .                              | .                              | .                 | 0.27             | .                              | .                              | 2.0              | 0.60                           | 0.46                           | 0.20                           | .                             | .                              | .                              | .                | .                              | .                             | .                             | .                |   |
| BR PD  | .                              | 0.46                           | 0.18                           | .    | 0.84                           | .                              | .                 | 0.41             | .                              | 0.88                           | 0.87             | .                              | .                              | .                              | .                             | .                              | .                              | 0.13             | .                              | .                             | .                             | 0.34             |   |
| BR PE  | 0.13                           | .                              | 0.08                           | .    | 0.56                           | .                              | .                 | 0.09             | 0.40                           | .                              | 0.05             | .                              | .                              | .                              | .                             | .                              | 0.60                           | 0.31             | 0.05                           | 0.03                          | 0.18                          | .                |   |
| BR PF  | .                              | 0.09                           | .                              | 0.96 | 0.39                           | 0.27                           | 0.13              | .                | 0.26                           | .                              | 0.38             | .                              | .                              | .                              | 0.16                          | 0.18                           | 0.20                           | .                | 0.36                           | .                             | 0.45                          | 0.74             |   |



**LEAD IN XRF DISCS**

typical analysis

40 mm Ø x 5 mm

| Number | PbO  | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO | CaO  | CdO | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO  | MnO  | Na <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | SO <sub>3</sub> | SiO <sub>2</sub> | ZnO  |
|--------|------|--------------------------------|--------------------------------|-------------------------------|-----|------|-----|--------------------------------|------------------|------|------|-------------------|-------------------------------|-----------------|------------------|------|
| BR SF6 | 71.5 | .                              | 0.3                            | .                             | .   | .    | .   | .                              | 2.0              | .    | .    | 1.0               | .                             | .               | 25.2             | .    |
| BR SF1 | 62.2 | .                              | 0.5                            | .                             | .   | .    | .   | .                              | 3.2              | .    | .    | .                 | .                             | .               | 34.1             | .    |
| BR AK2 | 50.0 | .                              | .                              | .                             | 1.0 | 1.0  | 1.0 | .                              | 0.50             | .    | .    | 10.0              | 4.0                           | 0.67            | 30.83            | 1.00 |
| BR VAl | 50.0 | 0.5                            | .                              | 20.96                         | .   | 2.79 | .   | 4.27                           | 0.1              | 3.31 | 0.64 | 0.4               | 0.23                          | 0.3             | 1.2              | 15.0 |
| BR H 1 | 23.5 | 4.00                           | .                              | .                             | .   | 3.8  | .   | .                              | 8.7              | 2.6  | .    | 6.2               | .                             | .               | 51.1             | .    |

**NEODYMIUM IN XRF DISCS**

typical analysis

| Number  | Nd <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> | CaO | F   | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO  | Na <sub>2</sub> O | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | SiO <sub>2</sub> | ZnO | Units            |
|---------|--------------------------------|--------------------------------|-----|-----|--------------------------------|------------------|------|-------------------|-----------------|--------------------------------|------------------|-----|------------------|
| BR U 38 | 2.5                            | 1.2                            | 5.3 | 0.5 | 0.04                           | 7.5              | 0.07 | 9.2               | 0.11            | 0.2                            | 72.0             | 1.1 | 40 mm Ø x 5-8 mm |

**PHOSPHORUS IN XRF DISCS**

typical analysis

40 mm Ø x 5-6 mm

| Number  | P <sub>2</sub> O <sub>5</sub> | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO  | CaO  | Cl   | CoO  | Cr <sub>2</sub> O <sub>3</sub> | F    | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO  | MnO  | MoO <sub>3</sub> | Na <sub>2</sub> O | NiO   | SO <sub>3</sub> | SiO <sub>2</sub> | SrO  | TiO <sub>2</sub> | V <sub>2</sub> O <sub>5</sub> | ZnO  |   |
|---------|-------------------------------|--------------------------------|-------------------------------|------|------|------|------|--------------------------------|------|--------------------------------|------------------|------|------|------------------|-------------------|-------|-----------------|------------------|------|------------------|-------------------------------|------|---|
| BR UC5  | 67.88                         | 6.0                            | .                             | 11.0 | .    | .    | 8.99 | .                              | .    | .                              | 3.7              | .    | .    | .                | .                 | 2.43  | .               | .                | .    | .                | .                             | .    | . |
| BR HPII | 30.0                          | 25.0                           | 20.0                          | .    | .    | .    | .    | .                              | .    | .                              | 5.0              | .    | .    | .                | 10.0              | .     | .               | 10.0             | .    | .                | .                             | .    | . |
| FLX R5  | 18.61                         | 0.195                          | .                             | 5.87 | 0.11 | 1.01 | .    | .                              | .    | .                              | 4.19             | .    | 4.22 | 6.18             | 13.47             | .     | .               | 42.04            | .    | .                | 2.94                          | 5.9  | . |
| FLX PR3 | 9.72                          | 17.68                          | .                             | .    | 3.16 | .    | .    | 1.07                           | .    | .                              | .                | 6.76 | .    | .                | .                 | 0.373 | .               | 41.28            | .    | 3.32             | .                             | .    | . |
| FLX Z2  | 6.75                          | 7.17                           | 34.8                          | .    | 7.35 | 0.15 | .    | 0.23                           | 0.91 | 1.92                           | 2.17             | 7.33 | 0.50 | .                | 0.73              | .     | 0.11            | 29.97            | 0.05 | 0.98             | .                             | 0.10 | . |

**ELEMENTS IN XRF DISCS**

typical analysis

listed in mass %

all available individually

40 mm Ø x 6 mm

| Number       | Ag      | Al     | As   | B <sub>2</sub> O <sub>3</sub> | Ba     | Ca     | Cd      | Cl      | Co   | Cr     | Cu      | Fe     | K      | Li <sub>2</sub> O | Mg     | Mn     | Mo     |
|--------------|---------|--------|------|-------------------------------|--------|--------|---------|---------|------|--------|---------|--------|--------|-------------------|--------|--------|--------|
| FLX OME 5    | <0.0001 | 0.0005 | .    | .                             | 0.0005 | 0.0005 | <0.0001 | <0.0001 | .    | 0.0005 | <0.0001 | 0.0005 | 0.0005 | .                 | 0.0005 | 0.0005 | 0.0005 |
| FLX OME 10   | <0.0001 | 0.0010 | .    | .                             | 0.0010 | 0.0010 | 0.0010  | <0.0001 | .    | 0.0010 | <0.0001 | 0.0010 | 0.0010 | .                 | 0.0010 | 0.0010 | 0.0010 |
| FLX OME 25   | 0.0025  | 0.0025 | .    | .                             | 0.0025 | 0.0025 | 0.0025  | <0.0001 | .    | 0.0025 | 0.0008  | 0.0025 | 0.0025 | .                 | 0.0025 | 0.0025 | 0.0025 |
| FLX OME 50   | 0.0050  | 0.0050 | .    | .                             | 0.0050 | 0.0050 | 0.0055  | <0.0004 | .    | 0.0050 | 0.0033  | 0.0050 | 0.0050 | .                 | 0.0050 | 0.0050 | 0.0050 |
| FLX OME 100  | 0.0100  | 0.0100 | .    | .                             | 0.0100 | 0.0100 | 0.0100  | <0.0003 | .    | 0.0100 | 0.0056  | 0.0100 | 0.0100 | .                 | 0.0100 | 0.0100 | 0.0100 |
| FLX OME 250  | 0.0250  | 0.0250 | .    | .                             | 0.0250 | 0.0250 | 0.0250  | 0.0058  | .    | 0.0250 | 0.0203  | 0.0250 | 0.0250 | .                 | 0.0250 | 0.0250 | 0.0250 |
| FLX OME 500  | 0.0500  | 0.0500 | .    | .                             | 0.0500 | 0.0500 | 0.0500  | 0.0123  | .    | 0.0500 | 0.0500  | 0.0500 | 0.0500 | .                 | 0.0500 | 0.0500 | 0.0500 |
| FLX OME 900  | 0.0900  | 0.0900 | .    | .                             | 0.0900 | 0.0900 | 0.0900  | 0.0250  | .    | 0.0900 | 0.0900  | 0.0900 | 0.0900 | .                 | 0.0900 | 0.0900 | 0.0900 |
| FLX OME 1000 | 0.0684  | 0.0886 | .    | .                             | 0.0924 | 0.1010 | 0.0967  | 0.0190  | .    | 0.0906 | 0.0925  | 0.0961 | 0.0864 | .                 | 0.0958 | 0.0934 | 0.1120 |
| FLX OME 2500 | 0.1960  | 0.2500 | .    | .                             | 0.2500 | 0.2500 | 0.2500  | 0.0808  | .    | 0.2500 | 0.2500  | 0.2500 | 0.2500 | .                 | 0.2500 | 0.2500 | 0.2500 |
| FLX O1       | 0.52    | 1.93   | .    | .                             | 5.61   | 4.3    | 0.53    | 0.35    | .    | 0.63   | 0.90    | 0.80   | 0.87   | .                 | 2.82   | 0.27   | 1.55   |
| FLX L2       | .       | 5.88   | 0.12 | 37.2                          | .      | 0.17   | .       | .       | 0.56 | .      | .       | 0.25   | .      | 8.0               | .      | .      | 2.59   |

| Number       | Na     | Ni      | P      | Pb     | S       | Si     | SiO <sub>2</sub> | Sn      | Ti     | V      | W    | Zn     | Zr     |
|--------------|--------|---------|--------|--------|---------|--------|------------------|---------|--------|--------|------|--------|--------|
| FLX OME 5    | 0.0005 | <0.0001 | 0.0005 | 0.0005 | 0.0004  | 0.0005 | 0.0005           | <0.0001 | 0.0005 | 0.0005 | .    | 0.0005 | 0.0005 |
| FLX OME 10   | 0.0010 | <0.0001 | 0.0010 | 0.0010 | <0.0001 | 0.0010 | 0.0010           | <0.0001 | 0.0010 | 0.0010 | .    | 0.0010 | 0.0010 |
| FLX OME 25   | 0.0025 | 0.0016  | 0.0025 | 0.0025 | <0.0001 | 0.0025 | 0.0025           | <0.0008 | 0.0025 | 0.0025 | .    | 0.0025 | 0.0025 |
| FLX OME 50   | 0.0050 | 0.0041  | 0.0050 | 0.0050 | 0.0024  | 0.0050 | 0.0050           | 0.0029  | 0.0050 | 0.0050 | .    | 0.0050 | 0.0050 |
| FLX OME 100  | 0.0100 | 0.0086  | 0.0100 | 0.0100 | 0.0057  | 0.0100 | 0.0100           | 0.0057  | 0.0100 | 0.0100 | .    | 0.0100 | 0.0100 |
| FLX OME 250  | 0.0250 | 0.0250  | 0.0250 | 0.0250 | 0.0215  | 0.0250 | 0.0250           | 0.0250  | 0.0250 | 0.0250 | .    | 0.0250 | 0.0250 |
| FLX OME 500  | 0.0500 | 0.0500  | 0.0500 | 0.0500 | 0.0366  | 0.0500 | 0.0500           | 0.0500  | 0.0500 | 0.0500 | .    | 0.0500 | 0.0500 |
| FLX OME 900  | 0.0900 | 0.0900  | 0.0900 | 0.0900 | 0.0790  | 0.0900 | 0.0900           | 0.0900  | 0.0900 | 0.0900 | .    | 0.0900 | 0.0900 |
| FLX OME 1000 | 0.0938 | 0.0995  | 0.0967 | 0.0908 | 0.0801  | 0.0926 | 0.1030           | 0.0939  | 0.0946 | 0.0921 | .    | 0.0921 | .      |
| FLX OME 2500 | 0.2500 | 0.2500  | 0.2500 | 0.2500 | 0.2007  | 0.2500 | 0.2500           | 0.2500  | 0.2500 | 0.2500 | .    | 0.2500 | 0.2500 |
| FLX O1       | 5.26   | 0.92    | 0.58   | 2.79   | 0.07    | 24.75  | 4.35             | 0.90    | 0.66   | 0.63   | .    | 3.51   | .      |
| FLX L2       | 0.18   | 1.21    | 0.59   | 0.11   | 0.02    | .      | 43.55            | .       | .      | 0.55   | 0.22 | .      | .      |

**CRM GLASS XRF DISCS AND PLATES**

analysis listed in mass %

typical analysis

| Number   | Type              | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO  | CaO  | CdO  | FeO   | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO    | Na <sub>2</sub> O | SO <sub>3</sub> | SrO  | TiO <sub>2</sub> | ZnO  |
|----------|-------------------|------------------|--------------------------------|-------------------------------|------|------|------|-------|--------------------------------|------------------|--------|-------------------|-----------------|------|------------------|------|
| SRM 93a  | Borosilicate      | 80.8             | 2.28                           | 12.56                         | .    | 0.01 | .    | 0.016 | 0.028 (T.Fe)                   | 0.014            | 0.005  | 3.98              | .               | .    | 0.014            | .    |
| SRM 1831 | Soda-Lime Sheet   | 73.08            | 1.21                           | .                             | .    | 8.20 | .    | 0.025 | 0.087 (T.Fe)                   | 0.33             | 3.51   | 13.32             | 0.25            | .    | 0.019            | .    |
| SRM 1830 | Soda-Lime Float   | 73.07            | 0.12                           | .                             | .    | 8.56 | .    | 0.032 | 0.121 (T.Fe)                   | 0.04             | 3.90   | 13.75             | 0.26            | .    | 0.011            | .    |
| SRM 620  | Soda-Lime Flat    | 72.08            | 1.80                           | .                             | .    | 7.11 | .    | .     | 0.043                          | 0.41             | 3.69   | 14.39             | 0.28            | .    | 0.018            | .    |
| SRM 1411 | Soft Borosilicate | 58.04            | 5.68                           | 10.94                         | 5.00 | 2.18 | .    | .     | 0.050                          | 2.97             | 0.33   | 10.14             | .               | 0.09 | 0.02             | 3.85 |
| SRM 1412 | Multicomponent    | 42.38            | 7.52                           | 4.53                          | 4.67 | 4.53 | 4.38 | .     | (0.031)                        | 4.14             | (4.69) | 4.69              | .               | 4.55 | .                | 4.48 |

continued

| Number   | As <sub>2</sub> O <sub>3</sub> | Cl    | Li <sub>2</sub> O | PbO  | ZrO <sub>2</sub> | Units                          |
|----------|--------------------------------|-------|-------------------|------|------------------|--------------------------------|
| SRM 93a  | .                              | 0.060 | .                 | .    | 0.042            | 1 Disc 32 mm Ø x 6 mm          |
| SRM 1831 | .                              | .     | .                 | .    | .                | 3 Plates 37 mm x 37 mm x 3 mm  |
| SRM 1830 | .                              | .     | .                 | .    | .                | 3 Plates 32 mm x 32 mm x 6 mm  |
| SRM 620  | 0.056                          | .     | .                 | .    | .                | 3 Plates 35 mm x 35 mm x 3 mm  |
| SRM 1411 | .                              | .     | .                 | .    | .                | 10 Plates 32 mm x 32 mm x 3 mm |
| SRM 1412 | .                              | .     | (4.50)            | 4.40 | .                | 8 Plates 32 mm x 32 mm x 3 mm  |

## HIGH SILICA IN XRF DISCS

| typical analysis |                  |                                |     |                                |       |      |                  |                                |                  |                   |                 |                                |      | 40 mm Ø x 5-6 mm |               |  |
|------------------|------------------|--------------------------------|-----|--------------------------------|-------|------|------------------|--------------------------------|------------------|-------------------|-----------------|--------------------------------|------|------------------|---------------|--|
| Number           | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | BaO | Bi <sub>2</sub> O <sub>3</sub> | CaO   | Cl   | K <sub>2</sub> O | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | Na <sub>2</sub> O | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | SrO  | TiO <sub>2</sub> |               |  |
| ASO TU1          | 99.99            | 0.005                          | .   | .                              | 0.005 | .    | .                | <0.01                          | .                | 0.005             | .               | .                              | .    | .                | last of stock |  |
| FLX Q0           | 99.99            | .                              | .   | .                              | .     | .    | .                | .                              | .                | .                 | .               | .                              | .    | .                |               |  |
| BR K 1/3         | 99.5             | 0.17                           | .   | .                              | 0.02  | 0.05 | .                | 0.02                           | 0.07             | 0.10              | 0.04            | .                              | .    | 0.02             |               |  |
| ASO TU7          | 61.2             | .                              | 0.5 | 8.4                            | .     | 0.6  | 10.0             | .                              | .                | 17.0              | .               | 0.14                           | 0.25 | 2.0              | last of stock |  |

## CRM URANIUM IN XRF DISCS

| typical analysis listed in mg/kg |      | 12 mm Ø x 5 mm |  |  |
|----------------------------------|------|----------------|--|--|
| Number                           | U    |                |  |  |
| IRMM 540R                        | 15.0 | last           |  |  |

## URANIUM IN XRF DISCS

| typical analysis |                 |                               |                                |                                |                               |      |      |      |      |                                |      |      |                                | 30-40 mm Ø x 5 mm |      |      |                   |      |                               |                  |                                |                  |      |
|------------------|-----------------|-------------------------------|--------------------------------|--------------------------------|-------------------------------|------|------|------|------|--------------------------------|------|------|--------------------------------|-------------------|------|------|-------------------|------|-------------------------------|------------------|--------------------------------|------------------|------|
| Number           | UO <sub>3</sub> | U <sub>3</sub> O <sub>8</sub> | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO  | CaO  | CdO  | CoO  | Cr <sub>2</sub> O <sub>3</sub> | CuO  | F    | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O  | MgO  | MnO  | Na <sub>2</sub> O | NiO  | P <sub>2</sub> O <sub>5</sub> | SiO <sub>2</sub> | Sb <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | ZnO  |
| SV F             | 1.0             | .                             | 2.0                            | .                              | 3.0                           | 0.3  | 3.0  | .    | 0.5  | .                              | .    | 4.0  | .                              | 29.3              | 1.0  | .    | 1.0               | .    | .                             | 58.23            | 1.0                            | 1.0              | 0.2  |
| SV E             | 0.5             | .                             | 1.5                            | 0.5                            | 6.0                           | 3.0  | 5.0  | .    | 1.0  | 4.0                            | 1.0  | 0.8  | .                              | 2.5               | .    | 5.0  | 15.0              | 0.5  | .                             | 50.9             | .                              | .                | 2.0  |
| BR AS1           | 0.01            | .                             | 15.8                           | 0.44                           | 3.22                          | .    | 0.83 | 0.39 | .    | 0.15                           | .    | 0.17 | 1.16                           | 2.16              | 3.20 | 20.3 | 0.13              | .    | 0.58                          | 38.9             | .                              | 3.9              | 7.4  |
| BR U 26          | .               | 1.0                           | 1.5                            | .                              | .                             | 0.1  | 6.5  | .    | .    | .                              | .    | 1.0  | 0.07                           | 3.0               | .    | .    | 13.3              | .    | .                             | 69.98            | 0.25                           | .                | 1.0  |
| BR U 21          | .               | 0.40                          | 2.0                            | .                              | 10                            | .    | 6.5  | 1.5  | 0.25 | 0.6                            | 1    | .    | 0.05                           | 5.8               | 0.05 | 0.15 | 10.0              | 0.15 | .                             | 60.0             | 0.25                           | .                | .    |
| BR EK01          | .               | 0.10                          | .                              | 0.13                           | 0.74                          | 2.24 | 4.96 | 0.02 | 0.38 | 1.17                           | 0.63 | .    | .                              | 6.82              | .    | 8.54 | 0.64              | .    | .                             | 67.05            | 0.44                           | .                | 3.73 |
| BR U 25          | .               | 0.10                          | 3.0                            | .                              | .                             | .    | 6.9  | .    | .    | 0.27                           | 0.18 | .    | 0.34                           | 2.9               | 0.15 | 6.0  | 9.3               | .    | .                             | 69.3             | 0.20                           | .                | 0.8  |
| BR CH1           | .               | 0.1                           | 28.0                           | 0.8                            | 20.0                          | 1.0  | .    | 0.15 | .    | .                              | .    | .    | 7.0                            | 8.0               | .    | 0.5  | 6.5               | 0.3  | 14.0                          | 9.11             | .                              | 0.1              | .    |

| Number  | Bi <sub>2</sub> O <sub>3</sub> | CeO <sub>2</sub> | Cs <sub>2</sub> O | Ga <sub>2</sub> O <sub>3</sub> | GeO <sub>2</sub> | In <sub>2</sub> O <sub>3</sub> | La <sub>2</sub> O <sub>3</sub> | MoO <sub>3</sub> | Nb <sub>2</sub> O <sub>5</sub> | Nd <sub>2</sub> O <sub>3</sub> | PbO  | Pr <sub>2</sub> O <sub>3</sub> | Rb <sub>2</sub> O | SO <sub>3</sub> | SeO <sub>2</sub> | SnO  | SrO  | Ta <sub>2</sub> O <sub>5</sub> | TeO <sub>2</sub> | ThO <sub>2</sub> | V <sub>2</sub> O <sub>5</sub> | WO <sub>3</sub> | ZrO <sub>2</sub> |      |
|---------|--------------------------------|------------------|-------------------|--------------------------------|------------------|--------------------------------|--------------------------------|------------------|--------------------------------|--------------------------------|------|--------------------------------|-------------------|-----------------|------------------|------|------|--------------------------------|------------------|------------------|-------------------------------|-----------------|------------------|------|
| SV F    | .                              | 0.5              | .                 | 0.1                            | .                | .                              | 0.5                            | .                | 0.5                            | 0.6                            | .    | 0.15                           | .                 | .               | .                | .    | 1.0  | 0.12                           | .                | .                | .                             | .               | 1.0              | last |
| SV E    | .                              | .                | .                 | .                              | .                | .                              | .                              | .                | .                              | .                              | .    | .                              | .                 | .               | .                | 0.5  | 0.3  | .                              | .                | .                | .                             | .               | .                | last |
| BR AS1  | .                              | .                | 0.04              | .                              | 0.08             | 0.04                           | .                              | .                | .                              | .                              | 0.5  | .                              | 0.04              | .               | .                | .    | 0.71 | .                              | 0.04             | 0.04             | 0.01                          | .               | 0.15             |      |
| BR U 26 | .                              | 2.0              | .                 | .                              | .                | .                              | .                              | .                | .                              | .                              | .    | .                              | .                 | 0.2             | 0.14             | .    | .    | .                              | .                | .                | .                             | .               | .                |      |
| BR U 21 | .                              | 0.15             | .                 | .                              | .                | .                              | .                              | .                | .                              | .                              | .    | .                              | .                 | 0.15            | 0.02             | .    | .    | .                              | .                | .                | .                             | .               | .                |      |
| BR EK01 | .                              | .                | .                 | .                              | .                | .                              | .                              | 0.30             | .                              | .                              | 0.65 | .                              | .                 | .               | .                | 0.57 | .    | .                              | .                | .                | 0.89                          | .               | .                |      |
| BR U 25 | .                              | .                | .                 | .                              | .                | .                              | .                              | .                | .                              | .                              | .    | .                              | .                 | 0.12            | .                | .    | .    | .                              | .                | .                | .                             | .               | .                |      |
| BR CH1  | 1.0                            | .                | .                 | .                              | 0.3              | .                              | .                              | .                | 0.7                            | 0.5                            | .    | 0.4                            | 0.04              | .               | .                | .    | .    | .                              | .                | .                | 0.3                           | 1.2             | .                |      |

## ZINC AND ZIRCONIUM IN XRF DISCS

| typical analysis |       |                  |                  |                                |                               |      |                                |      |                                |      |                                |     |                                | 40 mm Ø x 5-6 mm |                   |       |                  |                   |       |
|------------------|-------|------------------|------------------|--------------------------------|-------------------------------|------|--------------------------------|------|--------------------------------|------|--------------------------------|-----|--------------------------------|------------------|-------------------|-------|------------------|-------------------|-------|
| Number           | ZnO   | ZrO <sub>2</sub> | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO  | Bi <sub>2</sub> O <sub>3</sub> | CaO  | Cr <sub>2</sub> O <sub>3</sub> | CdO  | Co <sub>2</sub> O <sub>3</sub> | F   | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | Li <sub>2</sub> O | MgO   | MnO <sub>2</sub> | Na <sub>2</sub> O |       |
| BR TL2           | .     | 30               | 10               | 0.5                            | 9.3                           | .    | .                              | .    | .                              | .    | .                              | .   | 0.1                            | 15               | 5                 | .     | .                | .                 | 15    |
| BR N 1           | 80.2  | .                | 0.2              | .                              | .                             | .    | 4.5                            | .    | 1.6                            | .    | .                              | 1.9 | .                              | .                | .                 | .     | .                | 0.7               | .     |
| FLX F1           | 12.92 | .                | 65.81            | 2.14                           | .                             | .    | .                              | 1.62 | .                              | .    | 0.181                          | .   | 2.57                           | 0.116            | 0.781             | .     | .                | .                 | 13.53 |
| FLX SP2          | 2.50  | 2.17             | 44.75            | .                              | 20.0                          | 5.35 | .                              | .    | .                              | 3.71 | .                              | .   | .                              | .                | .                 | 18.42 | .                | .                 | .     |

| Number  | NiO | P <sub>2</sub> O <sub>5</sub> | PbO  | Sb <sub>2</sub> O <sub>3</sub> | SO <sub>3</sub> | TiO <sub>2</sub> |
|---------|-----|-------------------------------|------|--------------------------------|-----------------|------------------|
| BR TL2  | .   | 0.1                           | 10   | .                              | .               | 5                |
| BR N 1  | 0.7 | .                             | .    | 9.3                            | .               | 0.9              |
| FLX F1  | .   | .                             | .    | .                              | 0.264           | .                |
| FLX SP2 | .   | .                             | 4.65 | .                              | .               | .                |

## MULTI-ELEMENT XRF DISCS

typical analysis

40 mm  $\phi$  x 5-6 mm

| Number     | Ag <sub>2</sub> O | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO  | Bi <sub>2</sub> O <sub>3</sub> | Br   | CaO   | CdO   | CeO <sub>2</sub> | Ce <sub>2</sub> O <sub>3</sub> | Cl   | CoO  | Co <sub>3</sub> O <sub>4</sub> | Cr <sub>2</sub> O <sub>3</sub> | Cs <sub>2</sub> O |
|------------|-------------------|--------------------------------|--------------------------------|-------------------------------|------|--------------------------------|------|-------|-------|------------------|--------------------------------|------|------|--------------------------------|--------------------------------|-------------------|
| BR AS1     | .                 | <b>15.8</b>                    | 0.05                           | 3.22                          | .    | .                              | .    | 0.83  | 0.39  | .                | .                              | .    | .    | .                              | 0.15                           | 0.04              |
| BR CH3     | 0.5               | <b>15.0</b>                    | 0.5                            | 5.0                           | 5.0  | 0.08                           | .    | 0.6   | .     | .                | .                              | .    | 1.0  | .                              | 0.6                            | 0.05              |
| FLX CH3    | 0.56              | <b>13.59</b>                   | 0.53                           | .                             | 5.51 | 2.07                           | .    | 0.59  | .     | .                | .                              | .    | .    | 0.93                           | 0.64                           | 0.05              |
| BR ES1     | 0.13              | <b>13.2</b>                    | 0.2                            | 1.1                           | 4.6  | 0.08                           | .    | 0.60  | .     | .                | .                              | .    | 0.74 | .                              | 0.56                           | .                 |
| FLX B2     | .                 | <b>9.23</b>                    | .                              | Rem                           | .    | .                              | .    | 32.48 | .     | .                | .                              | .    | .    | .                              | .                              | .                 |
| FLX B4     | .                 | <b>8.59</b>                    | .                              | Rem                           | .    | .                              | .    | 7.31  | .     | .                | .                              | .    | .    | .                              | .                              | .                 |
| BR PE 3    | 0.13              | <b>8.5</b>                     | 0.44                           | 4.0                           | 4.6  | 0.08                           | .    | 0.60  | .     | .                | .                              | .    | 0.74 | .                              | 0.56                           | .                 |
| FLX B1     | .                 | <b>7.34</b>                    | 0.57                           | .                             | 0.10 | .                              | .    | 17.37 | .     | .                | .                              | .    | .    | .                              | 1.72                           | .                 |
| FLX S6M    | .                 | <b>6.14</b>                    | 0.15                           | 6.9                           | 1.57 | .                              | .    | 4.87  | 0.28  | 0.37             | .                              | .    | .    | 0.52                           | 0.31                           | .                 |
| FLX MON-UT | 0.16              | <b>5.75</b>                    | 0.19                           | Rem                           | 0.19 | 0.18                           | 0.23 | 9.32  | 0.17  | 0.43             | .                              | 0.24 | .    | 0.17                           | 0.13                           | .                 |
| FLX MON    | 0.15              | <b>5.07</b>                    | 0.17                           | Rem                           | 0.21 | 0.19                           | 0.19 | 8.53  | 0.16  | 0.36             | .                              | 0.24 | .    | 0.17                           | 0.14                           | .                 |
| FLX S5     | .                 | <b>4.11</b>                    | .                              | .                             | 0.84 | 2.26                           | .    | 4.6   | 0.339 | 0.409            | .                              | .    | .    | 0.418                          | 0.427                          | .                 |
| FLX S13    | 0.27              | <b>3.95</b>                    | 0.18                           | 8.8                           | 1.20 | 2.17                           | 0.21 | 5.21  | 0.42  | 0.46             | .                              | 0.42 | .    | 0.45                           | 0.47                           | .                 |
| BR PF 3    | .                 | <b>3.85</b>                    | .                              | 2.0                           | 0.34 | .                              | .    | 2.84  | 0.96  | .                | 0.39                           | .    | 0.25 | .                              | 0.27                           | 0.13              |
| BR FS1     | .                 | <b>3.85</b>                    | .                              | 2.0                           | 0.34 | .                              | .    | 2.84  | 0.2   | .                | 0.39                           | .    | 0.25 | .                              | 0.27                           | 0.13              |
| BR CH4     | .                 | <b>3.0</b>                     | .                              | 2.65                          | 0.30 | .                              | .    | 4.00  | 1.00  | .                | 0.40                           | .    | 0.50 | .                              | 0.10                           | 0.15              |
| BR WIE2    | 0.54              | <b>1.89</b>                    | 0.66                           | 5.0                           | 2.0  | 0.56                           | .    | 3.0   | 0.57  | .                | .                              | .    | 1.27 | .                              | 1.46                           | .                 |
| FLX B3     | .                 | <b>0.37</b>                    | .                              | Rem                           | .    | .                              | .    | 5.73  | .     | .                | .                              | 0.09 | .    | .                              | 0.29                           | .                 |
| BR WIE1/1  | 0.11              | <b>0.19</b>                    | 0.13                           | 9.05                          | 2.0  | 0.11                           | .    | 3.0   | 0.12  | .                | .                              | .    | 0.13 | .                              | 0.15                           | .                 |
| FLX B5     | .                 | .                              | .                              | Rem                           | .    | .                              | .    | 8.67  | .     | .                | .                              | .    | .    | .                              | .                              | .                 |

| Number     | CuO   | Dy <sub>2</sub> O <sub>3</sub> | Er <sub>2</sub> O <sub>3</sub> | F    | Fe <sub>2</sub> O <sub>3</sub> | Ga <sub>2</sub> O <sub>3</sub> | Gd <sub>2</sub> O <sub>3</sub> | GeO <sub>2</sub> | HfO <sub>2</sub> | In <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | La <sub>2</sub> O <sub>3</sub> | MgO   | MnO   | MnO <sub>2</sub>      | MoO <sub>3</sub> |
|------------|-------|--------------------------------|--------------------------------|------|--------------------------------|--------------------------------|--------------------------------|------------------|------------------|--------------------------------|------------------|--------------------------------|-------|-------|-----------------------|------------------|
| BR AS1     | .     | .                              | .                              | 0.17 | 1.16                           | .                              | .                              | 0.08             | .                | 0.04                           | 2.16             | .                              | 3.20  | 20.3  | .                     | .                |
| BR CH3     | 0.3   | .                              | .                              | .    | .                              | 1.0                            | .                              | .                | .                | 0.1                            | 2.0              | 0.3                            | 0.1   | 12.0  | .                     | .                |
| FLX CH3    | 0.33  | .                              | .                              | .    | .                              | 1.19                           | .                              | .                | .                | 0.11                           | 1.73             | 0.25                           | 0.18  | 10.17 | .                     | .                |
| BR ES1     | 0.25  | .                              | .                              | 1.3  | 0.03                           | .                              | .                              | .                | .                | 0.09                           | 2.7              | 0.40                           | .     | 6.2   | .                     | .                |
| FLX B2     | .     | .                              | .                              | .    | 0.94                           | .                              | .                              | .                | .                | .                              | 0.43             | .                              | 5.01  | 0.83  | .                     | .                |
| FLX B4     | .     | .                              | .                              | .    | 10.04                          | .                              | .                              | .                | .                | .                              | 3.60             | .                              | 9.83  | 3.73  | .                     | .                |
| BR PE 3    | 0.82  | .                              | .                              | 1.3  | 0.03                           | .                              | .                              | .                | 0.09             | 0.95                           | 0.40             | .                              | .     | 6.5   | .                     | .                |
| FLX B1     | 0.10  | .                              | .                              | 1.16 | 9.48                           | .                              | .                              | .                | .                | 0.40                           | .                | .                              | 10.32 | 0.88  | .                     | .                |
| FLX S6M    | 0.39  | 0.19                           | 0.18                           | .    | 0.47                           | .                              | 0.17                           | .                | 0.40             | .                              | 3.27             | 0.38                           | 1.43  | 0.15  | Li <sub>2</sub> O:1.5 | 0.47             |
| FLX MON-UT | 0.15  | .                              | .                              | 2.26 | 0.95                           | .                              | 0.35                           | 0.26             | 0.18             | .                              | 1.53             | 0.34                           | 2.67  | 0.88  | Li <sub>2</sub> O:3.4 | 0.22             |
| FLX MON    | 0.16  | .                              | .                              | 1.47 | 1.20                           | .                              | 0.36                           | 0.26             | 0.19             | .                              | 1.91             | 0.41                           | 2.51  | 0.69  | Li <sub>2</sub> O:3.4 | 0.22             |
| FLX S5     | 0.412 | .                              | .                              | 0.89 | 0.478                          | .                              | .                              | .                | .                | .                              | 3.95             | 0.426                          | 1.68  | 0.382 | .                     | 0.43             |
| FLX S13    | 0.42  | 0.27                           | 0.21                           | 1.21 | 0.45                           | .                              | 0.26                           | 0.09             | 0.29             | 0.25                           | 4.76             | 0.42                           | 1.88  | 0.43  | Li <sub>2</sub> O:1.8 | 0.25             |
| BR PF 3    | 1.8   | .                              | .                              | 5.0  | 0.07                           | 0.09                           | .                              | .                | (0.01)           | 0.26                           | 18.3             | .                              | 0.82  | .     | .                     | .                |
| BR FS1     | 1.8   | .                              | .                              | 2.9  | 0.07                           | 0.09                           | .                              | .                | .                | 0.26                           | 18.4             | .                              | 0.82  | .     | .                     | .                |
| BR CH4     | 2.00  | .                              | .                              | .    | 0.10                           | 0.10                           | .                              | .                | .                | 0.40                           | 20.00            | .                              | 1.00  | .     | .                     | 0.20             |
| BR WIE2    | 2.5   | .                              | .                              | .    | 2.86                           | .                              | .                              | .                | .                | .                              | 5.0              | .                              | 1.66  | .     | 3.16                  | .                |
| FLX B3     | 0.27  | .                              | .                              | .    | 0.30                           | .                              | .                              | .                | .                | .                              | 7.11             | .                              | .     | .     | .                     | .                |
| BR WIE1/1  | 0.13  | .                              | .                              | .    | 0.15                           | .                              | .                              | .                | .                | 0.12                           | 12.0             | .                              | 0.17  | .     | 0.16                  | 0.15             |
| FLX B5     | .     | .                              | .                              | .    | .                              | .                              | .                              | .                | .                | .                              | 9.02             | .                              | .     | .     | .                     | .                |

| Number     | Na <sub>2</sub> O | Nb <sub>2</sub> O <sub>5</sub> | Nd <sub>2</sub> O <sub>3</sub> | NiO   | P <sub>2</sub> O <sub>5</sub> | PbO   | Pr <sub>2</sub> O <sub>3</sub> | Pr <sub>6</sub> O <sub>11</sub> | Rb <sub>2</sub> O | S    | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | Sc <sub>2</sub> O <sub>3</sub> | Se | SiO <sub>2</sub> | Sm <sub>2</sub> O <sub>3</sub> |
|------------|-------------------|--------------------------------|--------------------------------|-------|-------------------------------|-------|--------------------------------|---------------------------------|-------------------|------|-----------------|--------------------------------|--------------------------------|----|------------------|--------------------------------|
| BR AS1     | 0.13              | .                              | .                              | .     | 0.58                          | 0.5   | .                              | .                               | 0.04              | .    | .               | .                              | .                              | .  | 38.9             | .                              |
| BR CH3     | 16.0              | .                              | .                              | 2.0   | 0.6                           | 0.5   | 0.15                           | .                               | .                 | .    | .               | 0.4                            | .                              | .  | 31.83            | .                              |
| FLX CH3    | 17.39             | .                              | .                              | 2.04  | 0.60                          | 0.48  | .                              | 0.18                            | .                 | .    | .               | 0.42                           | .                              | .  | 36.76            | .                              |
| BR ES1     | 14.6              | 0.05                           | .                              | 1.85  | .                             | 0.3   | .                              | .                               | .                 | .    | .               | 0.43                           | .                              | .  | 48.03            | .                              |
| FLX B2     | .                 | .                              | .                              | .     | 2.17                          | .     | .                              | .                               | .                 | .    | 0.21            | .                              | .                              | .  | 42.33            | .                              |
| FLX B4     | 15.40             | .                              | .                              | .     | 2.81                          | .     | .                              | .                               | .                 | .    | 0.12            | .                              | .                              | .  | 34.60            | .                              |
| BR PE 3    | 15.3              | 0.05                           | .                              | 1.85  | .                             | 0.45  | .                              | .                               | (0.01)            | .    | .               | 0.43                           | .                              | .  | 50.07            | .                              |
| FLX B1     | 0.56              | 0.60                           | .                              | 0.80  | 2.16                          | 4.55  | .                              | .                               | .                 | .    | .               | .                              | .                              | .  | 33.80            | .                              |
| FLX S6M    | 9.16              | 0.90                           | 0.29                           | 0.48  | 0.70                          | 1.83  | .                              | 0.22                            | .                 | .    | .               | 0.22                           | .                              | .  | 47.26            | 0.12                           |
| FLX MON-UT | 5.61              | 0.21                           | 0.24                           | 0.17  | 1.56                          | 0.22  | .                              | 0.15                            | 0.12              | .    | 0.11            | 0.17                           | 0.19                           | .  | 44.39            | 0.27                           |
| FLX MON    | 5.09              | 0.20                           | 0.16                           | 0.18  | 1.47                          | 0.18  | .                              | 0.09                            | 0.14              | .    | 0.11            | 0.17                           | 0.20                           | .  | 47.02            | 0.27                           |
| FLX S5     | 10.04             | 0.615                          | .                              | 0.444 | 0.453                         | 2.64  | .                              | .                               | .                 | .    | .               | .                              | .                              | .  | 54.36            | .                              |
| FLX S13    | 7.74              | 0.28                           | 0.36                           | 0.49  | 0.55                          | 1.81  | 0.27                           | 0.10                            | 0.10              | 0.47 | 0.16            | 0.09                           | SeO <sub>2</sub> :0.01         | .  | 45.13            | 0.26                           |
| BR PF 3    | 1.2               | 0.38                           | .                              | .     | .                             | 0.05  | .                              | 0.16                            | (0.01)            | .    | 0.86            | .                              | .                              | .  | 56.31            | 0.18                           |
| BR FS1     | 1.2               | 0.38                           | .                              | .     | .                             | 0.05  | .                              | 0.16                            | .                 | .    | 0.25            | .                              | .                              | .  | 59.6             | 0.18                           |
| BR CH4     | 0.80              | 0.10                           | .                              | .     | .                             | 0.10  | .                              | 0.20                            | .                 | .    | 1.00            | .                              | .                              | .  | 56.83            | .                              |
| BR WIE2    | 14.0              | .                              | .                              | 2.55  | 1.15                          | 2.15  | .                              | .                               | .                 | 1.25 | 0.6             | .                              | 0.5                            | .  | 38.95            | .                              |
| FLX B3     | 9.66              | .                              | .                              | 0.24  | 0.47                          | 0.25  | .                              | .                               | .                 | 0.48 | 0.58            | .                              | .                              | .  | 64.18            | .                              |
| BR WIE1/1  | 17.0              | 0.14                           | .                              | 0.13  | 0.23                          | 0.11  | .                              | .                               | .                 | 0.25 | 0.12            | .                              | 0.10                           | .  | 53.10            | .                              |
| FLX B5     | 10.62             | .                              | .                              | 8.24  | .                             | 11.26 | .                              | .                               | .                 | .    | 2.21            | .                              | .                              | .  | 29.78            | .                              |

| Number     | SnO  | SnO <sub>2</sub> | SrO   | Ta <sub>2</sub> O <sub>5</sub> | Te   | TeO <sub>2</sub> | ThO <sub>2</sub> | TiO <sub>2</sub> | UO <sub>3</sub> | V <sub>2</sub> O <sub>5</sub> | WO <sub>3</sub> | Y <sub>2</sub> O <sub>3</sub> | Yb <sub>2</sub> O <sub>3</sub> | ZnO   | ZrO <sub>2</sub> |
|------------|------|------------------|-------|--------------------------------|------|------------------|------------------|------------------|-----------------|-------------------------------|-----------------|-------------------------------|--------------------------------|-------|------------------|
| BR AS1     | .    | .                | 0.71  | .                              | .    | 0.04             | 0.04             | 3.9              | 0.01            | 0.01                          | .               | .                             | .                              | 7.4   | 0.15             |
| BR CH3     | .    | 0.8              | 0.1   | 0.05*                          | .    | .                | 0.44             | 1.0              | .               | .                             | .               | 0.20                          | .                              | 1.8   | .                |
| FLX CH3    | .    | 0.86             | 0.08  | 0.03                           | .    | .                | 0.5              | 1.03             | .               | .                             | .               | 0.18                          | .                              | 1.82  | .                |
| BR ES1     | .    | 0.6              | 0.31  | 0.05                           | .    | 0.03             | 0.44             | 0.8              | .               | 0.2                           | .               | 0.18                          | .                              | 0.15  | .                |
| FLX B2     | .    | .                | .     | .                              | .    | .                | .                | 1.04             | .               | .                             | .               | .                             | .                              | .     | .                |
| FLX B4     | .    | .                | .     | .                              | .    | .                | .                | .                | .               | .                             | .               | .                             | .                              | .     | .                |
| BR PE 3    | .    | 0.60             | 0.31  | 0.05                           | .    | 0.03             | .                | 0.02             | .               | .                             | .               | 0.18                          | .                              | 0.92  | .                |
| FLX B1     | .    | 0.21             | 0.11  | .                              | .    | 0.11             | .                | 1.15             | .               | .                             | 1.97            | .                             | .                              | 0.11  | .                |
| FLX S6M    | .    | 0.57             | 1.02  | 0.53                           | .    | .                | .                | 4.93             | .               | 0.49                          | .               | 0.31                          | 0.23                           | 1.10  | 0.63             |
| FLX MON-UT | .    | 0.18             | 0.20  | 0.18                           | .    | 0.17             | 0.19             | 1.16             | 0.19            | 0.18                          | 0.18            | 0.25                          | 0.19                           | 0.15  | 0.18             |
| FLX MON    | .    | 0.17             | 0.20  | 0.21                           | .    | 0.13             | .                | 1.13             | .               | 0.19                          | 0.17            | 0.17                          | 0.31                           | 0.20  | 0.17             |
| FLX S5     | .    | 0.451            | 0.783 | 0.431                          | .    | .                | .                | 0.476            | .               | 0.451                         | 0.414           | .                             | .                              | 0.908 | 0.453            |
| FLX S13    | .    | 0.41             | 0.99  | 0.46                           | .    | 0.42             | .                | 0.48             | .               | 0.46                          | 0.42            | 0.19                          | 0.19                           | 0.94  | 0.47             |
| BR PF 3    | .    | 0.20             | .     | 0.36                           | .    | .                | .                | 0.04             | .               | 1.7                           | .               | 0.45                          | .                              | .     | 0.74             |
| BR FS1     | .    | 0.2              | .     | 0.36                           | .    | .                | .                | 0.04             | .               | 1.7                           | .               | 0.45                          | .                              | .     | 0.74             |
| BR CH4     | .    | 0.20             | .     | 0.50*                          | .    | .                | .                | 2.00             | .               | 0.70                          | 0.10            | 0.60                          | .                              | 0.80  | 1.00             |
| BR WIE2    | 2.27 | .                | .     | .                              | 0.5  | .                | .                | 0.83             | .               | .                             | .               | .                             | .                              | 2.49  | 0.68             |
| FLX B3     | .    | .                | .     | .                              | .    | .                | .                | .                | .               | .                             | .               | .                             | .                              | 0.25  | .                |
| BR WIE1/1  | 0.11 | .                | .     | .                              | 0.10 | .                | .                | 0.17             | .               | 0.18                          | 0.13            | .                             | .                              | 0.12  | 0.14             |
| FLX B5     | .    | .                | .     | .                              | .    | .                | .                | .                | .               | .                             | .               | .                             | .                              | 13.70 | .                |

\* BR CH3 and BR CH4 list Ta<sub>2</sub>O<sub>3</sub> as Ta<sub>2</sub>O<sub>5</sub>









## GEOLOGICAL POWDER SETTING-UP SAMPLES

analysis in mass %

Data Sheet shows two lists of analytical results, no uncertainties

100 g powder

| Number   | Al <sub>2</sub> O <sub>3</sub> | Ba    | CaO  | Cu     | F     | T.Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO  | MnO  | Na <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | Pb     | S      | SiO <sub>2</sub> | TiO <sub>2</sub> | W       | Zn     |
|----------|--------------------------------|-------|------|--------|-------|----------------------------------|------------------|------|------|-------------------|-------------------------------|--------|--------|------------------|------------------|---------|--------|
| US GXR-6 | 33.4                           | 0.13  | 0.25 | 0.0066 | 0.022 | 7.98                             | 2.25             | 1.01 | 0.13 | 0.14              | 0.08                          | 0.0101 | 0.016  | 46.68            | 0.83             | 0.00019 | 0.0118 |
| US GXR-2 | 31.10                          | 0.224 | 1.30 | 0.0076 | 0.045 | 2.66                             | 1.65             | 1.41 | 0.13 | 0.75              | 0.24                          | 0.069  | 0.0313 | 47.54            | 0.5              | 0.00019 | 0.053  |
| US GXR-4 | 13.6                           | 0.164 | 1.41 | 0.652  | 0.284 | 4.42                             | 4.83             | 2.75 | 0.02 | 0.76              | 0.27                          | 0.0052 | 1.77   | 66.19            | 0.48             | 0.00308 | 0.0073 |
| US GXR-3 | 12.1                           | 0.50  | 19.0 | 0.0015 | 8.62  | 27.2                             | 0.88             | 1.34 | 2.88 | 1.13              | 0.25                          | 0.0015 | 0.232  | 13.36            | 0.17             | 1.07    | 0.0207 |
| US GXR-1 | 6.64                           | 0.068 | 1.34 | 0.111  | 0.126 | 33.8                             | 0.06             | 0.36 | 0.11 | 0.07              | 0.15                          | 0.072  | 0.26   | 48.57            | 0.06             | 0.0164  | 0.076  |

continued analysis in mg/kg

| Number   | Ag  | As   | Au    | B   | Be   | Bi   | Br  | Cd   | Ce   | Cl  | Co   | Cr   | Cs  | Hg    | La   |
|----------|-----|------|-------|-----|------|------|-----|------|------|-----|------|------|-----|-------|------|
| US GXR-6 | 1.3 | 330  | 0.095 | 9.8 | 1.4  | 0.29 | 1.4 | 1    | 36   | .   | 13.8 | 96   | 4.2 | 0.068 | 13.9 |
| US GXR-2 | 17  | 25   | 0.036 | 42  | 1.7  | 0.7  | 3.2 | 4.1  | 51.4 | .   | 8.6  | 36   | 5.2 | 2.9   | 25.6 |
| US GXR-4 | 4   | 98   | 0.47  | 4.5 | 1.9  | 19   | 0.5 | 0.86 | 102  | 78  | 14.6 | 64   | 2.8 | 0.11  | 64.5 |
| US GXR-3 | 2.4 | 3970 | .     | 160 | 26   | 16   | .   | 0.3  | 18   | .   | 43   | 19.3 | 175 | 0.33  | 8.8  |
| US GXR-1 | 31  | 401  | 3.4   | 15  | 1.22 | 1380 | 0.5 | 3.3  | 17   | 136 | 8.2  | 13   | 3   | 3.9   | 7.5  |

| Number   | Li   | Mo  | Ni | Rb  | Sc   | Se   | Sn  | Sr  | Te    | Th   | U    | V   | Y  | Zr  | Type         |
|----------|------|-----|----|-----|------|------|-----|-----|-------|------|------|-----|----|-----|--------------|
| US GXR-6 | 32   | 2.4 | 27 | 90  | 27.6 | 0.94 | 1.7 | 35  | 0.018 | 5.3  | 1.54 | 186 | 14 | 110 | Soil         |
| US GXR-2 | 54   | 2.1 | 21 | 78  | 6.88 | 0.61 | 1.7 | 160 | 0.69  | 8.8  | 2.9  | 52  | 17 | 269 | Soil         |
| US GXR-4 | 11.1 | 310 | 42 | 160 | 7.7  | 5.6  | 5.6 | 221 | 0.97  | 22.5 | 6.2  | 87  | 14 | 186 | Copper Ore   |
| US GXR-3 | 114  | 6.6 | 60 | 92  | 16.8 | 0.15 | .   | 950 | 0.009 | 2.94 | 3    | 42  | 15 | 63  | Tungsten Ore |
| US GXR-1 | 8.2  | 18  | 41 | 14  | 1.58 | 16.6 | 55  | 259 | 13    | 2.44 | 33   | 76  | 32 | 38  | Jasperoid    |



## AUSMON XRF DRIFT MONITORS (wavelength dispersive XRF)

The monitors listed below have been formulated so that they have appropriate count rates for different ores and products. The monitors contain little flux and most have been in use for many years and have given excellent stability.

The monitor discs are 32 or 40mm diameter and about 4mm high. The monitors are polished flat so that they can be mounted precisely and are easily cleaned. The following types for wavelength dispersive XRF are available:

### AUSMON Bauxite

Suitable with bauxites and other materials with high Aluminum and contain **Fe, Si, Al, Ca, F, Na, Mg, P, S, Cl, K, Ti, V, Cr, Mn, Co, Ni, Cu, Zn, As, Br, Sn, and Ga.** (24 elements)

### AUSMON Cement A

Suitable when making detailed analyses of cements or other materials with high Calcium and contain **Ca, Si, Al, Mg, Fe, Na, Cl, S, F, P, K, Ti, Cr, Mn, Zn, Sr, Br, Ba, and Pb.** (19 elements)

### AUSMON Iron Ore

Suitable with iron ores and related materials, containing **Fe, Si, Al, Ca, F, Na, Mg, P, S, Cl, K, Ti, V, Cr, Mn, Co, Ni, Cu, Zn, As, Br, Sn, Cd, Sb, Bi, Mo, Ba, and Pb.** (28 elements)

### AUSMON Manganese Ore

Suitable with manganese ores and contain: **Mn, Fe, Si, Na, Mg, Al, P, K, Ca, Ti, V, Sr, Br, Ba, and Pb.** (15 elements)

### AUSMON Mineral Sands

Suitable with mineral sand products, including but not limited to ilmenite, rutile, zircon, monazite and xenotime. The following elements are present: **Ti, Fe, Zr, Si, Y, La, Ce, Nd, Pr, Yb, P, F, Na, Mg, Al, S, Cl, K, Ca, Sc, V, Mn, Cr, Co, Ni, Cu, Zn, Br, As, Sr, Nb, Mo, Cd, Sn, Ba, Hf, Pb, Th, and U.** (39 elements)

### AUSMON Nickel Ore

Suitable with nickel ores and related materials, containing **Ni, Fe, S, Si, F, Na, Mg, Al, P, Cl, K, Ca, Ti, Mn, Cr, Co, Cu, Zn, As, Se, Br, Mo, Ag, Pb, and Bi.** (25 elements)

### AUSMON Rare Earths

Suitable with monazite, xenotime and other rare earth minerals for the rare earth oxides. The following elements are present: **La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, P, F, Na, Mg, Al, Si, S, Cl, K, Ca, Sc, Ti, Mn, Fe, Ni, Br, Sr, Zr, Nb, Ba, Hf, Pb, Th, and U.** (39 elements)

### AUSMON Silicates

These monitors were designed for the analysis of rocks, soils and related materials. They can also be used as general purpose monitors for a wide range of materials, eg. vegetables, etc. They contain the following elements as majors: **Fe, Mn, Ti, Ca, K, Cl, S, P, Si, Al, Mg, Na and F.** In addition about 2000ppm of each of the following are present: **Sc** (1000ppm), **V, Cr, Co, Cu, Ni, Zn, Ga, Ge, Se, As, Rb, Sr, Br, Y, Zr, Nb, Mo, Ag, Cd, Sn, Sb, Te, Cs, Ba, La, Ce, Nd, Pr, Gd, Sm, Yb, Hf, Ta, W, Bi, Tl, Pb, Th, and U.** (53 elements)

### AUSMON Sulfides

These monitors are for use with lead, zinc, iron and copper sulphides, as ores, concentrates and related products. They contain: **Pb, Zn, Fe, Cu, S, F, Na, Mg, Al, Si, P, K, Ca, Cl, Ti, Co, Ni, Cr, Mn, As, Sr, Se, Ag, Cd, Sn, Sb, Ba, Te, Tl, Mo, U, and Bi.** (32 elements)

## AUSMON XRF DRIFT MONITORS (energy dispersive XRF)

The monitors listed below have been formulated so that they have appropriate count rates for different ores and products. The monitors contain little flux and most have been in use for many years and have given excellent stability.

The monitor discs (except AUSMON Cement B) are 32mm diameter and about 4mm high. The monitors are polished flat so that they can be mounted precisely and are easily cleaned. The following types for energy dispersive XRF are available:

### AUSMON MCACAL

Intended for the energy dispersive XRF system, this monitor contains the following elements: **F, Na, Mg, Si, Cl, Ca, V, Zn, As, Fe, Y, Mo, Cd, Ba.** (14 elements)

### AUSMON Mon A

This is intended as a drift monitor with the following elements: **Mg, Si, P, W, Pb, Sn.** (6 elements)

### AUSMON Mon B

This is a drift monitor with the following elements: **Na, Al, Si, Ca, Ti, Cr, and Ni.** (7 elements)

## AUSMON SPECIALS

Monitor discs can be made to suite needs not covered by the above. Very often this is for laboratories performing analysis on materials that do not have long term stability and so they cannot use a similar product as a monitor, eg aqueous liquids or liquids from the petroleum industry. Cl in brine, Ca in milk, Cl, Br, and trace elements in synthetic rubbers are some common examples for which custom monitors have been made.