

## INDEX

ALUMINUM 2, 3, 4  
ALUMINUM IN XRF DISCS 15  
AUSMON 25, 26

BARIUM IN XRF DISCS 15  
BAUXITE 25  
BORON IN XRF DISCS 15  
BRASS 5  
BRONZE 5

CALCIUM IN XRF DISCS 16  
CARBON STEEL 11, 12  
CARBONATE IN XRF DISC 16  
CAST IRON 9, 10  
CEMENT 25  
CERAMIC 5  
COBALT 5  
COPPER 5

ELEMENTS IN XRF DISCS 17

FLUORITE IN XRF DISCS 16

GEOLOGICAL 24  
GLASS XRF DISCS AND PLATES 17

HIGH ALLOY STEEL 14

ILMENITE 25  
IRON 9, 10  
IRON ORE 25

LAYER 7  
LEAD 6  
LEAD IN XRF DISCS 17  
LOW ALLOY STEEL 11, 12, 13

MAGNESIUM 6  
MANGANESE ORE 25  
MINERAL SANDS 25  
MONAZITE 25  
MULTI-ELEMENT XRF DISCS 19

NEODYMIUM IN XRF DISCS 17  
NICKEL 7  
NICKEL ORE 25

PHOSPHORUS IN XRF DISCS 17  
POWDER 24

RARE EARTHS 25  
RoHS 7  
RUTILE 25

SETS 10, 13  
SILICA IN XRF DISCS 18, 25  
STAINLESS STEEL 13, 14  
SULFIDES 25

TIN 7  
TITANIUM 8

URANIUM IN XRF DISCS 18

WEEE 7

XENOTIME 25  
XRF DISCS  
7, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26

ZINC 8  
ZINC IN XRF DISCS 18  
ZIRCONIUM IN XRF DISCS 18

**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 RC11/07 | 0.028    | 0.010    | 0.005 | .    | 10   | 0.002    | 0.010    | 0.0024   | 0.0049   | 0.003 | 0.012    | 0.011    | 0.015    | 0.046    |
| 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 RC11/07 | 0.021    | 0.005 | 0.010    | 0.012 | 0.0008   | 0.018    | 0.016    | 0.026 | 0.0015   | 0.010    | 0.0029  | 0.015    | 0.012    | 0.010 |
| 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 | 0.0002   | <0.0003  | .     |
| IARM 220G  | 0.00005  | .     | <0.00001 | .     | <0.00001 | 0.00007  | 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 | .     | <0.0002  | .     | <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 RC11/07 | 0.018    | 0.005    | 0.015    | 0.017   | 0.0047 | 0.020    | 0.015    | 60 mm Ø x 25 mm    |                                |
| R A 10     | <0.0010  | <0.0010  | <0.0010  | <0.0010 | .      | <0.0010  | <0.0010  | 50 mm Ø x 50 mm    | Al: 99.96                      |
| 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 | <0.0002  | 0.00052 | .      | 0.0003   | 0.000088 | 57 mm Ø x 38 mm    | many more elements             |
| 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  | <0.0003 | .      | <0.0002  | <0.00005 | 60 mm Ø x 40 mm    |                                |
| V E0       | <0.00002 | <0.00002 | <0.00005 | <0.0003 | .      | <0.00005 | <0.00003 | 60 mm Ø x 40 mm    |                                |
| AA SQ-10   | .        | .        | .        | .       | .      | .        | .        | 64 mm Ø x 37 mm    | 1199 Alloy, no analysis issued |
| C Al 0     | .        | .        | .        | .       | .      | .        | .        | 50 mm Ø x 30-50 mm | 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   | .       | .      | .      | .      |
| 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 |
| R A 20       | 14.8  | 5.4    | 0.78  | 1.1    | 0.27   | 2.7    | 0.16  | <0.0002 | 0.006   | 0.12   | 0.01    | 0.09    | 0.02    | 0.06   | 0.02   | 0.06   |
| 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 18       | 14.08 | 7.99   | 0.42  | 0.31   | 0.31   | 3.05   | 0.41  | .       | 0.01    | <0.005 | 0.01    | 0.09    | 0.01    | 0.31   | 0.07   | <0.001 |
| 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   | .      | 0.02   |
| 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 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  | .      | .      | .     | .       | .       | .      | .       | .       | .       | .      | .      | .      |
| AL RC60/02   | 1.34  | 0.29   | 0.49  | 0.92   | 1.1    | 0.10   | 0.10  | .       | .       | 0.20   | .       | .       | .       | .      | .      | 0.21   |
| R A 19       | 1.25  | 0.51   | 0.90  | 8.0    | 1.1    | 0.51   | 7.73  | 0.006   | 0.001   | 0.15   | 0.001   | <0.01   | .       | .      | .      | 0.23   |
| 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   | 0.01    | 0.03    | .      | 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   |
| 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       |
|--------------|--------|-------|--------|--------|-------|--------|-------|--------|--------|------|--------|--------|-------|------|----------|----------|
| Number       | Ag     | As    | B      | Bi     | Cd    | Co     | Ga    | In     | Li     | Mo   | P      | V      | Zr    | Al   | Ø X H mm |          |
| C Al 4       | .      | .     | 0.0008 | .      | .     | .      | .     | .      | .      | .    | .      | .      | .     | 75   | 50x30-50 | last     |
| 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  |          |
| R A 20       | .      | .     | <0.001 | .      | .     | 0.007  | .     | .      | <0.001 | .    | 0.017  | 0.12   | 0.08  | Rem  | 50 x 50  |          |
| KUT ASC-1    | .      | .     | .      | 0.1    | 0.05  | .      | 0.04  | .      | .      | .    | .      | 0.02   | 0.01  | .    | 45 x 35  |          |
| R A 18       | .      | 0.001 | 0.003  | <0.01  | .     | 0.01   | 0.008 | .      | .      | 0.10 | 0.01   | 0.001  | <0.01 | 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   | .      | 0.04 | .      | 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 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  |          |
| AL RC60/02   | .      | .     | .      | 0.10   | .     | .      | 0.011 | .      | .      | .    | 0.0045 | 0.11   | .     | .    | 60 x 25  |          |
| R A 19       | 0.19   | .     | 0.002  | 0.10   | 0.03  | 0.38   | 0.06  | 0.06   | <0.01  | .    | .      | 0.14   | 0.18  | Rem  | 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  | Hg: 0.01 |
| 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  |          |
| PY 2004      | .      | .     | .      | .      | 0.02  | .      | 0.03  | .      | 0.01   | .    | .      | .      | 0.02  | .    | 60 x 40  |          |
| 164X ALSUS 7 | .      | .     | .      | .      | .     | 0.2    | .     | .      | .      | .    | .      | .      | 0.18  | .    | 40 x 15  |          |
| V E2         | 0.22   | .     | .      | .      | .     | 0.04   | 0.06  | .      | .      | .    | .      | 0.11   | .     | .    | 60 x 40  |          |

## 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 |
| C AL 3     | 0.11    | 0.02   | 0.26  | 2.86   | 0.44   | 0.005   | 0.05  | .       | .      | 0.13     | .        | 0.009    | .     | <0.0003 | .     | 0.007 |
| 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 |
| 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  | 0.013 | 0.005  | 0.006  | 0.004   | 0.005 | 0.001   | 0.004  | 0.005    | .        | 0.003    | 0.010 | 0.004   | 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      | .       | .      | 4.0   | .      | .      | .       | .     | .       | .      | .        | .        | .        | .     | .       | .     | .     |

| Number     | Si      | Cu     | Fe    | Mg      | Mn      | Ni       | Zn    | Be       | Ca    | Cr      | Na    | Pb     | Sb      | Sn             | Sr | Ti |
|------------|---------|--------|-------|---------|---------|----------|-------|----------|-------|---------|-------|--------|---------|----------------|----|----|
| 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        | .  | .  |
| C AL 3     | .       | .      | .     | .       | .       | .        | 0.009 | .        | .     | .       | .     | .      | 96.1    | ~40-50 x 30-50 | .  | .  |
| 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        | .  | .  |
| 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   | .      | 0.005 | 0.006   | 0.003   | 0.003    | 0.006 | .        | 0.005 | .       | 0.003 | 0.003  | .       | 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

| mm     |    |    | typical analysis |      |     |      |       |     |      |     |    |      |        |       | T = trace, such as "<0.005" or "<0.01" |     |       |     |       |     |    |  |  |  |  |  | ~35 mm Ø x ~25-35 |  |  |  |
|--------|----|----|------------------|------|-----|------|-------|-----|------|-----|----|------|--------|-------|----------------------------------------|-----|-------|-----|-------|-----|----|--|--|--|--|--|-------------------|--|--|--|
| Number |    |    | Al               | B    | C   | Cr   | Cu    | Fe  | Mn   | Mo  | Nb | Ni   | P      | S     | Si                                     | Sn  | Ta    | Ti  | V     | W   | Zr |  |  |  |  |  |                   |  |  |  |
| R      | Co | 16 | 0.05             | 0.04 | 0.2 | 0.06 | 0.8   | 21  | 0.01 | 2.1 | 2  | 0.03 | <0.01  | <0.01 | 0.3                                    | 0.2 | ~0.04 | 0.5 | 0.7   | .   | .  |  |  |  |  |  |                   |  |  |  |
| 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 | 0.05             | 0.05 | 0.5 | 29   | Co:51 | 0.9 | 0.3  | .   | .  | 10   | <0.001 | <0.01 | 0.7                                    | .   | .     | .   | <0.01 | 7   | .  |  |  |  |  |  |                   |  |  |  |
| 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     |
|---------------|--------|---------|---------|---------|---------|----------|---------|---------|---------|---------|---------|---------|---------|-------------------|--------|
| COPPER        |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| 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  | 0.0012  | 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        | Rem    | <0.005  | <0.001  | <0.002  | <0.002  | 0.7      | <0.01   | <0.005  | <0.005  | <0.005  | 0.03    | .       | .       | .                 | .      |
| C Cu 2        | .      | 0.2180  | 0.1150  | .       | 0.0090  | 0.0110   | 0.0227  | 0.0113  | 0.4220  | 0.3710  | .       | 0.4930  | .       | 0.0047            | .      |
| C Cu 3        | .      | .       | .       | .       | .       | .        | .       | .       | .       | .       | .       | .       | 0.0875  | .                 | .      |
| R C 38        | 67     | 0.01    | 0.01    | <0.01   | <0.01   | <0.001   | 0.7     | 0.8     | 31      | <0.01   | 0.02    | <0.001  | 0.02    | .                 | .      |
| BRASS         |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| 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   | 0.02    | .                 | .      |
| BRONZE        |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| R C 12        | Rem    | 0.21    | 0.19    | 0.13    | 0.009   | 0.04     | 0.10    | 0.08    | 0.04    | 0.09    | 0.08    | 0.06    | 0.09    | (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    | <0.01   | <0.01   | 8       | .       | <0.01    | 1.5     | 5.5     | 2       | 0.02    | 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        | 80     | 0.03    | 0.08    | 11      | <0.006  | 0.03     | 3.8     | 0.2     | 4.6     | <0.01   | 0.05    | <0.001  | 0.02    | .                 | .      |
| R C 36        | 76     | 7.4     | 1.0     | <0.005  | 0.01    | <0.001   | 0.03    | <0.005  | 1.6     | 14      | <0.005  | 0.015   | 0.009   | .                 | <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     |
|               |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| Number        | C      | Ca      | Cd      | Co      | Mg      | O        | P       | S       | Sb      | Se      | Te      | Ti      | Zr      | Units             |        |
| COPPER        |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| 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        | .      | .       | .       | 0.003   | 0.003   | 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        | .      | .       | .       | .       | .       | .        | <0.005  | <0.001  | .       | .       | .       | .       | 0.1     | 40 mm Ø x 40 mm   |        |
| C Cu 2        | .      | .       | .       | .       | .       | .        | .       | .       | 0.2830  | .       | .       | .       | last    | 40 mm Ø x 30 mm   |        |
| C Cu 3        | .      | .       | 0.0096  | 0.0496  | 0.001   | .        | .       | 0.0229  | .       | 0.0475  | 0.0194  | .       | last    | 40 mm Ø x 30 mm   |        |
| R C 38        | .      | .       | <0.01   | <0.001  | <0.001  | .        | <0.01   | <0.01   | 0.01    | .       | .       | .       | <0.001  | 40 mm Ø x 40 mm   |        |
| BRASS         |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| 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   |        |
| BRONZE        |        |         |         |         |         |          |         |         |         |         |         |         |         |                   |        |
| R C 12        | .      | .       | 0.05    | 0.05    | 0.002   | .        | 0.09    | 0.04    | 0.01    | (0.02)  | (0.04)  | (0.002) | 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  | <0.01   | <0.001  | .        | <0.01   | <0.005  | .       | .       | .       | .       | <0.001  | 40 mm Ø x 40 mm   |        |
| R C 36        | .      | .       | <0.001  | <0.001  | <0.001  | .        | <0.01   | 0.04    | 0.23    | .       | .       | <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      | 30      | 2.2     | 2.6     | 0.07    | 0.10    | 0.02    | 1.5     | <0.001  | <0.01   | 0.002   | .      | .       | .      | 0.08    |
| R Pb 17      | 3.5     | 14      | 2.1     | 0.14    | 0.13    | <0.001  | 2.0     | <0.001  | <0.0005 | 0.001   | <0.001 | 0.01    | <0.001 | <0.01   |
| 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 13      | 0.14    | 0.15    | 0.05    | 0.05    | 0.29    | 0.06    | 0.14    | .       | .       | .       | .      | 0.03    | (0.03) | 0.06    |
| R Pb 16      | 0.12    | <0.001  | 0.002   | <0.001  | <0.01   | <0.001  | <0.001  | <0.001  | <0.0005 | <0.001  | 0.002  | .       | <0.001 | <0.001  |
| 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      | <0.005  | 12.6    | 0.008   | 1.4     | 0.02    | <0.005  | 0.06    | <0.001  | <0.002  | <0.001  | 0.01   | <0.005  | .      | <0.001  |
| R Pb 11      | <0.0005 | <0.0005 | <0.0010 | <0.0010 | <0.0030 | <0.0005 | <0.0005 | <0.0005 | .       | <0.0005 | .      | <0.0005 | .      | <0.0005 |
| R Pb PM      | .       | .       | 0.0100  | .       | .       | .       | .       | .       | .       | .       | .      | .       | .      | .       |

| Number | Sn | Sb | Ag | As | Bi | Cd | Cu | Fe | In | Ni | S | Te | Tl | Zn |
|--------|----|----|----|----|----|----|----|----|----|----|---|----|----|----|
|--------|----|----|----|----|----|----|----|----|----|----|---|----|----|----|

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      | 0.01    | (0.002) | .      | .       | <30 | <10 | (0.001) | .  | .   | .    | <10 | .      | (0.001) | (0.001) | .   | .   | .      |
| 168X Pb SUS1 | .       | 0.001   | .      | .       | .   | .   | .       | .  | .   | .    | .   | .      | .       | .       | .   | .   | 0.01   |
| R Pb 13      | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .      | .       | .       | .   | .   | 0.003  |
| R Pb 16      | 0.03    | .       | (0.01) | 0.2     | .   | .   | .       | .  | .   | (10) | .   | <0.001 | .       | .       | .   | .   | .      |
| R Pb 18      | <0.0001 | .       | .      | <0.0001 | <1  | 1   | .       | .  | .   | .    | <10 | .      | .       | .       | .   | .   | (0.01) |
| R Pb 14      | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .      | .       | .       | .   | .   | .      |
| R Pb 11      | .       | .       | .      | .       | .   | .   | .       | .  | .   | .    | .   | .      | .       | .       | .   | .   | .      |
| R Pb PM      | .       | 0.0100  | .      | .       | .   | .   | .       | .  | 3   | .    | .   | .      | 0.0050  | 0.0050  | 50  | 50  | .      |

| Number | Al | Au | Ba | Ca | Co* | Cr* | Ge | Hg | Ir* | Mg* | Mn* | Na | Pd | Pt | Rh* | Ru* | Se |
|--------|----|----|----|----|-----|-----|----|----|-----|-----|-----|----|----|----|-----|-----|----|
|--------|----|----|----|----|-----|-----|----|----|-----|-----|-----|----|----|----|-----|-----|----|

## MAGNESIUM BASE SETTING-UP SAMPLES

cast typical analysis listed in mass %

| Number       | Al    | Cd     | Cu     | Fe     | Mg   | Mn    | Ni     | Pb    | Si    | Sn    | Zn     | Zr     |
|--------------|-------|--------|--------|--------|------|-------|--------|-------|-------|-------|--------|--------|
| R Mg 17      | 7.5   | <0.01  | <0.01  | 0.009  | Rem  | 0.2   | 0.001  | .     | 0.04  | 0.03  | 0.4    | <0.001 |
| R Mg 13 *    | 5.7   | 0.0001 | 0.006  | 0.001  | Rem  | 0.2   | 0.001  | 0.001 | 0.01  | 0.001 | 0.8    | 0.004  |
| C Mg 2 *     | 5.7   | 0.0001 | 0.006  | 0.001  | Rem  | 0.2   | 0.001  | 0.001 | 0.01  | 0.001 | 0.8    | 0.004  |
| 166X MG SUS3 | 0.4   | 0.005  | 0.07   | <0.005 | Rem  | 0.8   | 0.02   | 0.04  | 0.01  | 0.005 | 0.09   | .      |
| R Mg 11      | 0.022 | .      | <0.003 | <0.004 | 99.9 | 0.022 | <0.005 | .     | 0.037 | .     | <0.005 | .      |
| 58A ST7310   | 0.004 | .      | 1.64   | 0.0098 | Rem  | 0.967 | 0.002  | .     | 0.025 | .     | 7.2    | .      |
| R Mg 16      | .     | .      | .      | 0.001  | Rem  | .     | .      | .     | .     | .     | .      | 0.06   |

continued

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

| Number       | Ag   | Be     | Ce  | Na     | Nd  | P      | Pr   | Ti     | Y   | Units              |
|--------------|------|--------|-----|--------|-----|--------|------|--------|-----|--------------------|
| R Mg 17      | .    | .      | .   | <0.001 | .   | .      | .    | .      | .   | 50 mm Ø x 50 mm    |
| R Mg 13 *    | .    | .      | .   | 0.001  | .   | .      | .    | .      | .   | 50 mm Ø x 50 mm    |
| C Mg 2 *     | .    | .      | .   | 0.001  | .   | .      | .    | .      | .   | 50 mm Ø x 40-50 mm |
| 166X MG SUS3 | 0.02 | 0.0005 | .   | .      | .   | <0.001 | .    | <0.001 | .   | ~50 mm Ø x ~20 mm  |
| R Mg 11      | .    | .      | .   | .      | .   | .      | .    | .      | .   | 50 mm Ø x 50 mm    |
| 58A ST7310   | .    | .      | .   | .      | .   | .      | .    | .      | .   | 45 mm Ø x 25 mm    |
| R Mg 16      | .    | .      | 2.2 | .      | 1.6 | .      | 0.26 | .      | 2.2 | 50 mm Ø x 50 mm    |

## 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    | >99.9  | <0.001 | <0.005 | <0.001 | .     | <0.001 | 0.02 | .     | .     | .     | .      | <0.001 | <0.002 | .     | .     |
| 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 | .     |
| 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     | 3      | 0.1    | <0.01  | 0.01  | 29     | 1.2  | 0.6   | .     | .     | <0.01  | <0.01  | 0.09   | 0.6   | .     |
| BS SU 625  | [60.8] | 0.16   | 0.022  | 0.040  | 21.8  | 0.15   | 3.83 | 0.096 | 9.11  | 3.52  | 0.008  | <0.005 | 0.11   | 0.23  | 0.036 |
| 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  |
| BS SU C-22 | [57.8] | 0.19   | 0.002  | 0.11   | 21.3  | 0.057  | 3.45 | 0.32  | 13.6  | 0.016 | 0.008  | <0.005 | <0.05  | 0.004 | 3.09  |
| R Ni 13    | 57     | 0.3    | 0.01   | 0.06   | 17    | 0.01   | 4.6  | 0.04  | 17    | 0.05  | <0.01  | <0.01  | (0.01) | 0.02  | 3.3   |
| BS SU 617  | [53.5] | 1.04   | 0.07   | 12.3   | 21.4  | 0.007  | 1.6  | 0.15  | 9.2   | 0.03  | 0.004  | <0.005 | 0.2    | 0.4   | 0.02  |
| R Ni 15    | Rem    | 0.6    | 0.01   | 0.2    | 18    | 0.06   | 18   | 0.10  | 3     | 5     | <0.01  | <0.01  | 0.09   | 1     | 0.09  |
| R Ni 14    | 50.5   | 0.5    | 0.05   | 19.4   | 20.9  | 0.01   | 0.3  | 0.2   | 5.2   | .     | 0.01   | <0.01  | 0.05   | 2.2   | 0.1   |

| Number     | As     | B      | Ca     | Mg     | N     | O      | Pb     | Sn     | Ta    | V     | Zr    | Units            |
|------------|--------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|------------------|
| R Ni 10    | .      | .      | .      | .      | .     | .      | .      | .      | .     | .     | .     | 40 mm Ø x 40 mm  |
| R Ni 11    | .      | .      | .      | 0.02   | .     | .      | .      | .      | .     | .     | .     | 40 mm Ø x 40 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 625  | <0.005 | 0.0025 | .      | 0.005  | 0.028 | 0.001  | .      | 0.001  | <0.05 | 0.015 | 0.001 | 38 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 |
| BS SU C-22 | <0.005 | 0.001  | .      | 0.004  | <0.05 | <0.005 | .      | 0.002  | 0.004 | 0.009 | .     | 38 mm Ø x 40 mm  |
| R Ni 13    | .      | <0.01  | .      | .      | .     | .      | .      | .      | <0.01 | 0.2   | .     | 40 mm Ø x 40 mm  |
| BS SU 617  | 0.002  | 0.005  | <0.005 | <0.005 | 0.004 | <0.005 | <0.005 | <0.005 | 0.004 | 0.005 | 0.02  | 38 mm Ø x 40+ mm |
| R Ni 15    | .      | <0.01  | .      | .      | .     | .      | .      | .      | <0.01 | 0.09  | 0.02  | 40 mm Ø x 40 mm  |
| R Ni 14    | 0.5    | 0.003  | .      | .      | .     | .      | .      | .      | .     | <0.01 | 0.01  | 40 mm Ø x 40 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   | <0.002  | 0.002   | 0.002   | 0.001   | 0.02    | 0.005   | .       | .       | .     | .       | .      | .   |
| 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    | 0.3     | 0.1     | 1       | <0.01   | 34      | 2       | 0.2     | <0.001  | .     | 0.1     | <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        | .       | .       | .       | .  | .       | .     | .      | .       | <0.001  | 40 mm Ø x 40 mm   |
| 1611X SAC305   | .       | .       | .       | .  | .       | .     | .      | .       | .       | 40 mm Ø x 6-10 mm |
| R Sn 21        | 0.08    | 0.4     | <0.001  | .  | .       | .     | <0.001 | 0.3     | 0.3     | 40 mm Ø x 40 mm   |
| R Sn 13        | <0.01   | 0.23    | .       | .  | .       | .     | <0.001 | 0.02    | 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        | 0.1     | <0.001  | .       | .  | .       | .     | .      | (0.03)  | 0.03    | 40 mm Ø x 40 mm   |
| R Sn 14        | .       | .       | 0.05    | .  | .       | .     | .      | .       | .       | 40 mm Ø x 40 mm   |

last

**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

JK, R: 40 mm Ø x 30 mm

| Number      | Al      | Cd      | Cu      | Fe      | Mg      | Mn      | Ni      | Pb      | Sb      | Sn      | Tl     | Ag     | Bi      | Cr     | Ga      | In     | Ti      | Zn    |
|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|---------|--------|---------|--------|---------|-------|
| R Zn 14     | 8       | 0.02    | 2       | 0.06    | 0.09    | 0.03    | <0.001  | 0.09    | <0.001  | 0.04    | <0.001 | <0.001 | .       | .      | .       | <0.001 | 0.009   | 90    |
| 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    | .      | .      | .       | .      | .       | .      | .       | .     |
| R Zn 13     | 0.4     | 0.3     | 0.3     | 0.01    | <0.01   | <0.01   | 0.04    | 0.6     | 0.2     | 0.3     | 0.05   | 0.05   | .       | .      | .       | 0.2    | <0.01   | 97    |
| R Zn 15     | 0.23    | 0.39    | 0.30    | 0.19    | .       | <0.005  | .       | 0.15    | 0.03    | 0.06    | .      | .      | .       | .      | .       | .      | .       | Rem   |
| R Zn 16     | 0.23    | 0.049   | 0.011   | 0.092   | .       | .       | .       | 0.23    | .       | 0.009   | .      | .      | .       | .      | .       | .      | .       | .     |
| JK SUS Zn-1 | 0.2024  | 0.0014  | 0.0014  | 0.0273  | .       | 0.0006  | 0.0043  | 0.0021  | 0.00001 | 0.00003 | 0.0008 | 0.0002 | 0.00002 | 0.0055 | 0.00004 | .      | .       | .     |
| JK SUS Zn-5 | 0.1992  | 0.0063  | 0.0015  | 0.0318  | .       | 0.0009  | 0.0047  | 0.0108  | 0.0024  | 0.0099  | 0.0003 | 0.0002 | 0.0136  | 0.0081 | 0.0019  | 0.0029 | .       | .     |
| JK SUS Zn-2 | 0.1394  | 0.0075  | 0.0019  | 0.0314  | .       | 0.0007  | 0.0043  | 0.0077  | 0.0034  | 0.0061  | 0.0005 | 0.0002 | 0.0056  | 0.0063 | 0.00004 | .      | .       | .     |
| R Zn 12     | 0.006   | 0.008   | 0.009   | 0.024   | 0.005   | 0.002   | 0.008   | 0.009   | (0.01)  | 0.007   | 0.007  | 0.004  | 0.006   | .      | .       | 0.009  | 0.006   | 99.9  |
| R Zn 11     | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | .       | <0.0005 | .      | .      | .       | .      | .       | .      | <0.0010 | 99.99 |

**RM****ZINC BINARY**

cast typical analysis listed in mass %

| Number   | Mn   | Zn        | Size            |
|----------|------|-----------|-----------------|
| 41X ZMn1 | 1.06 | Remainder | 50 mm Ø x 20 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 5/58     | 3.8  | 0.60  | .     | 0.006 | 2.1  | 0.006 | 1.02  | 0.02  | .      | 0.04   | .       | 0.07   | 0.004  | 0.49  | .     | 0.09   | 0.03     |
| SUS 2/49     | 3.7  | 0.74  | 0.23  | 0.12  | 1.9  | 0.20  | 0.48  | 0.07  | 0.11   | 0.01   | .       | 0.10   | 0.06   | 0.55  | .     | .      | .        |
| SUS GGG      | 3.5  | 0.3   | 0.03  | 0.008 | 2.1  | 0.6   | 0.02  | 0.04  | 0.008  | 0.03   | .       | 0.08   | 0.01   | 0.004 | .     | 0.03   | .        |
| 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  | .     | .      | .        |
| 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 16       | 3.19 | 0.19  | 0.21  | <0.01 | 1.92 | 0.06  | 1.13  | 0.96  | .      | 0.04   | .       | 0.17   | 0.01   | 0.15  | .     | 0.04   | 0.03     |
| R G 14       | 3.18 | 0.18  | 0.05  | .     | 1.89 | 0.07  | 1.16  | 0.97  | .      | 0.04   | .       | 0.16   | <0.01  | 0.15  | .     | 0.06   | 0.04     |
| R G 13       | 3.1  | 0.8   | 0.3   | 0.05  | 2.0  | 0.5   | 0.4   | 0.9   | 0.3    | 0.05   | .       | 0.3    | 0.02   | 0.3   | .     | .      | .        |
| 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  | .     | .      | .        |
| 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       | 2.1  | 0.8   | 0.3   | 0.1   | 4.4  | <0.01 | 0.5   | 0.6   | 0.9    | 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       | As     | B      | Bi     | Ca     | Co    | La         | N     | Pb     | Sb     | Se    | Te    | Zn | Zr | Units                 |
|--------------|--------|--------|--------|--------|-------|------------|-------|--------|--------|-------|-------|----|----|-----------------------|
| C Fe 5       | .      | .      | .      | .      | .     | .          | .     | .      | .      | .     | .     | .  | .  | 40 mm Ø x 20 mm       |
| NCS AH11355a | .      | 0.013  | .      | .      | 0.027 | (0.0003)   | .     | .      | .      | .     | .     | .  | .  | 31 mm Ø x 24 mm       |
| SUS 5/58     | 0.003  | .      | .      | .      | .     | .          | .     | .      | 0.03   | .     | .     | .  | .  | 60 mm x 35 mm x 18 mm |
| SUS 2/49     | .      | .      | .      | .      | .     | .          | .     | .      | .      | .     | .     | .  | .  | 60 mm x 35 mm x 18 mm |
| SUS GGG      | .      | .      | .      | .      | 0.003 | .          | .     | .      | .      | .     | .     | .  | .  | 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 |
| 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 16       | .      | 0.02   | .      | .      | .     | 0.01       | .     | .      | .      | .     | .     | .  | .  | 40 mm Ø x 20 mm       |
| R G 14       | .      | 0.01   | .      | .      | .     | 0.01       | .     | .      | .      | .     | .     | .  | .  | ~40 mm Ø x 20 mm      |
| R G 13       | .      | <0.01  | .      | .      | <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    |
| 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       | .      | .      | .      | .      | .     | .          | 0.047 | <0.02  | .      | .     | .     | .  | .  | ~40 mm Ø x 20 mm      |
| C Fe 4       | .      | .      | .      | .      | 0.02  | .          | .     | .      | .      | .     | .     | .  | .  | 40 mm Ø x 40 mm       |

## CAST IRON SETTING-UP SET

| Number   | 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  |

## DUCTILE IRON SETTING-UP SET

| Number     | 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 |

## CAST IRON SETTING-UP SETS

**typical analysis** set KTC-13/1 8 pcs (3 pcs A and B 34mm Ø x 5mm, 1 each C 35mm Ø x 10mm) set KTC-14 10 pcs (2 pcs D, 4 pcs E and F) 34mm Ø x 5mm

[illegible]

## CAST IRON SETTING-UP SETS

typical analysis      available in sets only, as grouped

34 mm Ø x 5 mm

| Number      | C    | Mn   | P     | S      | Si   | Cu   | Ni   | Cr   | Mo    | Al    | Ce    | Mg    | Sn    | Ti    | V     | Zn    |
|-------------|------|------|-------|--------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| KTC-11 D-1  | 3.20 | 0.13 | 0.028 | 0.005  | 3.31 | 0.19 | .    | .    | 0.11  | 0.087 | 0.035 | 0.046 | .     | .     | 0.10  | 0.005 |
| KTC-11 D-2  | 3.47 | 0.50 | 0.016 | 0.001  | 2.99 | 0.04 | 0.41 | .    | 0.22  | 0.074 | 0.011 | 0.053 | 0.004 | 0.10  | 0.20  | 0.002 |
| KTC-11 D-3  | 3.60 | 0.42 | 0.033 | 0.017  | 2.22 | .    | 0.31 | .    | 0.45  | 0.012 | .     | 0.022 | 0.014 | 0.24  | .     | 0.018 |
| KTC-11 D-4  | 3.19 | 0.71 | 0.020 | 0.006  | 2.71 | .    | 0.34 | 0.21 | 0.021 | 0.053 | 0.008 | 0.048 | 0.44  | .     | 0.25  | .     |
| KTC-11 D-5  | 3.78 | 0.24 | 0.044 | 0.014  | 2.47 | .    | .    | 0.02 | 0.32  | 0.013 | .     | 0.020 | .     | 0.18  | .     | 0.029 |
| KTC-11 D-6  | 3.93 | 0.37 | 0.071 | 0.033  | 1.64 | 0.31 | 0.10 | 0.31 | .     | 0.007 | .     | 0.015 | 0.054 | 0.047 | 0.15  | .     |
| KTC-11 D-7  | 3.99 | 0.29 | 0.060 | 0.021  | 2.02 | 0.11 | 0.21 | .    | 0.062 | 0.014 | .     | 0.013 | .     | 0.12  | 0.055 | 0.051 |
| KTC-11 D-8  | 2.98 | 0.20 | 0.050 | 0.037  | 2.87 | 0.52 | 0.01 | 0.29 | 0.008 | 0.11  | 0.064 | 0.021 | 0.30  | .     | 0.009 | .     |
| KTC-11 D-9  | 3.20 | 0.84 | 0.004 | 0.014  | 2.48 | 0.01 | .    | 0.11 | 0.004 | 0.10  | 0.092 | 0.007 | 0.20  | .     | 0.37  | .     |
| KTC-11 D-10 | 2.79 | 0.02 | 0.008 | 0.011  | 2.40 | 0.40 | .    | 0.40 | .     | 0.029 | .     | 0.003 | 0.089 | .     | 0.003 | .     |
| KTC-12 01   | 3.96 | 0.80 | 0.002 | 0.034  | 0.40 | 0.50 | .    | 0.10 | 0.30  | 0.001 | .     | .     | .     | .     | .     | 0.005 |
| KTC-12 02   | 3.87 | 0.63 | 0.009 | 0.018  | 0.84 | 0.42 | .    | 0.21 | 0.24  | 0.013 | .     | .     | .     | .     | .     | 0.002 |
| KTC-12 03   | 3.73 | 0.95 | 0.017 | 0.076  | 1.18 | 0.27 | .    | 0.28 | 0.11  | 0.018 | .     | .     | .     | .     | .     | 0.016 |
| KTC-12 04   | 3.52 | 0.09 | 0.030 | 0.001  | 1.59 | 0.02 | 0.02 | 0.43 | 0.42  | 0.033 | .     | .     | .     | .     | 0.010 | 0.024 |
| KTC-12 05   | 3.40 | 0.41 | 0.11  | 0.047  | 2.11 | 0.11 | 0.54 | 0.26 | 0.047 | 0.054 | 0.001 | .     | 0.001 | .     | 0.14  | 0.034 |
| KTC-12 06   | 3.35 | 0.35 | 0.076 | 0.026  | 2.22 | 0.01 | 0.42 | 0.35 | 0.002 | 0.029 | 0.015 | .     | 0.41  | 0.013 | 0.048 | .     |
| KTC-12 07   | 3.30 | 0.32 | 0.050 | 0.016  | 2.45 | .    | 0.28 | 0.03 | .     | 0.052 | 0.11  | .     | 0.30  | 0.095 | 0.10  | .     |
| KTC-12 08   | 3.04 | 0.26 | 0.030 | 0.010  | 2.71 | .    | 0.20 | .    | .     | 0.059 | 0.067 | .     | 0.20  | 0.059 | 0.20  | .     |
| KTC-12 09   | 2.92 | 0.21 | 0.52  | 0.005  | 2.95 | .    | 0.10 | .    | .     | 0.068 | 0.011 | .     | 0.11  | 0.17  | 0.31  | .     |
| KTC-12 10   | 2.50 | 0.10 | 0.68  | 0.0027 | 3.09 | 0.52 | 0.01 | .    | .     | 0.097 | 0.028 | .     | 0.045 | 0.22  | 0.004 | .     |

| Number      | B     | Bi    | Ca     | Pb    | Sb    |
|-------------|-------|-------|--------|-------|-------|
| KTC-11 D-1  | 0.028 | .     | .      | 0.001 | 0.06  |
| KTC-11 D-2  | 0.055 | .     | .      | .     | 0.094 |
| KTC-11 D-3  | 0.010 | .     | .      | .     | 0.024 |
| KTC-11 D-4  | 0.12  | .     | 0.0018 | 0.004 | 0.009 |
| KTC-11 D-5  | 0.001 | 0.001 | 0.0005 | 0.007 | 0.16  |
| KTC-11 D-6  | .     | 0.005 | 0.0005 | 0.016 | .     |
| KTC-11 D-7  | .     | 0.011 | .      | 0.009 | .     |
| KTC-11 D-8  | .     | 0.005 | .      | 0.009 | 0.21  |
| KTC-11 D-9  | .     | .     | 0.0030 | 0.037 | .     |
| KTC-11 D-10 | 0.087 | 0.003 | 0.0035 | 0.026 | .     |
| KTC-12 01   | 0.089 | .     | .      | .     | 0.15  |
| KTC-12 02   | 0.057 | 0.010 | .      | .     | 0.10  |
| KTC-12 03   | 0.072 | 0.013 | .      | .     | 0.48  |
| KTC-12 04   | 0.020 | 0.004 | .      | .     | 0.008 |
| KTC-12 05   | 0.008 | 0.001 | .      | 0.007 | 0.004 |
| KTC-12 06   | 0.001 | 0.001 | 0.0008 | 0.006 | .     |
| KTC-12 07   | .     | .     | 0.0013 | 0.002 | .     |
| KTC-12 08   | .     | .     | 0.0017 | 0.016 | .     |
| KTC-12 09   | .     | .     | 0.0028 | 0.045 | .     |
| KTC-12 10   | .     | .     | 0.0052 | 0.031 | .     |

## IRON SETTING-UP SAMPLES

typical analysis

C Fe 0: no analysis issued

[illegible][illegible]

## CARBON AND LOW ALLOY STEEL SETTING-UP SAMPLES

CONTINUED ON THE NEXT PAGE

typical analysis

| Number         | C     | Mn    | P      | S      | Si    | Cu    | Ni     | Cr    | Mo      | Sn      | Al      | Co    | N        | Ti     | V       | W       |
|----------------|-------|-------|--------|--------|-------|-------|--------|-------|---------|---------|---------|-------|----------|--------|---------|---------|
| BS SU D2       | 1.52  | 0.29  | 0.024  | 0.0003 | 0.55  | 0.075 | 0.13   | 11.34 | 0.83    | 0.005   | 0.008   | 0.017 | .        | 0.003  | 0.76    | 0.02    |
| R H 18         | 1.3   | 0.31  | 0.02   | 0.01   | 0.33  | 0.1   | 0.14   | 4.2   | 3.4     | <0.001  | <0.01   | 10.3  | .        | 0.002  | 3.0     | 10.3    |
| BR ST2         | 1.075 | 2.38  | 0.040  | 0.013  | 0.340 | 0.242 | 0.003  | 2.35  | 0.128   | 0.033   | 0.016   | 0.013 | (0.0085) | 0.013  | 0.156   | 0.194   |
| KUT K3         | 1.03  | 0.46  | (0.02) | 0.010  | 0.32  | 0.09  | 0.18   | 1.63  | .       | .       | .       | .     | .        | .      | .       | .       |
| BS SU E52100A  | 1.02  | 0.38  | 0.012  | 0.005  | 0.27  | 0.085 | 0.063  | 1.51  | 0.020   | 0.005   | 0.02    | 0.007 | 0.007    | 0.001  | 0.004   | <0.05   |
| BS SU E52100   | 1.00  | 0.40  | 0.016  | 0.012  | 0.24  | 0.090 | 0.046  | 1.47  | 0.011   | 0.006   | 0.017   | 0.005 | 0.0080   | 0.0014 | 0.0035  | <0.005  |
| R N 13         | 1.0   | 1.9   | <0.01  | <0.01  | 0.01  | <0.01 | 3.0    | <0.01 | <0.01   | 0.05    | 0.4     | <0.01 | <0.01    | <0.001 | <0.01   | 0.07    |
| R H 13         | 1     | 0.3   | 0.03   | <0.01  | 0.4   | 0.10  | 0.3    | 3.8   | 4.7     | <0.01   | 0.02    | 4     | .        | 0.003  | 1.7     | 6       |
| R N 16         | 0.99  | 1.79  | <0.01  | <0.01  | 0.01  | <0.01 | 3.00   | <0.01 | <0.01   | 0.05    | 0.39    | <0.01 | <0.01    | <0.001 | <0.01   | 0.07    |
| BAM SUS-1 R    | 0.9   | 1.1   | 0.02   | 0.0174 | 0.8   | 0.7   | 2.9    | 1.7   | 0.9     | .       | .       | 0.3   | .        | .      | 0.5     | 0.7     |
| NCS AH21311    | 0.856 | 0.312 | 0.017  | 0.005  | 0.33  | 0.261 | 0.048  | 3.93  | 4.83    | .       | 0.36    | 4.86  | .        | 0.17   | 1.90    | 6.25    |
| R Fe D         | 0.81  | 0.25  | 0.01   | 0.01   | 0.85  | 0.07  | 0.13   | 2.81  | 1.24    | 0.005   | 0.19    | 0.31  | 0.02     | 0.09   | 0.05    | 0.05    |
| SUS D          | 0.80  | 0.40  | 0.01   | 0.03   | 0.80  | 0.11  | 0.10   | 3.0   | 1.3     | 0.01    | 0.19    | 0.29  | 0.01     | 0.10   | 0.12    | 0.16    |
| R N 19         | 0.75  | 1.6   | 0.10   | 0.00   | 1.0   | 0.44  | 2.0    | 3.5   | 0.95    | 0.11    | 0.62    | 0.81  | 0.02     | 0.09   | 0.40    | 0.49    |
| NCS AH21313    | 0.75  | 0.16  | 0.017  | 0.002  | 0.282 | 0.137 | 0.041  | 4.20  | 0.10    | 0.045   | .       | 0.010 | .        | .      | 1.17    | 17.99   |
| BS SU LAS-14   | 0.748 | 0.41  | 0.0164 | 0.0293 | 1.4   | 0.024 | 1.53   | 0.19  | 0.041   | 0.0061  | 0.01    | 0.031 | 0.0073   | 0.0222 | 0.023   | 0.031   |
| KUT K4         | 0.52  | 0.84  | (0.02) | 0.025  | 0.46  | 0.28  | (0.1)  | 1.24  | .       | .       | .       | .     | .        | .      | 0.20    | .       |
| KUT K6         | 0.51  | 0.79  | (0.02) | 0.026  | 0.30  | 0.26  | 1.72   | 0.96  | 0.37    | .       | .       | .     | .        | .      | .       | .       |
| IMZ S-04       | 0.5   | 0.8   | 0.03   | (0.2)  | 0.2   | .     | 0.53   | 4.3   | 6.5     | .       | .       | 10.6  | .        | .      | 1.5     | .       |
| BS 02H         | 0.49  | 0.75  | 0.007  | 0.028  | 0.19  | 0.21  | 0.17   | 0.11  | 0.026   | 0.016   | <0.001  | 0.007 | .        | <0.001 | 0.029   | <0.001  |
| BS SU 4340     | 0.411 | 0.75  | 0.008  | 0.0008 | 0.25  | 0.13  | 1.8    | 0.87  | 0.26    | 0.008   | 0.032   | 0.013 | 0.01     | 0.002  | 0.003   | 0.003   |
| BS SU 8740     | 0.41  | 0.92  | 0.014  | 0.014  | 0.24  | 0.14  | 0.44   | 0.51  | 0.225   | 0.007   | 0.019   | 0.012 | 0.0085   | .      | .       | .       |
| BS SU41L40     | 0.39  | 0.90  | 0.01   | 0.02   | 0.26  | 0.13  | 0.25   | 0.97  | 0.20    | 0.01    | 0.02    | 0.008 | <0.05    | 0.002  | 0.002   | <0.05   |
| BS SU 4942     | 0.39  | 0.61  | 0.009  | 0.002  | 0.25  | 0.06  | 0.13   | 0.94  | 0.59    | 0.006   | 0.014   | 0.007 | 0.006    | 0.002  | 0.27    | 0.002   |
| C Fe 2 50mm    | 0.32  | 0.44  | 0.048  | 0.011  | 0.32  | 0.31  | 0.83   | 0.59  | 0.28    | 0.033   | 0.01    | 0.03  | (0.02)   | 0.015  | 0.3     | 0.044   |
| BS SU 4130A    | 0.301 | 0.539 | 0.0104 | 0.011  | 0.246 | 0.219 | 0.09   | 0.912 | 0.167   | 0.0096  | 0.024   | 0.008 | .        | <0.001 | 0.0038  | 0.005   |
| C Fe 2         | 0.29  | 0.69  | 0.042  | 0.013  | 0.45  | 0.36  | 0.83   | 0.59  | 0.31    | 0.033   | 0.015   | 0.05  | (0.02)   | 0.045  | 0.3     | 0.038   |
| BS 210         | 0.28  | 0.56  | 0.021  | 0.018  | 0.42  | 0.084 | 1.86   | 0.70  | 0.23    | (0.006) | 0.016   | .     | .        | .      | 0.005   | .       |
| BS SU8620MOD   | 0.233 | 0.71  | 0.014  | 0.026  | 0.17  | 0.18  | 0.38   | 0.44  | 0.15    | 0.008   | 0.022   | 0.007 | 0.0092   | <0.001 | 0.003   | <0.005  |
| BS SU LF-1     | 0.226 | 0.75  | 0.012  | 0.017  | 0.20  | 0.030 | 0.020  | 0.014 | 0.011   | 0.002   | <0.005  | 0.006 | 0.006    | <0.005 | 0.002   | 0.001   |
| Number         | C     | Mn    | P      | S      | Si    | Cu    | Ni     | Cr    | Mo      | Sn      | Al      | Co    | N        | Ti     | V       | W       |
| BS SU 8620A    | 0.22  | 0.81  | 0.008  | 0.028  | 0.26  | 0.16  | 0.62   | 0.54  | 0.20    | 0.009   | 0.022   | 0.006 | 0.009    | 0.0008 | 0.0053  | .       |
| BS SU 4620     | 0.21  | 0.58  | 0.010  | 0.023  | 0.23  | 0.14  | 1.69   | 0.15  | 0.26    | 0.008   | 0.022   | 0.009 | 0.0090   | 0.002  | 0.002   | .       |
| BS SU 4820     | 0.197 | 0.640 | 0.008  | 0.014  | 0.190 | 0.210 | 3.27   | 0.165 | 0.201   | 0.010   | 0.030   | 0.009 | 0.0078   | 0.002  | 0.001   | 0.004   |
| BS SU LF-2A    | 0.195 | 1.02  | 0.009  | 0.023  | 0.224 | 0.093 | 0.151  | 0.146 | 0.024   | 0.006   | 0.031   | 0.007 | 0.0080   | <0.001 | 0.002   | .       |
| BS 03D         | 0.18  | 1.15  | 0.025  | 0.10   | 0.28  | 0.27  | 0.11   | 0.18  | 0.04    | 0.017   | <0.001  | 0.02  | 0.011    | .      | .       | .       |
| BS SU 1018D    | 0.18  | 0.87  | 0.004  | 0.026  | 0.24  | 0.20  | 0.066  | 0.088 | 0.015   | 0.010   | <0.001  | 0.007 | .        | <0.001 | 0.002   | <0.001  |
| BS SU 1018F    | 0.18  | 0.80  | 0.017  | 0.017  | 0.31  | 0.27  | 0.12   | 0.17  | 0.040   | 0.011   | 0.004   | 0.008 | <0.05    | 0.001  | 0.002   | 0.004   |
| IMZ S-07       | 0.18  | 0.23  | 0.06   | 0.1    | 1.7   | 0.17  | 2.0    | 2.1   | 0.12    | .       | .       | 0.02  | .        | 0.02   | 0.15    | 2.3     |
| BS SU LF-2     | 0.17  | 1.13  | 0.007  | 0.008  | 0.24  | 0.19  | 0.115  | 0.12  | 0.035   | .       | 0.040   | 0.014 | 0.0074   | .      | .       | .       |
| BS SU 1018C    | 0.17  | 0.87  | 0.006  | 0.018  | 0.25  | 0.20  | 0.074  | 0.089 | 0.020   | 0.010   | 0.001   | 0.007 | .        | 0.001  | 0.032   | <0.001  |
| BS SU LF-3     | 0.17  | 0.83  | 0.008  | 0.011  | 0.22  | 0.07  | 3.25   | 0.11  | 0.017   | 0.005   | 0.021   | 0.010 | 0.0067   | 0.002  | 0.0024  | .       |
| BS SU 11117    | 0.168 | 1.14  | 0.011  | 0.116  | 0.009 | 0.032 | 0.046  | 0.081 | 0.018   | .       | 0.002   | .     | 0.003    | 0.002  | 0.001   | 0.005   |
| BS SU 1018E    | 0.168 | 0.85  | 0.008  | 0.016  | 0.227 | 0.204 | 0.065  | 0.094 | 0.021   | 0.009   | <0.005  | 0.006 | .        | <0.001 | 0.0296  | <0.005  |
| BS 213         | 0.152 | 0.68  | 0.015  | 0.005  | 0.49  | 0.059 | 2.68   | 0.37  | (0.008) | (0.002) | (0.04)  | .     | .        | .      | (0.004) | (0.006) |
| CZ CM-22A (RM) | 0.154 | 1.443 | 0.086  | 0.084  | 0.248 | 0.419 | 3.10   | 0.167 | 0.132   | 0.069   | (0.004) | 0.130 | 0.0065   | 0.0038 | 0.653   | 0.59    |
| BS 207         | 0.15  | 0.51  | 0.017  | 0.013  | 0.39  | 0.033 | 0.017  | 0.37  | 0.005   | (0.003) | 0.007   | .     | .        | .      | 0.002   | .       |
| IMZ 501        | 0.15  | 0.32  | 0.019  | .      | 0.40  | .     | 0.11   | 13.24 | .       | .       | .       | .     | .        | .      | .       | .       |
| IMZ S-13       | 0.14  | 0.6   | 0.01   | 0.01   | 0.6   | 0.05  | 1.1    | 10.8  | 0.8     | .       | .       | .     | .        | 0.02   | 0.7     | 0.9     |
| IMZ 503        | 0.14  | 0.47  | 0.029  | .      | 0.37  | .     | 0.19   | 11.43 | 0.62    | .       | .       | .     | .        | .      | 0.30    | .       |
| BS SU 9310     | 0.125 | 0.57  | 0.010  | 0.016  | 0.23  | 0.19  | 3.25   | 1.29  | 0.127   | 0.014   | 0.026   | 0.016 | 0.0102   | 0.002  | 0.005   | .       |
| R Fe C         | 0.12  | 1.37  | 0.05   | 0.06   | 0.33  | 0.67  | 3.10   | 0.4   | 0.09    | 0.04    | 0.005   | 0.06  | <0.01    | 0.01   | 0.50    | 0.50    |
| BS SU 9310A    | 0.12  | 0.57  | 0.009  | 0.016  | 0.22  | 0.19  | 3.2    | 1.3   | 0.13    | 0.014   | 0.026   | 0.015 | 0.0096   | 0.003  | 0.005   | .       |
| BS SU LAS13-2  | 0.11  | 1.75  | 0.06   | 0.006  | 0.25  | 0.47  | 0.18   | 1.25  | 0.75    | 0.06    | 0.23    | 0.23  | 0.02     | 0.10   | 0.34    | 0.12    |
| BS 214         | 0.10  | 0.65  | 0.019  | 0.012  | 0.34  | 0.10  | 3.70   | 0.21  | 0.02    | (0.005) | 0.025   | .     | .        | .      | (0.004) | <0.008  |
| KUT K9         | 0.096 | 1.53  | (0.01) | 0.018  | 0.59  | 0.73  | 0.97   | 0.64  | 0.56    | .       | (0.01)  | .     | .        | 0.11   | 0.27    | .       |
| IMZ S-11       | 0.095 | 0.35  | 0.01   | 0.015  | 1.8   | .     | 0.66   | 6.5   | .       | .       | .       | .     | .        | .      | .       | .       |
| C Fe 9         | 0.09  | 1.2   | 0.06   | 0.3    | 0.001 | 0.006 | 0.01   | 0.01  | 0.005   | .       | 0.0005  | .     | .        | .      | .       | .       |
| IARM 218A      | 0.05  | 2     | 0.1    | 0.07   | 0.1   | 0.6   | 5      | 0.1   | 0.1     | 0.1     | 0.003   | 0.01  | 0.007    | 0.01   | 1       | 0.7     |
| DSZU SUS 40L   | 0.008 | 0.02  | 0.002  | 0.002  | 0.06  | 0.006 | 0.006  | 0.007 | 0.005   | 0.0008  | 0.04    | 0.004 | 0.009    | 0.001  | .       | 0.005   |
| R N 14         | 0.008 | 0.01  | 0.00   | 0.07   | 1.8   | 0.6   | <0.005 | 3.0   | 0.5     | <0.005  | 0.02    | 0.4   | 0.02     | 0.1    | 0.5     | 0.3     |
| R N 17         | 0.008 | 0.01  | 0.00   | 0.07   | 1.8   | 0.6   | <0.005 | 3.0   | 0.5     | <0.005  | 0.02    | 0.4   | 0.02     | 0.1    | 0.5     | 0.3     |
| SAG 0203       | .     | 1.12  | 0.008  | .      | 0.16  | 0.020 | 0.030  | 1.00  | 0.01    | <0.001  | 0.030   | 0.004 | .        | <0.001 | 0.003   | <0.001  |
| SAG 0204       | .     | 0.80  | 0.016  | .      | 0.29  | 0.020 | 0.040  | 0.18  | 0.040   | <0.001  | 0.030   | 0.003 | .        | <0.001 | <0.001  | <0.001  |
| SAG 0202       | .     | 0.51  | 0.007  | .      | 0.22  | 0.010 | 0.020  | 0.020 | .       | 0.001   | .       | 0.003 | .        | .      | .       | .       |
| Number         | C     | Mn    | P      | S      | Si    | Cu    | Ni     | Cr    | Mo      | Sn      | Al      | Co    | N        | Ti     | V       | W       |

## 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         | .      | .       | .      | .       | <0.001  | .           | .        | .          | .          | .          | .          | .       | 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 E52100A  | 0.003  | .       | .      | <0.005  | 0.001   | <0.005      | <0.005   | <0.05      | .          | .          | .          | 0.002   | 38 mm Ø x 40 mm Fe: [96.6]     |
| 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                |
| BAM SUS-1 R    | .      | .       | .      | .       | 0.6     | .           | .        | .          | .          | .          | .          | .       | 50 mm Ø x 42 mm                |
| NCS AH21311    | .      | .       | .      | .       | .       | .           | .        | .          | .          | .          | .          | .       | 40 mm Ø x 40 mm                |
| R Fe D         | <0.01  | <0.01   | <0.001 | <0.001  | 0.28    | .           | <0.001   | 0.07       | <0.01      | 0.001      | .          | 0.03    | 40 mm Ø x 40 mm                |
| SUS D          | .      | <0.001  | .      | .       | 0.05    | .           | .        | .          | .          | .          | .          | .       | 44 mm Ø x 25, 75, or 150 mm    |
| R N 19         | 0.07   | 0.007   | 0.01   | .       | 0.36    | .           | 0.02     | 0.05       | 0.30       | 0.01       | 0.02       | 0.07    | 40 mm Ø x 40 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]     |
| 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               |
| 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]     |
| 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 210         | .      | .       | .      | .       | 0.016   | .           | .        | .          | .          | .          | .          | .       | 32 mm Ø x 17 mm last           |
| BS SU8620MOD   | 0.005  | 0.0002  | .      | 0.0007  | 0.001   | 0.0009      | .        | Fe: [97.6] | Mg: 0.0002 | .          | .          | <0.001  | 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    |
| Number         | As     | B       | Bi     | Ca      | Nb      | O           | Pb       | Sb         | Ta         | Te         | Zn         | Zr      | Units                          |
| 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 40-150 mm            |
| BS 03D         | .      | .       | .      | .       | .       | .           | .        | .          | .          | .          | .          | .       | 41 mm Ø x 150 mm               |
| BS SU 1018D    | 0.005  | 0.0005  | .      | 0.001   | 0.003   | .           | <0.002   | <0.001     | <0.001     | .          | .          | <0.001  | 41 mm Ø x ~110 mm last         |
| BS SU 1018F    | 0.004  | 0.0003  | .      | <0.005  | 0.001   | <0.05       | .        | 0.002      | .          | .          | .          | 0.001   | 38 mm Ø x 150 mm Fe: [98.92]   |
| IMZ S-07       | .      | .       | .      | .       | .       | .           | .        | .          | .          | .          | .          | .       | 40 mm Ø x ~30 mm               |
| BS SU LF-2     | .      | .       | .      | .       | .       | 0.002       | .        | .          | .          | .          | .          | .       | 38 mm Ø x 19-40 mm last        |
| BS SU 1018C    | 0.006  | 0.0006  | .      | 0.0012  | 0.002   | .           | <0.002   | <0.001     | <0.001     | .          | .          | 0.001   | 38 mm Ø x ~40 mm last          |
| BS SU LF-3     | .      | .       | .      | .       | .       | 0.002       | .        | .          | .          | .          | .          | .       | 44 mm Ø x 40 mm                |
| BS SU 11117    | .      | <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      | .          | last       | 0.0015  | 38 mm Ø x 150 mm last          |
| BS 213         | .      | .       | .      | .       | 0.013   | .           | .        | .          | .          | .          | .          | .       | 32 mm Ø x 17 mm Tl: (0.002)    |
| CZ CM-22A (RM) | 0.057  | .       | .      | .       | 0.019   | .           | .        | .          | .          | .          | .          | .       | ~39 mm Ø x ~25 mm              |
| BS 207         | .      | .       | .      | .       | 0.024   | .           | .        | .          | .          | .          | .          | .       | 32 mm Ø x 17 mm                |
| IMZ 501        | .      | .       | .      | .       | .       | .           | .        | .          | .          | .          | .          | .       | 48 mm Ø x 25 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                |
| R Fe C         | 0.05   | <0.005  | 0.003  | <0.001  | 0.01    | .           | 0.001    | 0.01       | 0.19       | 0.002      | 0.001      | <0.001  | 40 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 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 last           |
| DSZU SUS 40L   | 0.0006 | .       | 0.0004 | 0.003   | 0.0006  | .           | 0.0005   | 0.002      | .          | .          | 0.001      | 0.002   | 40 mm Ø x 50 mm last           |
| R N 14         | 0.05   | 0.006   | <0.005 | <0.001  | >0.4    | .           | 0.007    | 0.02       | 0.05       | 0.02       | .          | <0.005  | 40 mm Ø x 40 mm                |
| R N 17         | 0.05   | 0.006   | <0.005 | <0.001  | >0.4    | .           | 0.007    | 0.02       | 0.05       | 0.02       | .          | <0.005  | 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       | Pb        | Ta      |  |
| KTC-3/1 21                         | 0.13  | 0.40 | 0.003 | 0.026  | 0.18           | .     | 4.03             | 27.02 | .                | .          | .      | .      | 0.003 | .               | 0.003    | .         | .       |  |
| KTC-3/1 22                         | 0.058 | 0.62 | 0.029 | 0.005  | 0.43           | .     | 19.73            | 24.90 | .                | 0.073      | 0.003  | 0.001  | .     | .               | .        | .         | .       |  |
| KTC-3/1 23                         | 0.11  | 1.60 | 0.005 | 0.021  | 0.82           | 0.048 | 9.99             | 22.17 | 1.01             | 0.045      | 0.003  | 0.104  | .     | <0.01           | .        | 0.005     | .       |  |
| KTC-3/1 24                         | 0.084 | 0.80 | 0.009 | 0.014  | 0.60           | 0.031 | 14.12            | 20.18 | 1.46             | 0.006      | 0.004  | 0.050  | .     | .               | .        | 0.018     | .       |  |
| KTC-3/1 25                         | 0.027 | 1.42 | 0.010 | 0.021  | 1.43           | 0.011 | 8.05             | 18.32 | 2.49             | 0.001      | 0.001  | 0.012  | 0.050 | .               | .        | 0.044     | .       |  |
| KTC-3/1 26                         | 0.044 | 1.19 | 0.021 | 0.008  | 1.01           | .     | 17.62            | 16.18 | 0.49             | 0.004      | 0.002  | .      | 0.21  | 0.29            | 0.075    | .         | 0.40    |  |
| KTC-3/1 27                         | 0.057 | 1.00 | 0.019 | 0.011  | 1.19           | .     | 15.74            | 13.39 | 0.008            | 0.016      | 0.002  | .      | 0.014 | 1.53            | 0.24     | .         | 0.24    |  |
| KTC-3/1 28                         | 0.011 | 0.22 | 0.036 | 0.003  | 0.10           | .     | 29.79            | 10.06 | .                | 0.019      | <0.001 | .      | .     | 0.072           | 0.45     | .         | 0.054   |  |
| 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    | CLEARANCE | SALE    |  |
| 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    | CLEARANCE | SALE    |  |
| 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     | CLEARANCE | SALE    |  |
| 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  | 4.88             | 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    | .         | .       |  |
| JSM M205 1                         | 0.054 | 0.43 | 0.031 | 0.011  | 0.27           | 0.09  | 0.26             | 15.9  | 0.13             | .          | .      | .      | 0.022 | .               | N:0.0409 | .         | V:0.052 |  |
| JSM M205 2                         | 0.049 | 1.64 | 0.042 | 0.26   | 0.36           | 0.35  | 8.46             | 17.0  | 0.29             | Al: <0.005 | .      | .      | 0.17  | .               | N:0.077  | .         | V:0.049 |  |
| JSM M205 3                         | 0.059 | 1.48 | 0.034 | 0.025  | 0.49           | 0.38  | 8.16             | 18.2  | 0.22             | Al: <0.005 | .      | .      | 0.21  | .               | N:0.079  | .         | V:0.099 |  |
| JSM M205 4                         | 0.028 | 1.85 | 0.035 | 0.010  | 0.27           | 0.52  | 9.09             | 19.4  | 0.31             | Al: <0.005 | .      | .      | 0.19  | .               | N:0.076  | .         | V:0.10  |  |
| JSM M205 5                         | 0.068 | 1.58 | 0.033 | 0.001  | 0.32           | 0.26  | 13.1             | 22.1  | 0.19             | Al: <0.005 | .      | .      | 0.27  | .               | N:0.067  | .         | V:0.080 |  |
| JSM M205 6                         | 0.020 | 1.08 | 0.029 | <0.001 | 0.39           | 0.32  | 19.1             | 24.2  | 0.17             | Al: 0.010  | .      | .      | 0.35  | .               | N:0.0281 | .         | V:0.074 |  |
| JSM M205 7                         | 0.057 | 1.31 | 0.034 | 0.026  | 0.47           | 0.30  | 10.2             | 16.6  | 2.04             | Al: <0.005 | .      | .      | 0.24  | .               | N:0.0472 | .         | V:0.079 |  |
| JSM M205 8                         | 0.022 | 1.28 | 0.036 | 0.017  | 0.51           | 0.27  | 12.1             | 17.2  | 2.02             | Al: <0.005 | .      | .      | 0.17  | .               | N:0.0432 | .         | V:0.046 |  |

## STAINLESS AND HIGH ALLOY STEEL SETTING-UP SAMPLES

typical analysis

| Number        | C     | Mn    | P     | S      | Si    | Cu     | Ni    | Cr    | Mo    | Sn     | Al     | Co    | Nb     | Ti      | V     | W       | N      |
|---------------|-------|-------|-------|--------|-------|--------|-------|-------|-------|--------|--------|-------|--------|---------|-------|---------|--------|
| IMZ S-22      | 1.1   | 1.1   | 0.01  | 0.02   | 0.94  | 0.03   | 0.63  | 19.1  | .     | .      | .      | 0.02  | .      | 0.02    | 0.033 | .       | .      |
| 162X FeSUS1   | 1.1   | 0.8   | 0.15  | 0.35   | 1.8   | 0.3    | 0.5   | 25.0  | 0.45  | 0.05   | 0.6    | 1.1   | 0.05   | 0.4     | 0.4   | 0.2     | .      |
| R N 18        | 1     | 1.1   | .     | 0.2    | 0.2   | 7      | 10    | .     | .     | 0.1    | 0.05   | .     | .      | .       | .     | .       | .      |
| R H 12        | 0.47  | 16.6  | 0.07  | <0.01  | 0.37  | 0.09   | 0.12  | 3.55  | 0.11  | <0.01  | 0.01   | 0.03  | 0.03   | <0.01   | 0.05  | 0.06    | .      |
| BS SU 420     | 0.32  | 1.0   | 0.018 | 0.27   | 0.42  | 0.12   | 0.45  | 12.8  | 0.37  | 0.005  | <0.005 | 0.028 | 0.02   | 0.001   | 0.11  | 0.048   | 0.034  |
| IMZ S-15      | 0.32  | 0.7   | 0.01  | 0.01   | 2.0   | .      | 7.3   | 11.9  | .     | .      | .      | .     | .      | .       | .     | .       | .      |
| IMZ 502       | 0.31  | 0.47  | 0.02  | <0.005 | 2.8   | .      | 6.7   | 12.8  | .     | .      | .      | .     | .      | .       | .     | .       | .      |
| NCS AH21312   | 0.297 | 16.24 | 0.033 | 0.117  | 0.48  | 0.208  | 0.43  | 0.69  | 0.506 | .      | 2.98   | 0.032 | .      | 0.045   | 0.23  | 0.35    | .      |
| IMZ S-21      | 0.26  | 0.50  | 0.02  | 0.02   | 0.44  | 0.30   | 2.2   | 18.3  | 0.4   | .      | .      | .     | .      | 0.12    | 0.25  | 0.4     | .      |
| IMZ S-30      | 0.20  | 1.6   | 0.02  | 0.01   | 0.93  | .      | 12.6  | 18.7  | .     | .      | .      | .     | 1.0    | .       | .     | .       | .      |
| IMZ S-06A     | 0.2   | 1.4   | 0.01  | 0.01   | 0.2   | 0.04   | 20    | 10.8  | 0.5   | .      | .      | .     | 1.5    | .       | .     | 0.4     | .      |
| KUT K10       | 0.155 | 1.77  | 0.022 | 0.020  | 0.88  | 0.16   | 11.2  | 17.5  | 2.98  | .      | .      | .     | 0.98   | .       | .     | .       | .      |
| KUT K10B      | 0.14  | 1.77  | 0.022 | 0.020  | 0.88  | 0.16   | 11.2  | 17.5  | 2.98  | .      | .      | .     | 0.98   | .       | .     | .       | .      |
| KUT K10C      | 0.13  | 1.77  | 0.022 | 0.020  | 0.88  | 0.16   | 11.2  | 17.5  | 2.98  | .      | .      | .     | 0.98   | .       | .     | .       | .      |
| IMZ S-24      | 0.13  | 0.7   | 0.01  | 0.02   | 0.95  | .      | 0.76  | 26.8  | .     | .      | .      | .     | .      | .       | .     | .       | .      |
| BS SU 410     | 0.124 | 0.41  | 0.020 | 0.008  | 0.35  | 0.039  | 0.098 | 12.02 | 0.017 | 0.004  | 0.010  | 0.015 | 0.003  | 0.003   | 0.029 | 0.004   | 0.0284 |
| IMZ S-10      | 0.12  | 0.65  | 0.01  | 0.01   | 0.32  | 2.4    | 1.1   | 28    | .     | .      | .      | .     | 0.6    | 1.4     | .     | .       | .      |
| IMZ S-34      | 0.11  | 1.7   | 0.015 | 0.01   | 0.62  | .      | 9.1   | 20.8  | 1.6   | .      | .      | .     | .      | 0.5     | .     | 0.5     | .      |
| BS 224        | 0.11  | 0.60  | 0.024 | 0.019  | 1.32  | 0.07   | 0.75  | 12.8  | 0.056 | 0.007  | 0.013  | 0.03  | 0.02   | .       | 0.041 | (0.004) | .      |
| IMZ S-33      | 0.10  | 1.2   | 0.03  | 0.01   | 0.75  | .      | 8.3   | 19.6  | .     | .      | 0.1    | .     | .      | 0.6     | .     | .       | .      |
| IMZ S-16      | 0.10  | 0.65  | 0.015 | 0.01   | 1.3   | 0.12   | 0.59  | 14.3  | .     | .      | 0.5    | .     | .      | 0.20    | .     | .       | .      |
| BS SU 309     | 0.077 | 1.68  | 0.027 | 0.009  | 0.50  | 0.26   | 13.68 | 22.50 | 0.30  | 0.007  | 0.006  | 0.13  | 0.027  | .       | 0.065 | .       | 0.095  |
| KUT K7        | 0.063 | 1.44  | 0.026 | 0.012  | 0.89  | 0.20   | 10.45 | 17.8  | .     | .      | .      | .     | .      | 0.27    | .     | .       | .      |
| KUT K8        | 0.061 | 1.10  | 0.026 | 0.017  | 1.38  | (0.18) | .     | 23.5  | .     | .      | 1.53   | .     | .      | .       | .     | .       | .      |
| R H 34        | 0.06  | 7.4   | <0.01 | 0.01   | 0.3   | 1.9    | 18    | 17    | 0.08  | <0.01  | <0.01  | 0.3   | 0.44   | 0.04    | 0.06  | 0.1     | 0.16   |
| BS SU 347     | 0.056 | 1.61  | 0.030 | 0.027  | 0.51  | 0.16   | 9.43  | 17.26 | 0.39  | 0.007  | 0.005  | 0.05  | 0.79   | .       | .     | .       | 0.060  |
| BS SU 321     | 0.055 | 1.67  | 0.016 | 0.023  | 0.63  | 0.21   | 10.15 | 17.18 | 0.22  | 0.004  | 0.19   | 0.16  | .      | 0.45    | 0.13  | .       | 0.012  |
| NCS AH11333d  | 0.054 | 1.23  | 0.029 | 0.014  | 0.577 | 0.136  | 8.08  | 17.34 | 0.153 | .      | 0.082  | .     | .      | 0.399   | 0.074 | .       | .      |
| C Fe 3        | 0.05  | 1.54  | 0.02  | 0.02   | 0.37  | 0.241  | 9.92  | 17.38 | 2.07  | 0.02   | .      | 0.322 | (0.54) | (0.021) | 0.07  | .       | .      |
| BS SU 321A    | 0.046 | 1.77  | 0.024 | 0.020  | 0.38  | 0.67   | 9.09  | 17.40 | 0.25  | 0.008  | 0.10   | 0.052 | 0.014  | 0.53    | 0.10  | 0.04    | .      |
| BS SU 321B    | 0.039 | 1.58  | 0.03  | 0.0004 | 0.56  | 0.465  | 9.2   | 17.65 | 0.357 | 0.012  | 0.025  | 0.1   | 0.012  | 0.29    | 0.076 | 0.025   | 0.02   |
| R H 33        | 0.031 | 10.02 | <0.01 | 0.015  | 0.09  | 1.9    | 18.9  | 18.0  | 0.02  | <0.01  | 0.025  | 0.027 | 0.51   | 0.25    | 0.04  | 0.09    | .      |
| IMZ S-28      | 0.03  | 1.6   | 0.01  | 0.01   | 0.75  | .      | 14.3  | 16.3  | 2.25  | .      | .      | .     | .      | .       | .     | .       | .      |
| IMZ S-31      | 0.03  | 1.5   | 0.01  | 0.01   | 0.30  | .      | 11.0  | 17.6  | .     | .      | .      | .     | .      | .       | .     | .       | .      |
| IMZ 504       | 0.03  | 1.43  | 0.02  | 0.01   | 0.56  | .      | 11.1  | 18.2  | .     | .      | .      | .     | .      | .       | .     | .       | 0.17   |
| R H 31        | 0.03  | 1.1   | 0.02  | 0.01   | 0.6   | 2.0    | 20.0  | 17.02 | 2.3   | <0.01  | <0.01  | 0.06  | 0.3    | <0.01   | 0.04  | 0.06    | .      |
| BS SU 2507    | 0.026 | 0.78  | 0.024 | 0.002  | 0.32  | 0.23   | 6.8   | 25.2  | 3.8   | 0.005  | 0.007  | 0.042 | 0.009  | 0.003   | 0.06  | 0.085   | 0.30   |
| BS SU 304     | 0.024 | 1.45  | 0.031 | 0.026  | 0.367 | 0.47   | 8.1   | 18.25 | 0.49  | 0.014  | <0.005 | 0.125 | 0.013  | 0.002   | 0.072 | 0.032   | 0.084  |
| BS SU 304 BAR | 0.024 | 1.45  | 0.031 | 0.026  | 0.367 | 0.47   | 8.1   | 18.25 | 0.49  | 0.014  | <0.005 | 0.125 | 0.013  | 0.002   | 0.072 | 0.032   | 0.084  |
| NCS AH11367c  | 0.022 | 0.942 | 0.038 | 0.0038 | 0.348 | 0.062  | 10.07 | 16.82 | 2.04  | 0.012  | 0.012  | 0.226 | .      | .       | 0.090 | 0.0055  | 0.066  |
| SUS 1.3974    | 0.02  | 5.7   | 0.02  | <0.001 | 0.40  | 0.12   | 14.8  | 23.3  | 2.9   | .      | <0.01  | 0.06  | 0.14   | 0.01    | 0.12  | 0.13    | .      |
| SUS G         | 0.02  | 1.7   | 0.03  | 0.02   | 0.32  | 0.30   | 10.0  | 16.8  | 2.1   | 0.006  | 0.003  | 0.15  | 0.01   | <0.005  | 0.08  | 0.04    | 0.08   |
| SUS F/6       | 0.02  | 0.61  | 0.02  | <0.005 | 0.53  | 0.63   | 7.2   | 25.8  | 3.4   | <0.005 | 0.005  | 0.05  | 0.005  | <0.005  | 0.06  | 0.63    | 0.25   |
| SUS F/5       | 0.02  | 0.50  | 0.02  | <0.005 | 0.26  | 0.59   | 7.0   | 24.7  | 3.5   | <0.001 | <0.005 | 0.01  | <0.005 | <0.005  | 0.03  | 0.62    | 0.23   |
| BS SU 316L-A  | 0.017 | 1.67  | 0.029 | 0.0232 | 0.41  | 0.41   | 9.83  | 16.67 | 2.03  | 0.0088 | 0.001  | 0.17  | 0.007  | 0.0061  | 0.062 | 0.051   | 0.08   |

| Number        | C      | Mn     | P     | S      | Si     | Cu     | Ni     | Cr     | Mo     | Sn   | Al    | Co     | Nb                                 | Ti         | V | W | N |
|---------------|--------|--------|-------|--------|--------|--------|--------|--------|--------|------|-------|--------|------------------------------------|------------|---|---|---|
| Number        | As     | B      | Bi    | Ca     | Fe     | O      | Pb     | Sb     | Ta     | Te   | Zn    | Zr     | Units                              |            |   |   |   |
| IMZ S-22      | 0.002  | 0.001  | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 45 mm Ø x ~29 mm                   | last       |   |   |   |
| 162X FeSUS1   | 0.005  | .      | 0.005 | .      | .      | .      | 0.005  | 0.015  | .      | .    | 0.002 | 0.04   | 43 mm Ø x 20 mm                    |            |   |   |   |
| R N 18        | .      | .      | 0.06  | .      | .      | .      | 0.1    | .      | .      | 0.06 | .     | .      | 40 mm Ø x 40 mm                    |            |   |   |   |
| R H 12        | <0.01  | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | <0.01  | 40 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 420     | 0.002  | 0.0005 | .     | 0.0002 | [83.9] | 0.006  | <0.005 | <0.005 | .      | .    | .     | 0.001  | 38 mm Ø x 40+ mm                   | Mg: 0.0001 |   |   |   |
| IMZ S-15      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~23 mm                   |            |   |   |   |
| IMZ 502       | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 47 mm Ø x ~25 mm                   |            |   |   |   |
| NCS AH21312   | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x 40 mm                    |            |   |   |   |
| IMZ S-21      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~30 mm                   |            |   |   |   |
| IMZ S-30      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~23 mm                   |            |   |   |   |
| IMZ S-06A     | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 45 mm Ø x ~25 mm                   |            |   |   |   |
| KUT K10       | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 30-35 mm Ø x 39 mm                 |            |   |   |   |
| KUT K10B      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 30-35 mm Ø x 39 mm                 |            |   |   |   |
| KUT K10C      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 30-35 mm Ø x 39 mm                 |            |   |   |   |
| IMZ S-24      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~30 mm                   |            |   |   |   |
| BS SU 410     | .      | 0.0002 | .     | 0.0002 | .      | 0.0038 | .      | .      | .      | .    | .     | .      | 40 mm Ø x 40 mm                    |            |   |   |   |
| IMZ S-10      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 45 mm Ø x ~30 mm                   |            |   |   |   |
| IMZ S-34      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~30 mm                   |            |   |   |   |
| BS 224        | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 32 mm Ø x 17 mm                    |            |   |   |   |
| IMZ S-33      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~35 mm                   |            |   |   |   |
| IMZ S-16      | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.01   | 40 mm Ø x ~30 mm                   |            |   |   |   |
| BS SU 309     | .      | 0.0030 | .     | .      | .      | 0.005  | .      | .      | .      | .    | .     | .      | 44 mm Ø x 40 mm                    |            |   |   |   |
| KUT K7        | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 30-35 mm Ø x 39 mm                 |            |   |   |   |
| KUT K8        | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 30-35 mm Ø x 39 mm                 |            |   |   |   |
| R H 34        | <0.001 | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.01   | 40 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 347     | .      | 0.0040 | .     | .      | .      | 0.004  | .      | .      | .      | .    | .     | .      | 38 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 321     | .      | .      | .     | .      | .      | 0.002  | .      | .      | .      | .    | .     | .      | 39 mm Ø x 40 mm                    |            |   |   |   |
| NCS AH11333d  | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 38 mm Ø x 35 mm                    |            |   |   |   |
| C Fe 3        | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x 30 or 40 mm              |            |   |   |   |
| BS SU 321A    | 0.004  | 0.0005 | .     | 0.0003 | .      | .      | <0.001 | <0.01  | .      | .    | .     | <0.001 | 38 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 321B    | 0.006  | 0.002  | .     | 0.0009 | [69.6] | .      | 0.0002 | 0.001  | .      | .    | .     | 0.003  | 41 mm Ø x 40 mm                    |            |   |   |   |
| R H 33        | <0.001 | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.016  | 40 mm Ø x 40 mm                    |            |   |   |   |
| IMZ S-28      | .      | 0.005  | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.005  | 40 mm Ø x ~30 mm                   |            |   |   |   |
| IMZ S-31      | .      | 0.005  | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 40 mm Ø x ~30 mm                   |            |   |   |   |
| IMZ 504       | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 50 mm Ø x ~23 mm                   |            |   |   |   |
| R H 31        | <0.001 | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.014  | 40 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 2507    | <0.006 | 0.002  | .     | <0.005 | [62.6] | <0.005 | <0.005 | <0.005 | .      | .    | .     | <0.007 | 38 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 304     | .      | 0.0007 | .     | 0.0016 | [70.5] | 0.015  | 0.002  | .      | .      | .    | .     | 0.007  | 38 mm Ø x 40 mm                    |            |   |   |   |
| BS SU 304 BAR | .      | 0.0007 | .     | 0.0016 | [70.5] | 0.015  | 0.002  | .      | .      | .    | .     | 0.007  | 38 mm Ø x 150 mm                   |            |   |   |   |
| NCS AH11367c  | .      | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | .      | 38 mm Ø x 35 mm                    |            |   |   |   |
| SUS 1.3974    | <0.001 | .      | .     | .      | .      | .      | .      | .      | .      | .    | .     | 0.01   | 40 mm Ø x 30 mm                    |            |   |   |   |
| SUS G         | .      | .      | .     | 0.003  | .      | .      | .      | .      | <0.001 | .    | .     | <0.005 | 44 mm Ø X 25, 75 , or 150 mm       |            |   |   |   |
| SUS F/6       | 0.005  | 0.002  | .     | .      | [60.7] | .      | .      | .      | .      | .    | .     | .      | 44 mm Ø X 25-75 mm                 |            |   |   |   |
| SUS F/5       | 0.005  | 0.002  | .     | .      | 62.9   | .      | .      | .      | .      | .    | .     | .      | 44 mm Ø x 25-150 mm, last of batch |            |   |   |   |
| BS SU 316L-A  | 0.0043 | 0.0007 | .     | 0.0015 | [68.6] | .      | 0.0006 | 0.002  | 0.007  | .    | .     | 0.0041 | 38 mm Ø x 40 mm                    |            |   |   |   |
| Number        | As     | B      | Bi    | Ca     | Fe     | O      | Pb     | Sb     | Ta     | Te   | Zn    | Zr     | Units                              |            |   |   |   |

## ALUMINUM IN XRF DISCS

typical analysis

30-40 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 | Bi <sub>2</sub> O <sub>3</sub> | CaO   | Fe <sub>2</sub> O <sub>3</sub> | GeO <sub>2</sub> | K <sub>2</sub> O | MgO  | MoO <sub>3</sub> | Na <sub>2</sub> O | 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> |
|-----------|--------------------------------|--------------------------------|-------------------------------|-----|--------------------------------|-------|--------------------------------|------------------|------------------|------|------------------|-------------------|-------------------------------|------|--------------------------------|------------------|------------------|-------------------------------|-----------------|
| BR CH1    | 28.0                           | 0.8                            | 20.0                          | 1.0 | 1.0                            | .     | 7.0                            | 0.3              | 8.0              | .    | .                | 6.5               | 14.0                          | .    | .                              | 9.11             | 0.1              | 0.3                           | 1.2             |
| SV C      | 27.15                          | 0.78                           | 19.23                         | 1.0 | 0.5                            | 0.03  | 5.4                            | 0.27             | 6.9              | .    | 2.0              | 7.9               | 15.6                          | .    | .                              | 9.9              | 0.1              | 0.26                          | 0.9             |
| BR PC 3   | 27.1                           | 0.78                           | 19.1                          | 1.0 | 0.50                           | 0.03  | 5.4                            | 0.27             | 6.9              | .    | 2.0              | 7.9               | 15.6                          | .    | .                              | 9.9              | 0.10             | 0.26                          | 0.90            |
| BR CS1    | 27.1                           | 0.78                           | 19.23                         | 1.0 | 0.5                            | 0.03  | 5.4                            | 0.27             | 6.9              | .    | 2.0              | 7.9               | 15.6                          | .    | .                              | 11.3             | 0.1              | 0.26                          | 0.05            |
| FLX CH2/1 | 24.83                          | 2.68                           | 8.76                          | .   | 0.82                           | 15.57 | 0.79                           | 1.86             | 0.30             | 7.99 | 1.03             | 10.11             | 4.87                          | 3.20 | 2.16                           | 8.40             | .                | 1.54                          | 0.45            |
| BR ACEM   | 21.68                          | .                              | 19.88                         | .   | .                              | 10.53 | 11.93                          | .                | 3.14             | 7.03 | .                | 11.15             | 0.20                          | 2.0  | 2.0                            | 9.56             | 0.20             | .                             | .               |
| FLX PR3   | 17.68                          | .                              | .                             | .   | .                              | 3.16  | .                              | .                | .                | 6.76 | .                | .                 | 9.72                          | .    | .                              | 41.28            | 3.32             | .                             | .               |
| FLX S7    | 15.46                          | .                              | .                             | .   | .                              | 10.1  | 11.52                          | .                | 3.14             | 4.71 | .                | 3.38              | 0.28                          | .    | .                              | 48.06            | 2.36             | .                             | .               |

| Number    | CdO  | Ce <sub>2</sub> O <sub>3</sub> | Cr <sub>2</sub> O <sub>3</sub> | La <sub>2</sub> O <sub>3</sub> | MnO   | Mn <sub>2</sub> O <sub>3</sub> | Nb <sub>2</sub> O <sub>5</sub> | Nd <sub>2</sub> O <sub>3</sub> | NiO                    | Pr <sub>2</sub> O <sub>3</sub> | Rb <sub>2</sub> O | SO <sub>3</sub> | SrO  | U <sub>3</sub> O <sub>8</sub> | ZrO <sub>2</sub> |
|-----------|------|--------------------------------|--------------------------------|--------------------------------|-------|--------------------------------|--------------------------------|--------------------------------|------------------------|--------------------------------|-------------------|-----------------|------|-------------------------------|------------------|
| BR CH1    | 0.15 | .                              | .                              | .                              | 0.5   | .                              | 0.7                            | 0.5                            | 0.3                    | 0.4                            | 0.04              | .               | .    | 0.1                           | .                |
| SV C      | 0.66 | .                              | .                              | .                              | 0.47  | .                              | 0.6                            | 0.46                           | 0.29                   | 0.2                            | .                 | .               | .    | .                             | last             |
| BR PC 3   | 0.16 | .                              | .                              | .                              | 0.47  | .                              | 0.60                           | 0.46                           | 0.29                   | 0.20                           | .                 | .               | .    | .                             | .                |
| BR CS1    | 0.16 | .                              | .                              | .                              | 0.47  | .                              | .                              | 0.46                           | 0.29                   | 0.2                            | .                 | .               | .    | .                             | .                |
| FLX CH2/1 | .    | 1.23                           | .                              | 0.87                           | .     | .                              | .                              | 0.44                           | Li <sub>2</sub> O:1.20 | .                              | .                 | .               | 0.55 | .                             | 0.33             |
| BR ACEM   | .    | .                              | .                              | .                              | .     | 0.20                           | .                              | .                              | .                      | .                              | .                 | 0.50            | .    | .                             | .                |
| FLX PR3   | .    | .                              | 1.07                           | .                              | .     | .                              | .                              | 0.373                          | .                      | .                              | .                 | .               | .    | .                             | .                |
| FLX S7    | .    | .                              | .                              | .                              | 0.234 | .                              | .                              | .                              | .                      | .                              | .                 | .               | .    | .                             | .                |

## ANTIMONY AND ARSENIC IN XRF DISC

typical analysis

40 mm Ø x 6 mm

| Number  | As <sub>2</sub> O <sub>3</sub> | CaO  | Co <sub>3</sub> O <sub>4</sub> | K <sub>2</sub> O | MnO  | MoO <sub>3</sub> | Na <sub>2</sub> O | Sb <sub>2</sub> O <sub>3</sub> | SiO <sub>2</sub> |
|---------|--------------------------------|------|--------------------------------|------------------|------|------------------|-------------------|--------------------------------|------------------|
| FLX K04 | 2.12                           | 14.8 | 0.52                           | 2.18             | 6.81 | 2.9              | 5.22              | 2.12                           | 29.9             |

## BARIUM IN XRF DISCS

typical analysis

40 mm Ø x 5 mm

| Number  | BaO   | SiO <sub>2</sub> | TiO <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> | CaO  | CeO <sub>2</sub> | Cr <sub>2</sub> O <sub>3</sub> | CuO | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO | Na <sub>2</sub> O | PbO   | Sb <sub>2</sub> O <sub>3</sub> | SrO  | ZnO  | ZrO <sub>2</sub> |
|---------|-------|------------------|------------------|--------------------------------|--------------------------------|-------------------------------|------|------------------|--------------------------------|-----|--------------------------------|------------------|-----|-------------------|-------|--------------------------------|------|------|------------------|
| BR M 1  | 62.2  | 0.2              | 33.5             | 1.3                            | .                              | .                             | .    | .                | 2.8                            | .   | 0.02                           | .                | .   | .                 | .     | .                              | .    | .    | last             |
| BR 4/L  | 24.70 | 35.00            | 2.33             | 0.70                           | 0.31                           | 4.25                          | 4.77 | 0.0              | .                              | .   | 0.02                           | 1.85             | 0.0 | 1.08              | 18.70 | 0.20                           | 0.22 | 4.98 | 0.0              |
| BR BG18 | 11.5  | 78.4             | .                | .                              | .                              | 3.5                           | .    | .                | .                              | 3.6 | .                              | 1.0              | .   | .                 | .     | .                              | .    | 1.0  | last             |

## BORON IN XRF DISCS

typical analysis

30-40 mm Ø x 5 mm

| Number     | B <sub>2</sub> O <sub>3</sub> | Al <sub>2</sub> O <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | CaO   | CdO  | Cr <sub>2</sub> O <sub>3</sub> | 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   | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | SiO <sub>2</sub> | SnO   | SnO <sub>2</sub> | TiO <sub>2</sub> | ZnO   |
|------------|-------------------------------|--------------------------------|--------------------------------|-------|------|--------------------------------|--------------------------------|------------------|-------|------|-------------------|-------|-------------------------------|-------|-----------------|--------------------------------|------------------|-------|------------------|------------------|-------|
| BR AN1/1   | 61.43                         | 22.6                           | .                              | 0.03  | 1.04 | 0.68                           | 0.1                            | 0.83             | 0.6   | .    | 1.7               | 0.78  | 0.4                           | 0.92  | 0.5             | .                              | 3.0              | .     | .                | 0.6              | 1.2   |
| BR DSH2    | 45.0                          | 21.80                          | .                              | 0.71  | .    | 0.68                           | 0.70                           | 0.83             | 0.60  | .    | 17.82             | 0.78  | 0.57                          | 0.92  | 0.50            | .                              | 3.0              | .     | .                | 0.60             | 0.80  |
| BR DSH1    | 41.82                         | 21.82                          | .                              | 0.71  | 2.0  | 0.68                           | 0.70                           | 0.83             | 0.60  | 2.0  | 17.0              | 0.78  | 0.57                          | 0.92  | 0.50            | .                              | 3.0              | .     | 0.79             | 0.60             | 0.80  |
| FLX PR2    | 41.0                          | .                              | .                              | .     | .    | .                              | .                              | 9.02             | 19.45 | .    | .                 | .     | .                             | 2.79  | .               | .                              | 23.57            | .     | 1.05             | .                | .     |
| BR WR2     | 40.0                          | 0.1                            | .                              | 1.1   | .    | 0.1                            | 9.0                            | 5.0              | 15.0  | 0.5  | 10.0              | .     | 0.5                           | .     | 0.5             | 0.5                            | 15.8             | .     | .                | 0.5              | .     |
| BR BP2     | 36.0                          | 20.33                          | 1.0                            | 14.0  | .    | 0.7                            | .                              | .                | 6.0   | .    | 12.0              | .     | .                             | .     | .               | 2.0                            | 4.27             | .     | .                | 0.33             | 4.0   |
| BR MM1     | 31.10                         | 9.0                            | .                              | 3.0   | .    | .                              | 0.50                           | 2.0              | 5.0   | 10.0 | 16.0              | 2.0   | 0.50                          | 4.0   | 0.10            | 0.50                           | 6.0              | .     | 1.0              | 3.0              | 5.0   |
| BR WR1     | 30.0                          | 13.0                           | .                              | 30.0  | .    | 1.5                            | 0.1                            | 2.0              | 5.0   | 0.2  | 5.0               | .     | 0.1                           | .     | 0.1             | 0.5                            | 12.5             | .     | .                | .                | .     |
| BR OS1     | 26.68                         | 15.11                          | 2.0                            | 14.0  | .    | .                              | .                              | .                | 13.43 | .    | 10.78             | .     | 5.0                           | .     | .               | 2.0                            | 5.0              | .     | .                | .                | 6.0   |
| SV D       | 25.2                          | 15.3                           | 2.0                            | 15.0  | .    | .                              | 0.5                            | .                | 9.0   | .    | 10.0              | .     | 5.0                           | 1.0   | .               | 2.0                            | 3.0              | .     | .                | .                | 5.0   |
| BR DS1     | 23.62                         | 20.0                           | .                              | 14.40 | .    | .                              | 0.58                           | 0.09             | 7.4   | .    | 9.6               | .     | 5.8                           | 1.7   | .               | 1.85                           | 6.6              | .     | .                | 0.03             | 3.7   |
| BR AX3     | 23.28                         | 18.89                          | .                              | 7.0   | .    | .                              | 12.0                           | 3.14             | 7.03  | .    | 11.15             | .     | 0.2                           | 4.0   | 0.5             | 2.0                            | 9.56             | .     | .                | .                | .     |
| BR PD 3    | 22.2                          | 20.6                           | 1.86                           | 14.4  | .    | .                              | 0.58                           | 0.09             | 7.4   | .    | 9.6               | .     | 5.8                           | 1.7   | .               | 1.85                           | 5.48             | .     | .                | 0.03             | 3.7   |
| BR U 30    | 22.0                          | 20.0                           | .                              | .     | .    | .                              | .                              | .                | 14.0  | .    | 14.0              | .     | .                             | .     | .               | .                              | 5.0              | .     | .                | .                | 6.0   |
| BR WIE3/II | 21.77                         | .                              | .                              | 8.0   | .    | .                              | .                              | 10.0             | .     | .    | 15.0              | 12.73 | .                             | 10.77 | .               | 2.0                            | 7.28             | .     | .                | .                | 12.45 |
| BR KA1     | 20.79                         | 20.0                           | .                              | 10.0  | .    | .                              | 0.01                           | 1.0              | 15.0  | .    | 11.0              | .     | 2.0                           | .     | 0.2             | 1.0                            | 4.0              | .     | .                | .                | 15.0  |
| BR WIE3/I  | 20.0                          | 18.9                           | .                              | 5.0   | .    | .                              | 14.3                           | 3.0              | .     | .    | 11.0              | .     | .                             | .     | .               | 2.0                            | 7.28             | 11.32 | .                | .                | .     |
| BR ARL2    | 20.0                          | 12.0                           | 0.5                            | 0.5   | 2.0  | .                              | .                              | .                | 3.0   | 25.0 | 12.0              | .     | 1.0                           | .     | 0.5             | .                              | 19.4             | .     | 0.5              | .                | 2.0   |

| Number     | Ag <sub>2</sub> O | BaO  | Bi <sub>2</sub> O <sub>3</sub> | CuO  | CeO <sub>2</sub> | Ce <sub>2</sub> O <sub>3</sub> | Cl   | 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> | Nb <sub>2</sub> O <sub>5</sub> | MoO  | MoO <sub>3</sub> | Se  | SrO  | Ta <sub>2</sub> O <sub>5</sub> | Te <sub>2</sub> O <sub>3</sub> | V <sub>2</sub> O <sub>5</sub> | WO <sub>3</sub> | ZrO <sub>2</sub> |
|------------|-------------------|------|--------------------------------|------|------------------|--------------------------------|------|--------------------------------|------------------|--------------------------------|--------------------------------|--------------------------------|------|------------------|-----|------|--------------------------------|--------------------------------|-------------------------------|-----------------|------------------|
| BR AN1/1   | .                 | 0.89 | 1.2                            | 0.8  | .                | .                              | 0.1  | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | 0.6                           | .               | .                |
| BR DSH2    | .                 | 0.89 | 1.20                           | 0.80 | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | 0.60                          | .               | .                |
| BR DSH1    | 0.93              | 0.89 | .                              | 0.80 | .                | .                              | 0.60 | .                              | .                | .                              | .                              | .                              | 0.66 | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| FLX PR2    | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | 3.76            | .                |
| BR WR2     | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | 1.5              |
| BR BP2     | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR MM1     | .                 | .    | 0.30                           | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | 1.0 | .    | .                              | .                              | .                             | .               | .                |
| BR WR1     | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR OS1     | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| SV D       | .                 | .    | 1.0                            | .    | 1.0              | .                              | .    | .                              | 1.5              | .                              | 1.0                            | .                              | .    | 1.0              | .   | .    | .                              | .                              | 1.0                           | .               | 0.5              |
| BR DS1     | .                 | .    | .                              | .    | .                | 0.84                           | .    | 0.46                           | .                | .                              | 0.88                           | .                              | .    | 0.87             | .   | 0.13 | .                              | .                              | 0.86                          | 0.05            | 0.34             |
| BR AX3     | .                 | .    | .                              | 1.25 | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR PD 3    | .                 | .    | 0.18                           | .    | .                | 0.84                           | .    | 0.46                           | 0.41             | .                              | 0.88                           | .                              | .    | 0.87             | .   | 0.13 | .                              | .                              | 0.86                          | 0.32            | 0.34             |
| BR U 30    | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR WIE3/II | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR KA1     | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | .                              | .                              | .                             | .               | .                |
| BR WIE3/I  | .                 | .    | .                              | .    | .                | .                              | .    | .                              | .                | 1.21                           | .                              | 1.43                           | .    | 1.43             | .   | .    | .                              | .                              | 1.8                           | 1.26            | .                |
| BR ARL2    | .                 | .    | 0.5                            | .    | .                | .                              | .    | .                              | .                | .                              | .                              | .                              | .    | .                | .   | .    | 0.5                            | 0.1                            | .                             | .               | 0.5              |



## 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 last |

## 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             |
| 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   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| FLX C1    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | 0.17 | .                             | 0.07 | .                |
| 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                          | .    | .                |
| FLX SLAG2 | 0.09 | .    | .                              | 0.09 | .   | 0.11             | Rem               | .                | 0.08                           | 0.06 | 0.08 | .                              | .    | 1.61                          | 0.09 | 0.08             |
| FLX D1    | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| 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   | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | .                             | .    | .                |
| BR WC     | .    | .    | .                              | .    | .   | .                | .                 | .                | .                              | .    | .    | .                              | .    | 0.15                          | .    | .                |

## 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> | W <sub>2</sub> O <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                           | .                             | .                             | .                |
| 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 VA1 | 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 UG5  | 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 60   | 0.0044  | 0.0060 | .    | .                             | 0.0060 | 0.0060 | 0.0055  | 0.0030  | .    | 0.0060 | 0.0028  | 0.0060 | 0.0060 | .                 | 0.0060 | 0.0060 | 0.0060 |
| 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 OME 5000 | 0.2560  | 0.5000 | .    | .                             | 0.5000 | 0.5000 | 0.3750  | 0.3180  | .    | 0.5000 | 0.5000  | 0.5000 | 0.5000 | .                 | 0.5000 | 0.5000 | 0.5000 |
| 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 | <0.0001          | 0.0005 | 0.0005 | .      | 0.0005 | 0.0005 | 0.0005 |
| FLX OME 10   | 0.0010 | <0.0001 | 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 | 0.0016  | 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 | 0.0041  | 0.0050 | 0.0050 | 0.0024  | 0.0050 | 0.0029           | 0.0050 | 0.0050 | .      | 0.0050 | 0.0050 | 0.0050 |
| FLX OME 60   | 0.0060 | 0.0049  | 0.0060 | 0.0060 | 0.0029  | 0.0060 | .                | 0.0060 | 0.0060 | .      | 0.0060 | 0.0060 | 0.0060 |
| FLX OME 100  | 0.0100 | 0.0086  | 0.0100 | 0.0100 | 0.0057  | 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 |
| 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 |
| 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 |
| FLX OME 1000 | 0.0938 | 0.0995  | 0.0967 | 0.0908 | 0.0801  | 0.0926 | .                | 0.1030 | 0.0939 | 0.0946 | .      | 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 |
| FLX OME 5000 | 0.5000 | 0.5000  | 0.5000 | 0.5000 | 0.5350  | 0.5000 | .                | 0.5000 | 0.5000 | 0.5000 | .      | 0.5000 | 0.5000 |
| FLX O1       | 5.26   | 0.92    | 0.58   | 2.79   | 0.07    | 24.75  | .                | 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  | 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 |

continued

| Number   | As <sub>2</sub> O <sub>3</sub> | Cl    | 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 |

typical analysis

40 mm Ø x 5-6 mm

| Number   | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | CaO   | Cl   | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | Na <sub>2</sub> O | SO <sub>3</sub> | TiO <sub>2</sub> |      |
|----------|------------------|--------------------------------|-------|------|--------------------------------|------------------|-------------------|-----------------|------------------|------|
| ASO TU1  | 99.99            | 0.005                          | 0.005 | .    | <0.01                          | .                | 0.005             | .               | .                | last |
| 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             |      |

typical analysis listed in mg/kg

12 mm Ø x 5 mm

| Number    | U    |      |
|-----------|------|------|
| IRMM 540R | 15.0 | last |

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> | As2O3 | 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 U21  | .               | 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                           | 0.10 | .    | 0.34                           | 2.9              | 0.15 | 6.0  | 9.3               | .    | .                             | 69.3             | 0.20                           | .                | 0.0  |     |
| 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 | .                              | .                | .                 | .                              | .                | .                              | .                              | .                | .                              | .                              | .    | .                              | .                 | .               | .                | .    | .    | .                              | .                | .                | .                             | .               | .                |      |
| BR CH1  | 1.0                            | .                | .                 | .                              | 0.3              | .                              | .                              | .                | 0.7                            | 0.5                            | .    | 0.4                            | 0.04              | .               | 0.12             | .    | .    | .                              | .                | .                | 0.3                           | 1.2             | .                |      |

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  | Sn <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              | last of stock |
| FLX F1  | .   | .                             | .    | .                              | 0.264           | .                |               |
| FLX SP2 | .   | .                             | 4.65 | .                              | .               | .                |               |

## MULTI-ELEMENT XRF DISCS

typical analysis

40 mm Ø 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     | .                 | 15.8                           | 0.05                           | 3.22                          | .    | .                              | .    | 0.83  | 0.39  | .                | .                              | .    | .    | .                              | 0.15                           | 0.04              |
| BR CH3     | 0.5               | 15.0                           | 0.5                            | 5.0                           | 5.0  | 0.08                           | .    | 0.6   | .     | .                | .                              | .    | 1.0  | .                              | 0.6                            | 0.05              |
| FLX CH3    | 0.56              | 13.59                          | 0.53                           | .                             | 5.51 | 2.07                           | .    | 0.59  | .     | .                | .                              | .    | .    | 0.93                           | 0.64                           | 0.05              |
| BR ES1     | 0.13              | 13.2                           | 0.2                            | 1.1                           | 4.6  | 0.08                           | .    | 0.60  | .     | .                | .                              | .    | 0.74 | .                              | 0.56                           | .                 |
| FLX B2     | .                 | 9.23                           | .                              | Rem                           | .    | .                              | .    | 32.48 | .     | .                | .                              | .    | .    | .                              | .                              | .                 |
| FLX B4     | .                 | 8.59                           | .                              | Rem                           | .    | .                              | .    | 7.31  | .     | .                | .                              | .    | .    | .                              | .                              | .                 |
| BR PE 3    | 0.13              | 8.5                            | 0.44                           | 4.0                           | 4.6  | 0.08                           | .    | 0.60  | .     | .                | .                              | .    | 0.74 | .                              | 0.56                           | .                 |
| FLX B1     | .                 | 7.34                           | 0.57                           | .                             | 0.10 | .                              | .    | 17.37 | .     | .                | .                              | .    | .    | 1.72                           | .                              | .                 |
| FLX S6M    | .                 | 6.14                           | 0.15                           | 6.9                           | 1.57 | .                              | .    | 4.87  | 0.28  | 0.37             | .                              | .    | .    | 0.52                           | 0.31                           | .                 |
| FLX MON-UT | 0.16              | 5.75                           | 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              | 5.07                           | 0.17                           | Rem                           | 0.21 | 0.19                           | 0.19 | 8.53  | 0.16  | 0.36             | .                              | 0.24 | .    | 0.17                           | 0.14                           | .                 |
| FLX S5     | .                 | 4.11                           | .                              | .                             | 0.84 | 2.26                           | .    | 4.6   | 0.339 | 0.409            | .                              | .    | .    | 0.418                          | 0.427                          | .                 |
| FLX S13    | 0.27              | 3.95                           | 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    | .                 | 3.85                           | .                              | 2.0                           | 0.34 | .                              | .    | 2.84  | 0.96  | .                | 0.39                           | .    | 0.25 | .                              | 0.27                           | 0.13              |
| BR FS1     | .                 | 3.85                           | .                              | 2.0                           | 0.34 | .                              | .    | 2.84  | 0.2   | .                | 0.39                           | .    | 0.25 | .                              | 0.27                           | 0.13              |
| BR CH4     | .                 | 3.0                            | .                              | 2.65                          | 0.30 | .                              | .    | 4.00  | 1.00  | .                | 0.40                           | .    | 0.50 | .                              | 0.10                           | 0.15              |
| BR WIE2    | 0.54              | 1.89                           | 0.66                           | 5.0                           | 2.0  | 0.56                           | .    | 3.0   | 0.57  | .                | .                              | .    | 1.27 | .                              | 1.46                           | .                 |
| FLX B3     | .                 | 0.37                           | .                              | Rem                           | .    | .                              | .    | 5.73  | .     | .                | .                              | 0.09 | .    | .                              | 0.29                           | .                 |
| BR WIE1/1  | 0.11              | 0.19                           | 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              | .      | 0.47            | 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>5</sub> as Ta<sub>2</sub>O<sub>3</sub>

\* B

typical analysis

38-40 mm Ø x 5-8 mm

| Number   | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO | CaO    | Cl    | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO    | Na <sub>2</sub> O | P <sub>2</sub> O <sub>5</sub> | PbO  | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | ZnO   |
|----------|------------------|--------------------------------|-------------------------------|-----|--------|-------|--------------------------------|------------------|--------|-------------------|-------------------------------|------|-----------------|--------------------------------|------------------|-------|
| BR RB    | 73.75            | .                              | 0.10*                         | .   | 3.94   | .     | .                              | 10.77            | 3.94   | 6.90              | .                             | .    | .               | 0.49                           | .                | .     |
| BR KC1   | 73.50            | .                              | 2.00                          | .   | .      | 0.50  | .                              | 15.00            | .      | 2.00              | .                             | 4.00 | .               | 1.00                           | .                | 2.00  |
| BR FR2   | 73.5             | 0.015                          | 10.00                         | .   | 0.011  | 0.006 | .                              | 3.40             | 0.013  | 9.00              | 0.014                         | 3.00 | 0.022           | 1.00                           | 0.008            | 0.007 |
| BR KC2   | 73.45            | .                              | 2.00                          | .   | 0.0140 | 0.050 | 0.0028                         | 15.00            | 0.0083 | 2.00              | .                             | 4.00 | 0.0125          | 1.00                           | .                | 2.00  |
| BR DEA1  | 73.193           | 0.378                          | 0.67                          | .   | 5.60   | 0.2   | 0.29                           | 7.70             | .      | 9.54              | 0.46                          | 0.23 | 0.2             | 0.50                           | .                | 0.249 |
| BR U 27  | 73.0             | 1.4                            | .                             | .   | 10     | .     | 0.2                            | 0.4              | .      | 14.5              | .                             | .    | 0.04            | .                              | .                | .     |
| BR U 37  | 73.0             | 1.9                            | .                             | .   | 8      | .     | 0.05                           | 2.5              | 0.05   | 12.0              | .                             | .    | 0.15            | 0.29                           | .                | 1.0   |
| BR DK1/1 | 72.92            | .                              | .                             | .   | 4.0    | .     | .                              | 6.0              | .      | 16.0              | .                             | .    | .               | 0.5                            | .                | .     |
| BR U 40  | 72.6             | 1.0                            | .                             | .   | 6.0    | .     | 0.05                           | 0.5              | 4.0    | 14.9              | .                             | .    | 0.35            | .                              | .                | .     |
| BR U 13  | 71.5             | 1.5                            | .                             | .   | 7.5    | .     | 0.06                           | 3.0              | .      | 13.5              | .                             | .    | 0.25            | 0.25                           | .                | 1.0   |
| BR W 1   | 71.29            | .                              | .                             | .   | 5.09   | .     | .                              | 2.46             | 3.22   | 17.16             | .                             | .    | .               | .                              | .                | .     |
| FLX S9   | 71.25            | 2.59                           | .                             | .   | 9.36   | .     | 0.502                          | 1.19             | 0.946  | 12.73             | 0.191                         | .    | .               | .                              | 0.216            | .     |
| BR U 14  | 71.0             | 1.3                            | .                             | 1.3 | 7.7    | .     | 0.05                           | 5.3              | 0.07   | 12.1              | .                             | .    | 0.28            | 0.36                           | .                | .     |
| BR X 1   | 70.87            | .                              | .                             | .   | 4.99   | .     | .                              | 2.26             | 3.12   | 16.96             | .                             | .    | .               | .                              | .                | .     |
| BR U 17  | 70.5             | 1.7                            | .                             | .   | 7.9    | .     | 0.10                           | 3.5              | .      | 13.0              | .                             | .    | 0.1             | 0.18                           | .                | 0.6   |
| BR Y 1   | 70.38            | .                              | .                             | .   | 4.99   | .     | .                              | 2.16             | 3.12   | 16.60             | .                             | .    | .               | .                              | .                | .     |
| BR AB1   | 70.00            | .                              | .                             | .   | 4.99   | .     | 0.04                           | 6.25             | 3.12   | 14.20             | .                             | .    | 0.45            | .                              | .                | 0.95  |

\* Br-

[illegible]



## VARIOUS XRF DISCS, chart 3 of 4

|           | * Cr <sub>2</sub> O <sub>5</sub> |                                |                               |        |       |                                |                                |                  |        | typical analysis  |       |                               |       |                 | 38-40 mm Ø x 5-8 mm            |                  |       |  |
|-----------|----------------------------------|--------------------------------|-------------------------------|--------|-------|--------------------------------|--------------------------------|------------------|--------|-------------------|-------|-------------------------------|-------|-----------------|--------------------------------|------------------|-------|--|
| Number    | SiO <sub>2</sub>                 | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | BaO    | CaO   | Cr <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | K <sub>2</sub> O | MgO    | Na <sub>2</sub> O | NiO   | P <sub>2</sub> O <sub>5</sub> | PbO   | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | ZnO   |  |
| FLX Q1    | 59.06                            | 1.52                           | .                             | .      | .     | .                              | 0.157                          | 0.28             | .      | 0.315             | .     | .                             | .     | .               | .                              | .                | .     |  |
| BR PN1/1  | 59.0                             | .                              | .                             | .      | 2.0   | .                              | .                              | .                | .      | 9.8               | .     | .                             | .     | 2.0             | .                              | .                | 16.0  |  |
| FLX R3    | 58.63                            | 7.99                           | Rem                           | .      | 6.18  | .                              | .                              | 4.63             | 4.71   | 10.26             | 1.77  | .                             | .     | 0.21            | .                              | .                | 1.02  |  |
| FLX R2    | 57.76                            | .                              | .                             | .      | .     | .                              | .                              | 3.05             | .      | 14.7              | .     | 4.76                          | 1.63  | .               | .                              | .                | .     |  |
| BR UG1    | 56.2                             | .                              | 2.0                           | .      | .     | .                              | .                              | 16.0             | .      | 1.0               | 3.5   | .                             | .     | .               | .                              | .                | 20.0  |  |
| BR SOL02  | 55.5                             | .                              | 8.8                           | 1.2    | 0.15  | .                              | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | 0.35            | 0.5                            | .                | 3.0   |  |
| BR BP1    | 55.5                             | .                              | 5.0                           | .      | 3.0   | .                              | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 7.0              | .     |  |
| BR BP1/3  | 55.5                             | .                              | 10.85                         | .      | 3.0   | 0.15                           | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 1.0              | .     |  |
| BR BP1/4  | 55.5                             | .                              | 8.7                           | .      | 3.0   | 0.3                            | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 3.0              | .     |  |
| BR BP1/5  | 55.5                             | .                              | 6.4                           | .      | 3.0   | 0.6                            | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 5.0              | .     |  |
| BR BP1/6  | 55.5                             | .                              | 4.2                           | .      | 3.0   | 0.8                            | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 7.0              | .     |  |
| BR BP1/7  | 55.5                             | .                              | 1.0                           | .      | 3.0   | 1.0                            | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | 10.0             | .     |  |
| BR SOL01  | 55.5                             | .                              | 9.15                          | 1.2    | 0.15  | .                              | .                              | 12.0             | .      | 17.0              | .     | .                             | .     | .               | 0.5                            | .                | 3.0   |  |
| BR LOE1/1 | 55.4                             | 10.0                           | 4.0                           | 0.0055 | 0.014 | .                              | .                              | 12.0             | 0.0017 | 17.0              | .     | 0.0184                        | .     | 0.050           | 1.0                            | .                | 0.025 |  |
| BR LK1    | 55.14                            | .                              | 9.68                          | 0.15   | 3.0   | .                              | .                              | 12.0             | .      | 17.0              | .     | .                             | 0.21  | .               | 1.19                           | 0.33             | 0.74  |  |
| BR 3/L    | 55.1                             | 0.08                           | 6.83                          | 0.0    | 0.06  | .                              | 0.02                           | 16.90            | 0.0    | 1.11              | .     | 0.0                           | 0.0   | 0.0             | 0.0                            | 0.03             | 19.50 |  |
| BR HS4    | 53.1                             | .                              | 5.0                           | .      | .     | 1.2                            | 7.0                            | 12.0             | .      | 17.7              | .     | 1.0                           | .     | 0.5             | 0.5                            | 2.0              | .     |  |
| BR TL3    | 53.0                             | .                              | 13.0                          | .      | 4.0   | .                              | 0.1                            | 10.0             | .      | 18.0              | .     | 1.0                           | 0.2   | .               | .                              | .                | .     |  |
| BR ME2    | 52.53                            | 10.00                          | .                             | .      | 20.00 | 0.036*                         | 0.036                          | 15.00            | .      | 0.033             | .     | 2.00                          | 0.026 | .               | .                              | 0.041            | 0.031 |  |
| BR SH4    | 52.34                            | .                              | 19.998                        | .      | 0.014 | .                              | 0.028                          | 5.00             | .      | 0.019             | 0.012 | .                             | .     | 1.50            | .                              | .                | 20.00 |  |
| BR AX1    | 52.31                            | 5.67                           | 5.0                           | .      | 2.8   | .                              | 4.29                           | 6.02             | 0.83   | .                 | .     | 1.15                          | 1.08  | 1.25            | .                              | .                | 2.49  |  |
| BR LOE2   | 51.967                           | 10.0                           | 4.0                           | 0.23   | 0.7   | .                              | .                              | 12.0             | 0.25   | 17.0              | .     | 0.35                          | .     | 1.87            | 1.0                            | .                | 0.19  |  |
| BR LOE2/1 | 51.96                            | .                              | 11.08                         | 0.69   | 0.7   | .                              | .                              | 12.0             | 0.75   | 17.0              | .     | 1.05                          | .     | 1.87            | 1.0                            | .                | 0.57  |  |

| Number    | Ag <sub>2</sub> O | As <sub>2</sub> O <sub>3</sub> | Bi <sub>2</sub> O <sub>3</sub> | Br   | CdO   | CeO <sub>2</sub> | Cl    | CoO   | Co <sub>2</sub> O <sub>3</sub> | CuO   | F    | GeO <sub>2</sub> | La <sub>2</sub> O <sub>3</sub> | MnO <sub>2</sub> | MoO <sub>3</sub> | Nb <sub>2</sub> O <sub>5</sub>         |
|-----------|-------------------|--------------------------------|--------------------------------|------|-------|------------------|-------|-------|--------------------------------|-------|------|------------------|--------------------------------|------------------|------------------|----------------------------------------|
| FLX Q1    | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR PN1/1  | .                 | .                              | .                              | .    | 7.2   | .                | .     | 1.0   | .                              | .     | 1.0  | .                | .                              | .                | .                | .                                      |
| FLX R3    | 0.35              | .                              | 0.49                           | 0.11 | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | 0.97 as Nb <sub>2</sub> O <sub>3</sub> |
| FLX R2    | .                 | 1.47                           | .                              | .    | .     | 1.48             | .     | .     | .                              | .     | .    | 1.54             | 1.43                           | .                | 1.04             | .                                      |
| BR UG1    | .                 | 0.3                            | .                              | .    | .     | .                | .     | .     | 1.0                            | .     | .    | .                | .                              | .                | .                | .                                      |
| BR SOL02  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1    | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1/3  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1/4  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1/5  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1/6  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR BP1/7  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR SOL01  | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR LOE1/1 | .                 | .                              | .                              | .    | .     | .                | 0.005 | .     | 0.0013                         | .     | .    | .                | .                              | .                | 0.03             | .                                      |
| BR LK1    | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR 3/L    | .                 | 0.30                           | .                              | .    | 0.0   | 0.0              | .     | .     | .                              | .     | 0.0  | .                | 0.0                            | .                | .                | 1.0                                    |
| BR HS4    | .                 | .                              | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR TL3    | .                 | 0.7                            | .                              | .    | .     | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR ME2    | 0.026             | .                              | .                              | .    | 0.028 | .                | .     | 0.031 | .                              | 0.031 | .    | .                | .                              | 0.04             | 0.037            | .                                      |
| BR SH4    | .                 | .                              | .                              | .    | 1.00  | .                | .     | .     | .                              | .     | .    | .                | .                              | .                | .                | .                                      |
| BR AX1    | .                 | 0.6                            | 0.0055                         | .    | .     | .                | .     | .     | .                              | 2.5   | 14.0 | .                | .                              | .                | 0.0058           | .                                      |
| BR LOE2   | .                 | .                              | .                              | .    | .     | .                | 0.15  | .     | .                              | 0.063 | .    | .                | .                              | .                | 0.23             | .                                      |
| BR LOE2/1 | .                 | .                              | .                              | .    | .     | .                | 0.45  | .     | .                              | 0.19  | .    | .                | .                              | .                | 0.69             | .                                      |

| Number    | Se  | SnO  | SnO <sub>2</sub> | SrO   | Te  | V <sub>2</sub> O <sub>5</sub> | W <sub>2</sub> O <sub>3</sub> | ZrO <sub>2</sub> |
|-----------|-----|------|------------------|-------|-----|-------------------------------|-------------------------------|------------------|
| FLX Q1    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR PN1/1  | 1.0 | .    | .                | .     | 1.0 | .                             | .                             | .                |
| FLX R3    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| FLX R2    | .   | .    | 1.19             | .     | .   | 2.71                          | 1.32                          | .                |
| BR UG1    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR SOL02  | .   | .    | .                | 1.5   | .   | .                             | .                             | .                |
| BR BP1    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR BP1/3  | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR BP1/4  | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR BP1/5  | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR BP1/6  | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR BP1/7  | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR SOL01  | .   | .    | .                | 1.5   | .   | .                             | .                             | .                |
| BR LOE1/1 | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR LK1    | .   | 0.56 | .                | .     | .   | .                             | .                             | .                |
| BR 3/L    | .   | .    | .                | 0.002 | .   | .                             | .                             | 0.0 last         |
| BR HS4    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR TL3    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR ME2    | .   | .    | .                | 0.03  | .   | 0.044                         | .                             | .                |
| BR SH4    | .   | .    | .                | .     | .   | 0.089                         | .                             | .                |
| BR AX1    | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR LOE2   | .   | .    | .                | .     | .   | .                             | .                             | .                |
| BR LOE2/1 | .   | .    | .                | .     | .   | .                             | .                             | .                |

## VARIOUS XRF DISCS, chart 4 of 4

typical analysis

30-40 mm Ø x 5-8 mm

| Number    | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | B <sub>2</sub> O <sub>3</sub> | CaO   | 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  | SO <sub>3</sub> | Sb <sub>2</sub> O <sub>3</sub> | TiO <sub>2</sub> | ZnO   |
|-----------|------------------|--------------------------------|-------------------------------|-------|--------------------------------|------------------|-------|------|-------------------|-------|-------------------------------|------|-----------------|--------------------------------|------------------|-------|
| BR SH1    | 51.34            | .                              | 22.648                        | .     | .                              | 5.00             | .     | .    | .                 | .     | .                             | .    | 0.012           | .                              | .                | 20.00 |
| BR SH2    | 51.34            | .                              | 22.41                         | .     | .                              | 5.00             | .     | .    | .                 | .     | .                             | .    | 0.25            | .                              | .                | 20.00 |
| BR HS3    | 51.2             | 7.0                            | 2.0                           | 10.0  | .                              | .                | 6.5   | .    | 17.1              | 2.0   | .                             | .    | .               | 1.0                            | .                | 1.0   |
| BR ME1    | 51.00            | 0.049                          | 28.26                         | 0.035 | .                              | 0.030            | 0.041 | .    | 15.00             | 0.031 | .                             | .    | .               | 0.50                           | 2.00             | 3.00  |
| BR ECH1   | 51.0             | 2.8                            | .                             | 10.0  | 5.0                            | .                | .     | 5.0  | 17.0              | 2.0   | 3.00                          | .    | .               | 1.00                           | 1.00             | .     |
| BR ECH2   | 51.0             | 2.8                            | 15.18                         | 10.0  | 1.0                            | .                | .     | 1.0  | 17.0              | 0.5   | 0.75                          | .    | .               | 0.25                           | 0.25             | .     |
| SV B      | 51.0             | .                              | .                             | 25.0  | 19.0                           | .                | .     | .    | .                 | 1.0   | .                             | .    | .               | .                              | .                | .     |
| BR TAB1/2 | 49.1             | 3.0                            | .                             | 0.30  | .                              | 2.00             | .     | .    | 40.00             | .     | .                             | .    | .               | 0.60                           | .                | .     |
| BR U 31B  | 49.1             | 1.5                            | .                             | 20.0  | 16.0                           | 3.0              | .     | .    | .                 | .     | 1.0                           | 4.0  | 0.4             | .                              | 3.0              | .     |
| BR HS2    | 48.75            | .                              | 14.5                          | .     | .                              | .                | .     | .    | 16.25             | .     | 5.0                           | 1.5  | .               | 1.0                            | .                | .     |
| BR AK1    | 47.82            | .                              | .                             | 10.00 | .                              | 2.00             | .     | .    | 10.00             | .     | 3.38                          | 5.00 | 1.80            | .                              | .                | 10.00 |
| BR B02    | 46.5             | 8.0                            | .                             | 20.0  | .                              | .                | 13.0  | .    | 5.0               | .     | 7.0                           | .    | .               | 0.5                            | .                | .     |
| BR TAB2   | 45.6             | 3.0                            | .                             | 0.20  | .                              | 7.00             | 3.6   | .    | 35.00             | .     | .                             | .    | .               | 0.60                           | .                | .     |
| BR U 22   | 45.0             | 7.0                            | 8.0                           | 10    | .                              | .                | 6.5   | .    | 16.0              | 2.0   | 0.3                           | .    | .               | .                              | .                | 1.0   |
| BR AX2    | 42.78            | 5.67                           | .                             | 21.4  | 14.3                           | 2.4              | 3.32  | .    | .                 | .     | 2.33                          | 0.54 | .               | .                              | .                | .     |
| BR PB 2   | 41.8             | 8.6                            | .                             | 21.0  | 12.3                           | 0.04             | 0.23  | 0.89 | 0.09              | 0.79  | 2.1                           | 4.4  | .               | .                              | 1.2              | 0.45  |
| FLX Q3    | 41.72            | 2.25                           | 42.8                          | 0.45  | .                              | .                | 5.33  | .    | .                 | .     | .                             | .    | .               | .                              | .                | .     |
| BR HKM2   | 41.00            | 11.0                           | 5.98                          | .     | 3.0                            | 5.0              | .     | .    | 10.0              | 0.07  | 0.02                          | .    | .               | .                              | 5.0              | .     |
| BR U 16   | 40.0             | .                              | 24.0                          | .     | 0.10                           | 5.0              | 10.0  | .    | 10.0              | .     | .                             | 2.0  | .               | .                              | .                | .     |
| BR TAB5   | 38.40            | 3.0                            | 15.00                         | .     | .                              | .                | 28.00 | .    | 10.00             | .     | .                             | 3.00 | .               | 0.60                           | .                | .     |
| SV A      | 36.8             | 11.9                           | 3.5                           | 0.7   | 0.4                            | 2.5              | 3.5   | 31.9 | 0.3               | .     | 0.6                           | .    | .               | .                              | .                | 6.6   |
| BR PA 4   | 36.52            | 15.8                           | 4.2                           | 0.83  | 1.16                           | 2.16             | 3.2   | 20.3 | 0.13              | .     | 0.56                          | .    | .               | .                              | 3.9              | 7.4   |
| BR HKM1   | 35.6             | 10.0                           | 32.00                         | .     | .                              | 5.0              | .     | .    | 10.0              | .     | .                             | .    | .               | .                              | .                | .     |
| BR BS1    | 31.942           | 6.75                           | .                             | 21.5  | 12.3                           | 0.04             | 12.00 | 0.89 | 0.09              | 0.79  | 2.1                           | 4.4  | .               | .                              | 1.2              | 0.1   |
| BR AL2    | 19.4             | 12.0                           | 20.0                          | 0.5   | .                              | .                | 3.0   | 25.0 | 12.0              | .     | 1.0                           | .    | 0.5             | .                              | .                | 2.0   |

  

| Number    | Ag <sub>2</sub> O | As <sub>2</sub> O <sub>3</sub> | BaO   | Bi <sub>2</sub> O <sub>3</sub> | Br   | CdO  | CeO <sub>2</sub> | CoO  | Cr <sub>2</sub> O <sub>3</sub> | CuO  | F    | Ga <sub>2</sub> O <sub>3</sub> | GeO <sub>2</sub> | I   | In <sub>2</sub> O <sub>3</sub> | La <sub>2</sub> O <sub>3</sub> | MnO <sub>2</sub> | Mn <sub>3</sub> O <sub>4</sub> |
|-----------|-------------------|--------------------------------|-------|--------------------------------|------|------|------------------|------|--------------------------------|------|------|--------------------------------|------------------|-----|--------------------------------|--------------------------------|------------------|--------------------------------|
| BR SH1    | .                 | .                              | .     | .                              | .    | 1.00 | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR SH2    | .                 | .                              | .     | .                              | .    | 1.00 | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR HS3    | 0.5               | .                              | .     | 0.5                            | 0.2  | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR ME1    | .                 | .                              | 0.027 | 0.027                          | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR ECH1   | .                 | .                              | .     | .                              | 0.20 | .    | .                | 2.00 | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR ECH2   | .                 | .                              | .     | .                              | 0.02 | .    | .                | 0.25 | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| SV B      | .                 | .                              | .     | .                              | .    | .    | .                | .    | .                              | 0.5  | 0.5  | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR TAB1/2 | .                 | .                              | 2.0   | .                              | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR U 31B  | .                 | .                              | .     | .                              | .    | .    | .                | 2.0  | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR HS2    | .                 | 1.5                            | .     | .                              | .    | .    | 1.5              | .    | .                              | .    | .    | .                              | 1.5              | .   | .                              | 1.5                            | .                | .                              |
| BR AK1    | .                 | .                              | 5.00  | .                              | .    | 5.00 | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR B02    | .                 | .                              | .     | .                              | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR TAB2   | .                 | .                              | 2.0   | .                              | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR U 22   | 0.50              | .                              | .     | 0.5                            | 0.1  | .    | .                | .    | .                              | .    | .    | .                              | .                | 0.1 | .                              | .                              | .                | .                              |
| BR AX2    | .                 | .                              | .     | .                              | .    | .    | .                | .    | .                              | 6.26 | 1.0  | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR PB 2   | .                 | .                              | 0.04  | .                              | .    | .    | .                | 1.62 | .                              | 0.25 | 1.4  | .                              | .                | .   | .                              | .                              | .                | .                              |
| FLX Q3    | .                 | .                              | .     | .                              | .    | .    | 0.47             | .    | .                              | .    | .    | .                              | .                | .   | .                              | Li <sub>2</sub> O:9.1          | .                | .                              |
| BR HKM2   | .                 | .                              | .     | .                              | .    | .    | .                | .    | .                              | 0.03 | .    | .                              | .                | .   | .                              | .                              | .                | 5.0                            |
| BR U 16   | .                 | 1.5                            | .     | .                              | .    | .    | 1.0              | .    | .                              | .    | .    | .                              | 1.5              | .   | .                              | 1.0                            | .                | .                              |
| BR TAB5   | .                 | .                              | 2.00  | .                              | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| SV A      | .                 | .                              | .     | .                              | .    | 0.8  | .                | .    | .                              | .    | 0.5  | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR PA 4   | .                 | .                              | 2.0   | .                              | .    | 0.39 | .                | .    | 0.15                           | .    | 0.17 | .                              | 0.08             | .   | 0.04                           | .                              | .                | .                              |
| BR HKM1   | .                 | .                              | .     | .                              | .    | .    | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR BS1    | .                 | 0.05                           | 0.04  | .                              | .    | .    | .                | 1.62 | .                              | 0.1  | 1.4  | .                              | .                | .   | .                              | .                              | .                | .                              |
| BR AL2    | .                 | 0.5                            | .     | 0.5                            | .    | 2.0  | .                | .    | .                              | .    | .    | .                              | .                | .   | .                              | .                              | .                | .                              |

  

| Number    | 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 | Se     | Sm <sub>2</sub> O <sub>3</sub> | SnO  | SnO <sub>2</sub> | SrO  | Ta <sub>2</sub> O <sub>5</sub> | TeO <sub>2</sub> | Tl <sub>2</sub> O <sub>3</sub> | V <sub>2</sub> O <sub>3</sub> | V <sub>2</sub> O <sub>5</sub> | W <sub>2</sub> O <sub>3</sub> | Y <sub>2</sub> O <sub>3</sub> | ZrO <sub>2</sub> |
|-----------|------------------|--------------------------------|--------------------------------|--------------------------------|-------------------|--------|--------------------------------|------|------------------|------|--------------------------------|------------------|--------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|------------------|
| BR SH1    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR SH2    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR HS3    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR ME1    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR ECH1   | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR ECH2   | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| SV B      | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | last             |
| BR TAB1/2 | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR U 31B  | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR HS2    | 1.0              | .                              | .                              | .                              | .                 | .      | .                              | 1.0  | .                | .    | .                              | .                | .                              | .                             | 4.0                           | 1.0                           | .                             | .                |
| BR AK1    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR B02    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR TAB2   | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR U 22   | .                | .                              | 0.5                            | 0.5                            | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR AX2    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR PB 2   | .                | .                              | .                              | .                              | .                 | .      | .                              | 0.92 | 0.008            | 0.85 | 0.08                           | .                | .                              | .                             | .                             | 1.85                          | .                             | .                |
| FLX Q3    | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| BR HKM2   | 4.0              | 4.0                            | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | 5.5                           | .                             | .                             | .                |
| BR U 16   | 1.0              | .                              | .                              | .                              | .                 | .      | .                              | 0.5  | .                | .    | 0.1                            | .                | .                              | 1.5                           | .                             | 1.0                           | .                             | .                |
| BR TAB5   | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | .                |
| SV A      | .                | .                              | .                              | .                              | .                 | .      | .                              | .    | .                | .    | .                              | .                | .                              | .                             | .                             | .                             | .                             | last             |
| BR PA 4   | .                | .                              | .                              | .                              | 0.04              | (0.01) | .                              | .    | 0.71             | .    | 0.04                           | .                | .                              | .                             | 0.01                          | .                             | .                             | 0.15             |
| BR HKM1   | .                | 2.0                            | .                              | .                              | .                 | .      | .                              | .    | .                | 0.4  | 0.08                           | .                | .                              | .                             | 2.5                           | .                             | .                             | .                |
| BR BS1    | .                | 0.6                            | .                              | .                              | .                 | .      | .                              | 0.2  | 0.008            | .    | 0.08                           | .                | .                              | .                             | .                             | 1.85                          | .                             | .                |
| BR AL2    | .                | .                              | .                              | .                              | .                 | .      | .                              | 0.5  | .                | 0.5  | .                              | .                | .                              | .                             | .                             | .                             | .                             | 0.5              |

**GEOLOGICAL POWDER SETTING-UP SAMPLES**

analysis in mass %

Data Sheet shows two lists of analytical results, no uncertainties, last of stock

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 |

continued analysis in mg/kg

| Number   | Ag  | As  | Au    | B   | Be  | Bi   | Br  | Cd | Ce | 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 |

  

| 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 |



## 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.