



BREITLÄNDER
Part of LGC Standards

XRF Layer Standards from CALMETRICS



www.breitlander.com

LGC Standards GmbH
Mercatorstr. 51
46485 Wesel, Germany

Tel.: +49 (0)281 319391 0
Fax: +49 (0)281 319391 29
E-Mail: mail@breitlander.com



Standards

Excellence through measurement



XRF CALIBRATION STANDARDS

There are four pages of price lists for XRF calibration standards:

1. Flat XRF calibration standards sets
2. Recessed XRF calibration standards (used for XRF-300 series, XRF-4000 series, XRF-5000 series, LXR, GXR and GXR-S)
3. Individual Flat foil calibration standards
4. Individual Flat hard plated calibration standards

<p>1. Flat XRF calibration standards (packaged sets)</p>	<p>For empirical calibrations: Must be used for MXR, VXR, GXR-C, MXR-P, MXR-V, & CXR Can be used for LXR, GXR, GXR-S, 5x00 series, Roentgenanalytik, Seiko, CMI & Fischer XRF instruments and to stack multiple foils to create multi-layer combinations</p>
<p>2. Recessed XRF calibration standards (packaged sets)</p>	<p>For empirical calibrations Can be used for LXR, GXR, GXR-S, 5x00 series Must be used for older Veeco & UPA model instruments (XRF-300, XRF-320, XRF-310, XRF-300AT)</p>
<p>3. Individual flat foil calibration standards</p>	<p>Typically selected a la carte for FP calibrations or to replace or supplement standards in existing set– select standard values which are within, above and below) the range of thicknesses which need to be measured.</p> <p><u>Part numbers key:</u></p> <p>“SXX###” where: “S” used for all flat standards (part numbers without “S” indicate recessed mount is used XX = element symbol ### = nominal thickness in microinches</p> <p><u>example:</u> SAU40 = individual flat foil standard, gold(Au), approximately 40 microinches or 1 micron</p> <p><u>Note:</u> Infinite (base materials) are not included when ordering individual standards and must be ordered separately Autocal racks can be ordered to hold up to 8 individual calibration standards for automatic positioning and measurement during calibration. Please specify base material to be included with racks (1 for each foil standard plus 1 blank)</p>
<p>4. Individual flat hard plated calibration standards</p>	<p>Typically selected a la carte for FP calibrations or used to replace or supplement existing standards set Part numbers: “SXX###XX999” where: “S” used for all flat standards XX = element symbol ### = nominal thickness in microinches 999 indicates infinite thickness (base) example: SAU80NI999 = individual flat plated standard, gold (Au), 80 microinches (2 microns) plated on infinite Ni Autocal racks can be ordered to hold up to 8 individual calibration standards for automatic positioning and measurement during calibration</p>

<p>5. Standards for FP calibrations</p>	<p>1. Order individual flat calibration standards. Foil standards are more versatile than plated standards and can be stacked for multilayer applications. Plated standards are more durable than foil standards but have a fixed base material</p> <p>2. Typical FP standards order includes two thickness standards. Choose standard values first by multiplying the lower expected measurement range by 1.1X and then multiplying upper expected measuring range by 0.9X of the upper expected measurement range. Then find 2 closest standards available to these calculated values</p> <p>Example: to measure 7.5 um (300u”) to 25 um (1000 u”) Cu on epoxy base;</p> <p>1.1 X 7.5 um =8.25 um (330 u”) 0.9 X 25 um = 22.5 um (900 u”)</p> <p>Select SCU400 and SCU800 as the closest thickness’ to the above-calculated values. Use customer’s epoxy base for calibration. If required individual calibration standards are not available then order S8542. In this case, samples provided by the customer are measured and certified as standards. Alternatively, you may order a custom standard value, S144.</p>
---	--

CALMETRICS

INDIVIDUAL FLAT FOIL MOUNTED XRF CALIBRATION STANDARDS

ALUMINUM (Al)			GOLD (Au)			PALLADIUM (Pd)		
SAL40	40µ"	(1.00µm)	SAU2	2µ"	(0.05µm)	SPD4	4µ"	(0.10µm)
SAL120	120µ"	(3.00µm)	SAU4	4µ"	(0.10µm)	SPD10	10µ"	(0.25µm)
SAL200	200µ"	(5.00µm)	SAU10	10µ"	(0.25µm)	SPD20	20µ"	(0.50µm)
SAL500	500µ"	(12.5µm)	SAU20	20µ"	(0.50µm)	SPD40	40µ"	(1.00µm)
CADMIUM (Cd)			SAU40	40µ"	(1.00µm)	SPD80	80µ"	(2.00µm)
SCD40	40µ"	(1.00µm)	SAU80	80µ"	(2.00µm)	SPD120	120µ"	(3.00µm)
SCD80	80µ"	(2.00µm)	SAU120	120µ"	(3.00µm)	SPD200	200µ"	(5.00µm)
SCD200	200µ"	(5.00µm)	SAU200	200µ"	(5.00µm)	PLATINUM (Pt)		
SCD400	400µ"	(10.0µm)	IRON (Fe)			SPT20	20µ"	(0.50µm)
SCD600	600µ"	(15.0µm)	SFE80	80µ"	(2.00µm)	SPT40	40µ"	(1.00µm)
CHROMIUM (Cr)			SFE240	240µ"	(6.00µm)	SILVER (Ag)		
SCR2	2µ"	(0.05µm)	LEAD (Pb)			SAG4	4µ"	(0.10µm)
SCR4	4µ"	(0.10µm)	SPB10	10µ"	(0.25µm)	SAG10	10µ"	(0.25µm)
SCR10	10µ"	(0.25µm)	SPB40	40µ"	(1.00µm)	SAG40	40µ"	(1.00µm)
SCR20	20µ"	(0.50µm)	SPB80	80µ"	(2.00µm)	SAG80	80µ"	(2.00µm)
SCR40	40µ"	(1.00µm)	SPB160	160µ"	(4.00µm)	SAG200	200µ"	(5.00µm)
SCR80	80µ"	(2.00µm)	SPB360	360µ"	(9.00µm)	SAG400	400µ"	(10.0µm)
SCR200	200µ"	(5.00µm)	NICKEL (Ni)			SAG800	800µ"	(20.0µm)
SCR400	400µ"	(10.0µm)	SNI4	4µ"	(0.10µm)	SAG1200	1200µ"	(30.0µm)
COBALT (Co)			SNI10	10µ"	(0.25µm)	SOLDER (Sn-Pb)		
SCO2	2µ"	(0.05µm)	SNI20	20µ"	(0.50µm)	SSNPB200-60	200µ"	(5.00µm) 60% Sn
SCO4	4µ"	(0.10µm)	SNI40	40µ"	(1.00µm)	SSNPB240-60	240µ"	(6.00µm) 60% Sn
SCO10	10µ"	(0.25µm)	SNI80	80µ"	(2.00µm)	SSNPB400-60	400µ"	(10.0µm) 60% Sn
SCO20	20µ"	(0.50µm)	SNI100	100µ"	(2.50µm)	SSNPB560-60	560µ"	(14.0µm) 60% Sn
SCO40	40µ"	(1.00µm)	SNI120	120µ"	(3.00µm)	SSNPB200-90	200µ"	(5.00µm) 90% Sn
SCO80	80µ"	(2.00µm)	SNI200	200µ"	(5.00µm)	SSNPB360-90	360µ"	(9.00µm) 90% Sn
SCO120	120µ"	(3.00µm)	SNI320	320µ"	(8.00µm)	SSNPB560-90	560µ"	(14.0µm) 90% Sn
COPPER (Cu)			SNI400	400µ"	(10.0µm)	TIN (Sn)		
SCU4	4µ"	(0.10µm)	SNI800	800µ"	(20.0µm)	SSN4	4µ"	(0.10µm)
SCU10	10µ"	(0.25µm)	SNI1100	1100µ"	(27.5µm)	SSN10	10µ"	(0.25µm)
SCU20	20µ"	(0.50µm)	NICKEL-PHOSPHORUS (Ni-P, 8% P)			SSN20	20µ"	(0.50µm)
SCU40	40µ"	(1.00µm)	SNIP100-92	100µ"	(2.50µm)	SSN40	40µ"	(1.00µm)
SCU80	80µ"	(2.00µm)	SNIP240-92	240µ"	(6.00µm)	SSN80	80µ"	(2.00µm)
SCU200	200µ"	(5.00µm)	SNIP360-92	360µ"	(9.00µm)	SSN200	200µ"	(5.00µm)
SCU400	400µ"	(10.0µm)	SNIP720-92	720µ"	(18.0µm)	SSN400	400µ"	(10.0µm)
SCU800	800µ"	(20.0µm)	TITANIUM (Ti)			SSN800	800µ"	(20.0µm)
SCU1400	1400µ"	(35.0µm)	STI20	20µ"	(0.50µm)	SSN1600	1600µ"	(40.0µm)
			STI40	40µ"	(1.00µm)	SSN2400	2400µ"	(60.0µm)
			STI200	200µ"	(5.00µm)	ZINC (Zn)		
			STI400	400µ"	(10.0µm)	SZN100	100µ"	(2.50µm)
			ZINC (Zn)			SZN400	400µ"	(10.0µm)
			SZN100	100µ"	(2.50µm)	SZN800	800µ"	(20.0µm)
			SZN400	400µ"	(10.0µm)			
			SZN800	800µ"	(20.0µm)			

NOTE: Flat XRF calibration standards (foil mounted and hard plate) can be arranged in an autocal rack for automatic positioning and measurement during calibration. Up to eight individual standards can be inserted with the flat style autocal rack, P/N 21063.

CALMETRICS

INDIVIDUAL FLAT HARD PLATED XRF CALIBRATION STANDARDS

SAG20CU999	Ag/Cu	20μ”	(0.50μm)	SNIP100-92CU999	Ni-P/Cu (8%P)	100μ”	(2.50μm)
SAG40CU999	Ag/Cu	40μ”	(1.00μm)	SNIP200-92CU999	Ni-P/Cu (8%P)	200μ”	(5.00μm)
SAG80CU999	Ag/Cu	80μ”	(2.00μm)	SNIP400-92CU999	Ni-P/Cu (8%P)	400μ”	(10.0μm)
SAG200CU999	Ag/Cu	200μ”	(5.00μm)	SNIP600-92CU999	Ni-P/Cu (8%P)	600μ”	(15.0μm)
SAG400CU999	Ag/Cu	400μ”	(10.0μm)				
SAG800CU999	Ag/Cu	800μ”	(20.0μm)	SNIP100-92FE999	Ni-P/Fe (8%P)	100μ”	(2.50μm)
				SNIP200-92FE999	Ni-P/Fe (8%P)	200μ”	(5.00μm)
SAU10NI999	Au/Ni	10μ”	(0.25μm)	SNIP400-92FE999	Ni-P/Fe (8%P)	400μ”	(10.0μm)
SAU20NI999	Au/Ni	20μ”	(0.50μm)	SNIP600-92FE999	Ni-P/Fe (8%P)	600μ”	(15.0μm)
SAU80NI999	Au/Ni	80μ”	(2.00μm)				
				SSN200CU999	Sn/Cu	200μ”	(5.00μm)
SCU200FE999	Cu/Fe	200μ”	(5.00μm)	SSN400CU999	Sn/Cu	400μ”	(10.0μm)
SCU400FE999	Cu/Fe	400μ”	(10.0μm)	SSN800CU999	Sn/Cu	800μ”	(20.0μm)
SCU800FE999	Cu/Fe	800μ”	(20.0μm)				
				SSNPB240-60Cu999	Sn-Pb/Cu (60% Sn)	240μ”	(6.00μm)
SNI40CU999	Ni/Cu	40μ”	(1.00μm)	SSNPB400-60Cu999	Sn-Pb/Cu (60% Sn)	400μ”	(10.0μm)
SNI80CU999	Ni/Cu	80μ”	(2.00μm)	SSNPB600-60Cu999	Sn-Pb/Cu (60% Sn)	600μ”	(15.0μm)
SNI100CU999	Ni/Cu	100μ”	(2.50μm)	SSNPB800-60Cu999	Sn-Pb/Cu (60% Sn)	800μ”	(20.0μm)
SNI200CU999	Ni/Cu	200μ”	(5.00μm)	SSNPB1200-60Cu999	Sn-Pb/Cu (60% Sn)	1200μ”	(30.0μm)
SNI400CU999	Ni/Cu	400μ”	(10.0μm)				
SNI800CU999	Ni/Cu	800μ”	(20.0μm)	SZN120FE999	Zn/Fe	120μ”	(3.00μm)
				SZN200FE999	Zn/Fe	200μ”	(5.00μm)
SNI200FE999	Ni/Fe	200μ”	(5.00μm)	SZN400FE999	Zn/Fe	400μ”	(10.0μm)
SNI400FE999	Ni/Fe	400μ”	(10.0μm)	SZN800FE999	Zn/Fe	800μ”	(20.0μm)
SNI800FE999	Ni/Fe	800μ”	(20.0μm)				
				S144	SPECIAL STANDARD SYSTEM XR		
					*Per Quote		

INFINITES			
SALLOY42	Alloy 42	SNB999	Niobium (Nb)
SAL999	Aluminum (Al)	SPD999	Palladium (Pd)
SBI999	Bismuth (Bi)	SPBRONZE999	P-Bronze (Cu-Sn) 95%Cu (CDA 519)
SBRASS999	Brass (Cu-Zn) 80%Cu	SPDNI999-80	Pd-Ni (80% Pd)
SCD999	Cadmium (Cd)	SPT999	Platinum (Pt)
SCR999	Chromium (Cr)	SRH999	Rhodium (Rh)
SCO999	Cobalt (Co)	SSI999	Silicon (Si)
SCU999	Copper (Cu)	SAG999	Silver (Ag)
SAU999	Gold (Au)	SSF999	Stainless Steel (304)
SIN999	Indium (In)	STA999	Tantalum (Ta)
SFE999	Iron (Fe)	SSN999	Tin (Sn)
SKOVAR999	Kovar (Kvr)	STI999	Titanium (Ti)
SPB999	Lead (Pb)	SW999	Tungsten (W)
SMO999	Molybdenum (Mo)	SV999	Vanadium (V)
SNI999	Nickel (Ni)	SZN999	Zinc (Zn)
SNIP999-92	Ni-P (EN) 92%Ni-8%P		

NOTE: Flat XRF calibration standards (foil mounted and hard plate) can be arranged in an autocal rack for automatic positioning and measurement during calibration. Up to eight individual standards can be inserted with the flat style autocal rack, P/N 21063.

CERTIFIED COMPOSITION**	
SSNPB999-5	Solder (Sn-Pb) 5%Sn **
SSNPB999-10	Solder (Sn-Pb) 10%Sn **
SSNPB999-50	Solder (Sn-Pb) 50%Sn **
SSNPB999-60	Solder (Sn-Pb) 60%Sn **
SSNPB999-80	Solder (Sn-Pb) 80%Sn **
SSNPB999-90	Solder (Sn-Pb) 90%Sn **

CALMETRICS

FLAT XRF CALIBRATION STANDARD SETS For System XR models, using empirical calibrations

HARD PLATED SINGLE LAYER STANDARDS		AUTOCAL SINGLE LAYER FOILS		AUTOCAL DUAL LAYER FOILS (14 pcs)	
S12454-1	Ag/Cu	S12511-1	Au/XX (Ni)	S12509-3	Cu-Zn/xx (Fe)
S12454-2	Ni/Cu	S12511-2	Ni/XX (Fe)	S12509-4	Pd-Ni/XX (Cu)
S12454-3	Sn/Cu	S12511-3	Cu/XX (Fe)	S14363	Sn-Pb/XX (Cu) (use for W-target tube systems)
S12454-4	Au/Ni	S12511-4	Ag/XX (Cu)	S12510-1	Sn-Pb/XX (Cu) (use for Mo-target tube systems)
S12454-5	Ni/Kvr	S12511-5	Sn/XX (Cu)	S12510-2	Au/Ni/XX (Cu)
S12454-6	Ni/Fe	S12511-6	Ni-P/XX (Fe)	S12510-3	Ag/Ni/XX (Cu)
S12454-7	Cu/Fe	S12511-7	Cr/XX (Fe)	S12510-4	Sn/Ni/XX (Cu)
S12454-8	Cd/Fe	S12511-8	Zn/XX (Fe)	S12510-5	Ni/Cu/XX (Fe)
S12454-9	Zn/Fe	S12511-9	Cd/XX (Fe)	S12510-7	Au/Ag/XX (Cu)
S12454-12	Au/Kvr	S12511-10	Al/XX (Fe)	S12510-8	Au/Pd/XX (Cu)
S12454-13	Rh/Ni	S12511-11	Mo/XX (Fe)	S12510-9	Cr/Ni/XX (Fe)
S12454-14	Pd/Ni	S12511-12	Co/XX (Fe)	S12510-10	Au/ Ni-P/XX (Cu)
S12454-16	Cr/Fe	S12511-13	Ti/XX (Fe)	S12510-11	Pd/Ni/xx (Cu)
S12454-17	Ni-P/Fe	S12511-14	Pd/XX (Fe)	S12510-12	Sn/Cu/XX(Fe)
S12454-18	Ni-P/Cu			S12510-13	Au/Ni/XX Thin (Cu)
S12454-19	Ni-P/Kvr			S12510-14	Au/Ni-P/XX Thin (Cu)
S12454-20	Ni-P/Al				

SUPPLEMENTARY BASE MATERIALS FOR SINGLE LAYER FOIL STDS ONLY	
S12514-1	Copper
S12514-2	Kovar
S12514-3	Phosphor Bronze
S12514-4	Aluminum
S12514-5	Aluminum Oxide
S12514-6	Alloy 42
S12514-7	Nickel
S12514-8	1010 Steel
S12514-9	Brass
S12514-10	CA725
S12514-11	Molybdenum
S12514-12	Tungsten

SUPPLEMENTARY BASE MATERIALS FOR DUAL LAYER FOIL STDS ONLY	
S12512-1	Copper
S12512-2	Kovar
S12512-3	Phosphor Bronze
S12512-4	Aluminum
S12512-5	Aluminum Oxide
S12512-6	Alloy-42
S12512-7	Nickel
S12512-8	1010 Steel
S12512-9	Brass
S12512-10	CA725
S12512-11	Molybdenum
S12512-12	Tungsten

S144	Special Standard System XR
S8542	Thickness Standard Preparation Service System XR (TSPS)- Single Layer (certified)
S8542	Thickness Standard Preparation Service (TSPS)- Multi-layer (certified)

SUPPLEMENTARY BASE MATERIALS FOR Sn-Pb FOIL STDS ONLY	
S12513-1	Copper
S12513-2	Kovar
S12513-3	Phosphor Bronze
S12513-5	Aluminum Oxide
S12513-6	Alloy 42
S12513-7	Nickel
S12513-8	1010 Steel
S12513-9	Brass
S12513-10	CA725

FOIL STANDARDS – NOTE: All foil standards come with base material in parentheses. All other base materials required must be specified by their respective part number. Both single and dual layer Autocal foil sets come complete with Autocal mounting (includes rack, plate, blanks, label).

CALMETRICS

FLAT XRF CALIBRATION STANDARD SETS For System XR models, using empirical or FP calibrations

AUTOCAL SINGLE LAYER 2 point sets (for Immersion Plating)	
S12515-1	Pd/xx (Cu) 4 & 10 u" (0.1 & 0.25 um)
S12515-2	Ag/xx (Cu) 4 & 10 u" (0.1 & 0.25 um)
S12515-3	Sn/xx (Cu) 4 & 10u" (0.1 & 0.25 um)
S12515-4	Sn/xx (Cu) 20 & 40u" (0.5 & 1 um)
S12515-5	Au/xx (Cu) 4 & 10u" (0.1 & 0.25 um)
S12515-6	Sn/XX(Cu) 2 & 10μ" (0.05 & 0.25μm)
S12515-7	Ag/XX(Cu) 20 & 40μ" (0.5 & 1.0μm)
S12515-8	Rh/XX(Ni) 4 & 10μ" (0.1 & 0.25μm)

Au-Ag/Pd/Ni/Cu

S12521	Au-Ag/Pd/Ni/Cu 3 Points & Autocal Rack
This Item Contains:	
3 Standards of Au-Ag(50wt%Au-50wt%Ag)/Pd/Ni/Cu- In a Rack	
#1: Au-Ag0.43-0.51μ"(110-130Å)/ Pd 0.57-0.65μ"(145-165Å)/ Ni35-50μ"(8.9-12.7KÅ)/ Cu	
#2: Au-Ag1.18-1.38μ"(300-350Å)/ Pd 1.38-1.54μ"(350-390Å)/ Ni85-110μ"(21.6-27.9KÅ)/ Cu	
#3: Au-Ag2.48-2.68μ"(630-680Å)/ Pd 2.28-2.48μ"(580-630Å)/ Ni135-165μ"(34.3-41.9KÅ)/ Cu	



Au/Pd/Ni/Cu Sets and Individuals

Part Number

S12517-20 Manual Au/Pd/Ni/Cu 2 pts

This Item Contains:

2 Standards of Au/Pd/Ni/Cu for Manual Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

S12517-21 Manual Au/Pd/Ni/Cu 3 pts

This Item Contains:

3 Standards of Au/Pd/Ni/Cu for Manual Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

#3 Au 0.87-1.08 μ m(221-274Å) / Pd 3.9-5.9 μ m(991-1499Å) / Ni 150-200 μ m(38.1-50.8KÅ)

S12517-22 Au/Pd/Ni/Cu 2 Pts & Autocal Rack

This Item Contains:

2 Standards of Au/Pd/Ni/Cu for Autocal Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

S12517-23 Au/Pd/Ni/Cu 3 Pts & Autocal Rack

This Item Contains:

3 Standards of Au/Pd/Ni/Cu for Autocal Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

#3 Au 0.87-1.08 μ m(221-274Å) / Pd 3.9-5.9 μ m(991-1499Å) / Ni 150-200 μ m(38.1-50.8KÅ)

S12517-24 Au/Pd/Ni/Cu 2 Pts, Infs & Autocal Rack

This Item Contains:

4 Infs, 2 Standards of Au/Pd/Ni/Cu for Autocal Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

S12517-25 Au/Pd/Ni/Cu 3 Pts, Infs & Autocal Rack

This Item Contains:

4 Infs, 3 Standards of Au/Pd/Ni/Cu for Autocal Calibration of XRF systems.

#1 Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

#2 Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

#3 Au 0.87-1.08 μ m(221-274Å) / Pd 3.9-5.9 μ m(991-1499Å) / Ni 150-200 μ m(38.1-50.8KÅ)

S12517-P1 Au/Pd/Ni/Cu Point 1

This Item Contains:

1 Standard of Au/Pd/Ni/Cu for Manual Calibration of XRF systems.

Au 0.12-0.16 μ m(30-40Å) / Pd 0.16-0.49 μ m(40-124Å) / Ni 20-35 μ m(5080-8890Å)

S12517-P2 Au/Pd/Ni/Cu Point 2

This Item Contains:

1 Standard of Au/Pd/Ni/Cu for Manual Calibration of XRF systems.

Au 0.31-0.43 μ m(80-110Å) / Pd 0.87-1.18 μ m(220-300Å) / Ni 80-100 μ m(20-25.4KÅ)

S12517-P3 Au/Pd/Ni/Cu Point 3

This Item Contains:

1 Standard of Au/Pd/Ni/Cu for Manual Calibration of XRF systems.

Au 0.87-1.08 μ m(221-274Å) / Pd 3.9-5.9 μ m(991-1499Å) / Ni 150-200 μ m(38.1-50.8KÅ)



RECESSED XRF CALIBRATION STANDARD SETS
 Used for XRF-300 series, 4000 series, 5000series, LXR, GXR & GXR-S

HARD PLATED SINGLE LAYER STANDARDS		AUTOCAL SINGLE LAYER FOILS		AUTOCAL DUAL LAYER & BINARY ALLOY FOILS (14 pcs)	
12454-1	Ag/Cu	12511-1	Au/XX (Ni)	12509-3	Cu-Zn/XX (Fe)
12454-2	Ni/Cu	12511-2	Ni/XX (Fe)	12509-4	Pd-Ni/XX (Cu)
12454-3	Sn/Cu	12511-3	Cu/XX (Fe)	14363	Sn-Pb/XX (Cu) (use for W-target tube systems)
12454-4	Au/Ni	12511-4	Ag/XX (Cu)	12510-1	Sn-Pb/XX (Cu) (use for Mo-target tube systems)
12454-5	Ni/Kvr	12511-5	Sn/XX (Cu)	12510-2	Au/Ni/XX (Cu)
12454-6	Ni/Fe	12511-6	Ni-P/XX (Fe)	12510-3	Ag/Ni/XX (Cu)
12454-7	Cu/Fe	12511-7	Cr/XX (Fe)	12510-4	Sn/Ni/XX (Cu)
12454-8	Cd/Fe	12511-8	Zn/XX (Fe)	12510-5	Ni/Cu/XX (Fe)
12454-9	Zn/Fe	12511-9	Cd/XX (Fe)	12510-7	Au/Ag/XX (Cu)
12454-12	Au/Kvr	12511-10	Al/XX (Fe)	12510-8	Au/Pd/XX (Cu)
12454-13	Rh/Ni	12511-11	Mo/XX (Fe)	12510-10	Au/Ni-P/XX (Cu)
12454-14	Pd/Ni	12511-12	Co/XX (Fe)	12510-11	Pd/Ni/XX (Cu)
12454-16	Cr/Fe	12511-13	Ti/XX (Fe)	12510-12	Sn/Cu/XX (Fe)
12454-17	En/Fe	12511-14	Pd/XX (Fe)	12510-13	Au/Ni/XX Thin (Cu)
12454-18	En/Cu			12510-14	Au/Ni-P/ Thin (Cu)
12454-19	En/Kvr				
12454-20	En/Al				

SUPPLEMENTARY BASE MATERIALS FOR SINGLE LAYER FOIL STDS ONLY	
12514-1	Copper
12514-2	Kovar
12514-3	Phosphor Bronze
12514-4	Aluminum
12514-5	Aluminum Oxide
12514-6	Alloy 42
12514-7	Nickel
12514-8	1010 Steel
12514-9	Brass
12514-10	CA725
12514-11	Molybdenum
12514-12	Tungsten

SUPPLEMENTARY BASE MATERIALS FOR DUAL LAYER FOIL STDS ONLY	
12512-1	Copper
12512-2	Kovar
12512-3	Phosphor Bronze
12512-4	Aluminum
12512-5	Aluminum Oxide
12512-6	Alloy-42
12512-7	Nickel
12512-8	1010 Steel
12512-9	Brass
12512-10	CA725
12512-11	Molybdenum
12512-12	Tungsten

8542-1	Thickness Standard Preparation Service System XR (TSPS)- Single Layer (certified)
8542-2	Thickness Standard Preparation Service (TSPS)- Multi-layer (certified)

SUPPLEMENTARY BASE MATERIALS FOR Sn-Pb FOIL STDS ONLY	
12513-1	Copper
12513-2	Kovar
12513-3	Phosphor Bronze
12513-5	Aluminum Oxide
12513-6	Alloy 42
12513-7	Nickel
12513-8	1010 Steel
12513-9	Brass
12513-10	CA725

FOIL STANDARDS – NOTE: All foil standards come with base material in parentheses. All other base materials required must be specified by their respective part number. Both single and dual layer Autocal foil sets come complete with Autocal mounting (includes rack, plate, blanks, and label).

CALMETRICS

Available WEE/ROHS Standards

<u>Part #</u>	<u>Description</u>	<u>Format</u>	
10013-1	WEE/ROHS PVC Contaminant 3 Pt. Set	32mm	**
10013-2	WEE/ROHS PE Contaminant 3 Pt. Set	32mm	**
70050-1	WEE/ROHS ∞ 96.5%Sn-3%Ag-0.5%Cu	Flat	
70050-2	WEE/ROHS ∞ 96.4%Sn-3%Ag-0.5%Cu+1000PPM Pb	Flat	
70050-3	WEE/ROHS ∞ 96.5%Sn-3%Ag-0.5%Cu	32mm	
70050-4	WEE/ROHS ∞ 96.4%Sn-3%Ag-0.5%Cu+1000PPM Pb	32mm	
70051-1	WEE/ROHS ∞Sn + 1000PPM Pb	Flat	
70051-2	WEE/ROHS ∞Sn + 1000PPM Pb	32mm	

** In the PVC and PE sets, contaminant values are listed for Br, Hg, Cr, Pb & Cd



Miscellaneous Standards & Accessories

<u>Part #</u>	<u>Description</u>
21063	8 Position Autocal rack (for flat standards)
21063-4	4 Position Autocal Rack (for flat standards)
21063-5	5 Position Autocal Rack (for flat standards)
20005	Manual External Reference Standard (Sn-Ni) Suitable for LXR, GXR, GXR-C, MXRP, MXR, MXR-V, CXR, GXR-S
20005-1	Manual External Reference Standard (Ti/Ag)
20005-2	Manual External Reference Standard (Al/Ni/Ag) Suitable for VXR
20005-3	Manual External Reference Standard (Sn/Cu) Suitable for MXR (Cr tube)
20005-4	Manual External Reference Standard (Ni/Ag) Suitable for MXR (microelectronics)
20005-5	Manual External Reference Standard (Ag-Cu) Suitable for MXR (data storage)
21038-01	Stage mounted reference standard (Sn-Ni) suitable for LXR, GXR, GXR-C, MXRP, MXR, MXR-V, CXR, GXR-S
21038-05	Stage mounted reference standard (Sn/Cu) suitable for MXR (Cr tube)
21038-06	Stage mounted reference standard (Ni/Ag) suitable for MXR (microelectronics)
21038-08	Stage mounted reference standard (Ti/Ag) suitable for LXR, GXR, GXR-C & GXR-S with Cr tube
21038-09	Stage mounted reference standard (Al-Ni)
21038-10	Stage mounted reference standard (Mo) suitable for VXR
21031	Alignment Standard Wafer-style
10010	Basic Element Kit Contains following elements: Na, Mg, Al, Si, P, S, K, Ca, Ti, Cr, Mn, Fe, Co, Ni, Zn, Br, Mo, Sn, Ba, W, Pb
10020	Case For Basic Element Kit

CALMETRICS

32mm Individual Element Price List 10011 Series Page 1

<u>Part Number</u>	<u>Description</u>
10011-11	Sodium (Na ₂ CO ₃ Pellet)
10011-12	Magnesium (Mg)
10011-13	Aluminum (Al)
10011-14	Silicon (Si Wafer)
10011-15	Phosphorus (NH ₄ H ₂ PO ₄ Pellet)
10011-16	Sulfur (S Pellet)
10011-17	Chlorine (NaCl Pellet)
10011-19	Potassium (KBr Pellet)
10011-20	Calcium (CaCO ₃ Pellet)
10011-22	Titanium (Ti)
10011-23	Vanadium (V)
10011-24	Chromium (Cr)
10011-25	Manganese (MnO Pellet)
10011-26	Iron (Fe)
10011-27	Cobalt (Co)
10011-28	Nickel (Ni)
10011-29	Copper (Cu)
10011-30	Zinc (Zn)
10011-31	Gallium (Ga ₂ O ₃ Pellet)
10011-32	Germanium (GeO ₂ Pellet)
10011-33	Arsenic (As ₂ O ₃ Pellet)
10011-34	Selenium (SeS Pellet)
10011-35	Bromine (KBr Pellet)

32mm Individual Element Price List 10011 Series Page 2

<u>Part Number</u>	<u>Description</u>	
10011-37	Rubidium (RbI Pellet)	
10011-38	Strontium (SrF Pellet)	
10011-39	Yttrium (Y ₂ O ₃ Pellet)	
10011-40	Zirconium (ZrO ₂ Pellet)	
10011-41	Niobium (Nb)	
10011-42	Molybdenum (Mo)	
10011-44	Ruthenium (Ru Metal Pellet)	*
10011-45	Rhodium (Rh)	*
10011-46	Palladium (Pd)	*
10011-47	Silver (Ag)	
10011-48	Cadmium (Cd)	
10011-49	Indium (In)	
10011-50	Tin (Sn)	
10011-51	Antimony (Sb ₂ O ₃ Pellet)	
10011-52	Tellurium (TeO ₂ Pellet)	
10011-53	Iodine (RbI Pellet)	
10011-55	Cesium (Cs ₂ SO ₄ Pellet)	
10011-56	Barium (BaSO ₄ Pellet)	
10011-57	Lanthanum (LaF ₃ Pellet)	
10011-58	Cerium (CeO ₂ Pellet)	
10011-72	Hafnium (HfO ₂ Pellet)	
10011-73	Tantalum (Ta)	

32mm Individual Element Price List 10011 Series Page 3

<u>Part Number</u>	<u>Description</u>	
10011-74	Tungsten (W)	
10011-77	Iridium (Ir)	*
10011-78	Platinum (Pt)	*
10011-79	Gold (Au)	*
10011-80	Mercury (HgS Pellet)	
10011-82	Lead (Pb)	
10011-83	Bismuth (Bi ₂ O ₃ Pellet)	
10011-90	Thorium (ThO ₂ Pellet)	
10011-92	Uranium (UO ₂ Pellet)	

* Please request quotation for this item since material costs are subject to significant short term changes



XRF Calibration Standard Re-Certification Prices

Re-Certification of Hard Plated Single Layer Standards		
Number of Checkpoints	NIST Re-Cert Price	ANSI Re-Cert Price
1 Individual Standard		
2 Point Set		
3 Point Set		
4 Point Set		
5 Point Set		

Re-Certification of Single Layer Foil Standards		
Number of Checkpoints	NIST Re-Cert Price	ANSI Re-Cert Price
1 Individual Standard		
2 Point Set		
3 Point Set		
4 Point Set		
5 Point Set		
6 Point Set		
7 Point Set		
8 Point Set		
9 Point Set		
10 Point Set		

Re-Certification of Multilayer and Thickness/Composition Standards		
Number of Checkpoints	NIST Re-Cert Price	ANSI Re-Cert Price
1 Individual Bi-Layer Standard		
1 Ind. Thickness/Comp Standard		
1 Individual Tri-Layer Standard		
1 Individual Au/Pd/Ni/Cu Standard		
* Multilayer & Thickness-Composition Sets		

Notes:

* Multi-layer-Thickness/Comp. Sets refer specifically to stock sets which have part numbers between (S)12510-1 through (S)12510-14.

** "Sets" refer to standards with the same material content (example: multiple Au foils) usually mounted and/or boxed together.

*** The price of the replacement standards is determined by the total number of replacement standards needed on all of the sets which are sent in by a customer on any given RMA#.

**** The Met200 Metrology measurements are supplied in an Excel File.

***** The Met300 Written Report includes description of work, details of set-up, results and comments/analysis/conclusions.

LGC Standards request form

Title: _____ First name: _____ Surname: _____

Company: _____

Department: _____

Address: _____

Postcode: _____ Country: _____

Tel: _____ Fax: _____

Email: _____

I use the following techniques:

OEM / manufacturer: _____ Combustion: _____
 XRF / manufacturer: _____ Other: _____
 ICP / manufacturer: _____
 AAS / manufacturer: _____

I am interested in the following reference materials:

Cast iron - solid Steel - solid Combustion samples Biomaterials
 Metal chips ICP / AAS solutions Coals / cokes Petrochemical samples
 Mineral, metalurg., environmental samples Aluminium - solid Other non-ferrous metals

Please send me information on the following equipment:

Grinding machines NF milling machines Fusion machines Pressing tools & dies
 Swing grinders Hydraulic presses Casting molds

Please send me information on the following consumables:

Grinding / pressing aids Cups & films Aluminium - cups Borate - Fluxes

Please send me information on customised products:

Oil / ICP / AAS standards Customised borates Setting Up Samples

Please send this form back to:

LGC Standards GmbH

Mercatorstr. 51

46485 Wesel

Germany

Tel: +49 (0)281 319 391-0

Fax: +49 (0)281 319 391-29

Email: mail@breitlander.com