ANALYTICAL REFERENCE MATERIALS INTERNATIONAL

RoHS, WEEE, & P&PW

REFERENCE MATERIALS

RoHS 2002/95/EC on the Restriction of Hazardous Substances

Requirements: Manufacturers must reduce risks to health and environment by substituting lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic equipment with safe or safer material. (Intro, Sections 5, 6)
Effective: 01 July 2006

WEEE 2002/96/EC on Waste Electronic and Electrical Equipment

Requirements: Manufacturers must implement measures to reduce and prevent electrical and electronic waste, including: registering as producers, marking electronic products, arranging for collection and recycling of materials, providing dismantling instructions, and more.
Effective: Manufacturers become financially responsible for compliance on 13 August 2005

P&PW 94/62/EC on Packaging and Packaging Waste

Requirements: Manufacturers must comply with certain rules regarding functional packaging, packaging components, and packaging materials to prevent waste, encourage re-use, and increase recovery of materials.
Effective: 30 June 1996

Heavy Metals in Plastic Reference Materials for XRF Analysis

These sets have become very popular due to the RoHS regulations that went into effect July, 2006.

RoHS 2002/95/EC has defined specific limits for heavy metals in plastic. These sets of PE and PVC have been designed for screening of heavy metals to check for compliance of these limits.

Two 3-piece sets of Reference Materials (RMs) containing Br, Hg, Cr, Pb, & Cd in PE and PVC base materials are now available. Each RM set consists of 3 individual discs of either PE or PVC; each disc is ~31 mm in diameter and ~13 mm thick. A manufacturing process has been developed that yields materials with good homogeneity.

A new 2-piece set of PE Reference Materials (**Pack-High** and **Pack Low**) containing Hg, Cr, Pb, & Cd, will allow for compliance testing for the "Packaging Directive" (P&PW 94/62/EC).

Please see the back of this page for tables containing the nominal chemistries for Metal Alloys and XRF Glasses for the RoHS, WEEE, & P&PW Reference Materials, actual chemistries may vary. Contact us for the COA's.

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Solder Alloys	Ag	Al	As	Au	Bi	Cd	Cu	Fe	Hg	In	Ni	P	Pb	S	Sb	Se	Zn
74X CA2 - % wt	3.50	0.0002	0.0100	0.0014	0.0329	***0.0010***	0.782	0.0021	***0.0007***	0.0062	0.0308	0.0055	***0.0331***	(0.0048)	0.0737	0.0015	0.0003
74X CA4 - % wt	2.95	0.0002	0.0171	0.0021	0.0641	***(0.0001)***	0.473	0.007	***0.0015***	0.0040	0.065	(0.0013)	***0.0621***	(0.0056)	0.041	0.0065	0.0008
74X CA5 - % wt	4.01	(0.0003)	0.0353	0.0049	0.0207	***0.0025***	1.098	0.0019	***0.0006***	0.0111	0.0147	0.0108	***0.0116***	0.0006	0.133	0.003	0.0009
74X CA6 - % wt	0.282	0.0006	0.0086	0.0106	0.0087	***0.00033***	0.629	0.0061	***0.0064***	0.0218	0.0194	0.0046	***0.0174***	(0.0008)	0.0078	0.0007	0.0006
74X CA7 - % wt	4.21	…	0.0095	…	0.0081	***0.0045***	0.333	0.0047	***0.053***	0.0026	0.0007	0.003	***0.0965***	…	0.0103	…	…
74X CA8 - %wt	2.44	…	0.0100	…	0.0032	***0.0103***	0.947	0.0037	***0.101***	0.0041	0.0007	0.0077	***0.0403***	…	0.0045	…	…

Copper Alloys	Ag	Al	As	Au	Be	Bi	Cd	Co	Cr	Fe	Mg	Mn	Ni	Pb	Sb	S	Se	Si	Sn	Te	Zn
39 X 17866 - ppm	55	11	541	51	(1)	56	***252***	395	284	102	11	47	503	***52***	113	510	30	156	70	27	2680
39 X 17868 - ppm	198	(5)	239	190	…	280	***49***	6	(5)	(10)	(2)	(1)	1260	***250***	198	41	195	12	60	106	(30)
39 X 17869 - ppm	440	6	137	90	…	440	***85***	133	2.3	230	4	13	144	***478***	389	…	63	(7)	150	323	110
39 X 17871 - ppm	250	<5	290	48	(4)	690	***31***	8	(3)	(20)	(2)	10	270	***92***	170	80	280	<5	…	110	(8)
SUS - RC11 - ppm	…	4	1	…	…	1	***1***	3	…	5	…	1	5	***2***	1	8	1	1	4	1	2
SUS - RC12 - % wt	…	0.3	0.15	…	0	0.015	***0.03***	0.1	…	0.2	…	0.2	0.5	***0.08***	0.04	0.03	0.02	0.2	0.5	0.02	0.6

Aluminum Alloys	As	Cd	Cr	Cu	Fe	Hg	Mg	Mn	Ni	Pb	Si	Ti	V	Zn	Zr
350/02 - % wt	<0.00003	***<0.00002***	0.0009	0.149	0.461	***<0.00005***	1.08	1.16	0.003	***0.00066***	0.255	0.0246	0.0114	0.0522	0.005
351/02 - % wt	0.00135	***0.0013***	(0.001)	(0.15)	(0.46)	***0.00094***	(1.08)	(1.16)	(0.003)	***0.0025***	(0.26)	(0.025)	(0.011)	(0.052)	(0.005)
352/02 - % wt	0.00142	***0.0021***	(0.0007)	(0.15)	(0.48)	***0.0022***	(1.06)	(1.13)	(0.003)	***0.0039***	(0.26)	(0.019)	(0.01)	(0.049)	(0.005)
353/02 - % wt	0.0061	***0.005***	(0.001)	(0.15)	(0.46)	***0.0059***	(1.08)	(1.16)	(0.003)	***0.0053***	(0.26)	(0.025)	(0.011)	(0.052)	(0.005)
354/02 - % wt	0.0121	***0.01***	(0.001)	(0.15)	(0.46)	***0.0099***	(1.08)	(1.16)	(0.003)	***0.0101***	(0.26)	(0.025)	(0.011)	(0.052)	(0.005)

Iron Alloys	Al	As	B	C	Co	Cr	Cu	Mn	Mo	N	Nb	Ni	O	P	Pb	S	Si	Sn	Ti	V	Zr
182A - % wt	0.020	0.008	0.0003	0.20	0.011	0.56	0.23	0.90	0.18	0.0067	0.003	0.50	0.0014	0.028	***0.14***	0.023	0.25	0.012	0.005	0.005	<0.003
183B - % wt	[0.003]	[0.002]	[0.002]	[0.073]	[0.005]	[0.046]	[0.021]	[1.08]	[0.006]	[0.003]	[(0.001)	[0.024]	[0.014]	[0.060]	***[0.28]***	[0.33]	[0.004]	[0.002]	[0.001]	[0.003]	[0.002]

PE Materials	Br	Hg	Cr	Pb	Cd
PE-H-04A - ppm	***1100***	***1100***	***1001***	***1200***	***300***
PE-L-04A - ppm	***502***	***201***	***400***	***400***	***100***
PE-02A - ppm	***0***	***0***	***0***	***0***	***0***
PACK-High - ppm		***~100***	***~100***	***~100***	***~100***
PACK-Low - ppm		***~30***	***~30***	***~30***	***~60***

PVC Materials	Br	Hg	Cr	Pb	Cd
PVC-H-03A - ppm	***1101***	***1101***	***1001***	***1201***	***300***
PVC-L-04A - ppm	***500***	***200***	***400***	***400***	***100***
PVC-01A - ppm	***0***	***0***	***0***	***0***	***0***

SAC305 & SAC405 Check Set

	Sn	Pb	Cu	Bi	Ag	Hg	P
SAC305 - % wt	Bal.	***0.076***	0.49	0.004	3.00	***0.0016***	0.004
SAC405 - % wt	Bal.	***<0.001***	0.46	—-	4.01	***0.0002***	0.006

XRF Glasses*	Br	Hg	Cr	Pb	Cd
BR-ROHS 1/3 - ppm	***0***	***0***	***0***	***0***	***0***
BR-ROHS 2/3 - ppm	***1000***	***0***	***1000***	***1000***	***100***
BR ROHS 3/3 - ppm	***5000***	***0***	***5000***	***5000***	***1000***

***Matrix:** SiO^2=53%, Na^2O=17%, CaO=10%, Al^20^3=7%, MgO=6%, B^2O^3=4%, Sb^2O^3=1%