Material Declaration Data for Altera's Lead-Free Devices (8 DIP – 84 PLCC)

Last Updated: Sept 15, 2008

Package Type		8 PDIP	8 SOIC	16 SOIC	20 PLCC	24 PDIP	28 PLCC	32 TQFP	44 PLCC	44 PQFP	44 TQFP	49 UBGA	68 PLCC	68 MBGA	84 PLCC
Pitch		2.5 mm	1.27 mm	1.27 mm	1.27 mm	2.5 mm	1.27 mm	0.8 mm	1.27 mm	0.8 mm	0.8 mm	0.8 mm	1.27 mm	0.5 mm	1.27 mm
Technology		Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond
Weight (g)		0.6	0.1	0.5	0.8	1.9	1.3	0.2	2.6	0.5	0.3	0.2	5.50	0.1	7.9
Termination or Ball Finish		Matte Tin(over Cu)	NiPdAu	NiPdAu	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	SnAgCu	Matte Tin(over Cu)	SnAgCu	Matte Tin(over Cu)
JESD 97 marking		e3	e4	e4	e3	e3	e3	e3	e3	e3	e3	e1	e3	e1	e3
Whisker mitigation Technique		Anneal *5	N/A	N/A	Anneal *5	Anneal *5	Anneal *5	Anneal *5	Anneal *5	Anneal *5	Anneal *5	N/A	Anneal *5	N/A	Anneal *5
Plating thickness		12 um	Ni: 1um, Pd: 0.05um, Au: 0.006um	Ni: 1um, Pd: 0.05um, Au: 0.006um	12 um	12 um	12 um	12 um	12 um	12 um	12 um	N/A	12 um	N/A	12 um
ROHS Compliant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROHS technology exemption		None	None	None	None	None	None	None	None	None	None	None	None	None	None
Peak Reflow Temperature (IPC/JEDEC J-STD-020C) *6		-	260°C	260°C	245°C	-	245°C	260°C	245°C	245°C	260°C	260°C	245°C	260°C	245°C
Is this Pb-free version backward compatible with conventional tin-lead soldering?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
Surface Mount (SM) or Through Hole (TH)		TH	SM	SM	SM	TH	SM	SM	SM	SM	SM	SM	SM	SM	SM
JIG A Substances *1	Lead (Pb) Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mercury Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cadmium Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hexavalent Chromium Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBB Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBDE Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other JIG A Substances	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JIG B Substances *2	Antimony	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Arsenic	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm
	Brominated flame retardants other than PBBs and PBDEs	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Other JIG B substances	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*1 JIG A substances : Asbestos, Azocolourants and Azodyes, Cadmium, Hexavalent Chromium, Lead, Mercury, Ozone Depleting Substances, PBB, PBDE, PCB, PCN, Radioactive Substances, Chlorinated Paraffins, TBT and TPT, TBTO

*2 JIG B substances: Antimony, Arsenic, Berylium, Bismuth, Brominated Flame Retardant other PBB or PBDE, Nickel on external application, Phthalates, Selenium, PVC

*3 Solder bumps in Flip Chip BGA packages contain lead (Pb). This application is exempted by EU ROHS

*4 The following part numbers have MIR/MCR TQFP packages with 245°C peak temperature: EP20K100ETC144-1N, EP20K100ETC144-2N, EP20K160ETC144-3N, EP20K30ETC144-3N,

*5 Annealing: 1 hr at 150°C within 24 hours post plating process

*6 Time within 5° of peak Temperature: 20 to 40 sec

*7 Lead (Pb) in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

Material Declaration Data for Altera's Lead-Free Devices (88 UBGA – 208 PQFP)

Package Type		88 UBGA	100 FBGA (Option 1)	100 FBGA (Option 2)	100 MBGA	100 PQFP-Option 1	100 TQFP	144 EQFP	144 FBGA	144 MBGA	144 TQFP	160 PQFP	164 MBGA	169 UBGA	208 PQFP
Pitch		0.8 mm	1.0 mm	1.0 mm	0.5 mm	0.65 mm	0.50 mm	0.5 mm	1.0 mm	0.5 mm	0.50 mm	0.65 mm	0.5 mm	0.8 mm	0.50 mm
Technology		Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond
Weight (g)		0.4	0.6	0.6	0.1	1.9	0.6	1.1	0.8	0.1	1.1	6.2	0.2	0.6	6.3
Termination or Ball Finish		SnAgCu	SnAgCu	SnAgCu	SnAgCu	Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	SnAgCu	SnAgCu	Matte Tin(over Cu)	Matte Tin(over Cu)	SnAgCu	SnAgCu	Matte Tin(over Cu)
JESD 97 marking		e1	e1	e1	e1	e3	e3	e3	e1	e1	e3	e3	e1	e1	e3
Whisker mitigation Technique		N/A	N/A	N/A	N/A	Anneal *5	Anneal *5	Anneal *5	N/A	N/A	Anneal *5	Anneal *5	N/A	N/A	Anneal *5
Plating thickness		N/A	N/A	N/A	N/A	12 um	12 um	12 um	N/A	N/A	12 um	12 um	N/A	N/A	12 um
ROHS Compliant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROHS technology exemption		None	None	None	None	None	None	None	None	None	None	None	None	None	None
Peak Reflow Temperature (IPC/JEDEC J-STD-020C) *6		260°C	260°C	260°C	260°C	245°C	260°C	260°C	260°C	260°C	260°C *4	245°C	260°C	260°C	245°C
Is this Pb-free version backward compatible with conventional tin-lead soldering?		No	No	No	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No	Yes
Surface Mount (SM) or Through Hole (TH)		SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM
JIG A Substances *1	**Lead (Pb) Content**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mercury Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cadmium Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hexavalent Chromium Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBB Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBDE Content	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other JIG A Substances	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JIG B Substances *2	**Antimony**	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Arsenic	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm
	Brominated flame retardants other than PBBs and PBDEs	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Other JIG B substances	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*1 JIG A substances : Asbestos, Azocolourants and Azodyes, Cadmium, Hexavalent Chromium, Lead, Mercury, Ozone Depleting Substances, PBB, PBDE, PCB, PCN, Radioactive Substances, Chlorinated Paraffins, TBT and TPT, TBTO

*2 JIG B substances: Antimony, Arsenic, Berylium, Bismuth, Brominated Flame Retardant other PBB or PBDE, Nickel on external application, Phthalates, Selenium, PVC

*3 Solder bumps in Flip Chip BGA packages contain lead (Pb). This application is exempted by EU ROHS

*4 The following part numbers have MIR/MCR TQFP packages with 245°C peak temperature: EP20K100ETC144-1N, EP20K100ETC144-2N, EP20K160ETC144-3N, EP20K30ETC144-3N,

*5 Annealing: 1 hr at 150°C within 24 hours post plating process

*6 Time within 5° of peak Temperature: 20 to 40 sec

*7 Lead (Pb) in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

Material Declaration Data for Altera's Lead-Free Devices (208 RQFP - 400 FBGA)

Package Type		208 RQFP	240 PQFP	240 RQFP	256 BGA - Option 1	256 BGA - Option 2	256 FBGA - Option 1	256 FBGA - Option 2	256 MBGA	256 UBGA	304 RQFP	324 FBGA	356 BGA	400 FBGA
Pitch		0.50 mm	0.50 mm	0.50 mm	1.27 mm	1.27 mm	1.0 mm	1.0 mm	0.5 mm	0.8 mm	0.5 mm	1.0 mm	1.27 mm	1.0 mm
Technology		Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond	Wire Bond
Weight (g)		6.7	8.0	8.6	4.8	3.1	1.5	1.5	0.3	0.8	14.3	1.6	7.7	2.3
Termination or Ball Finish		Matte Tin(over Cu)	Matte Tin(over Cu)	Matte Tin(over Cu)	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	Matte Tin(over Cu)	SnAgCu	SnAgCu	SnAgCu
JESD 97 marking		e3	e3	e3	e1	e1	e1	e1	e1	e1	e3	e1	e1	e1
Whisker mitigation Technique		Anneal *5	Anneal *5	Anneal *5	N/A	N/A	N/A	N/A	N/A	N/A	Anneal *5	N/A	N/A	N/A
Plating thickness		12 um	12 um	12 um	N/A	N/A	N/A	N/A	N/A	N/A	12 um	N/A	N/A	N/A
ROHS Compliant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROHS technology exemption		None	None	None	None	None	None	None	None	None	None	None	None	None
Peak Reflow Temperature (IPC/JEDEC J-STD-020C) *6		245°C	245°C	245°C	260°C	260°C	260°C	260°C	260°C	260°C	245°C	260°C	245°C	260°C
Is this Pb-free version backward compatible with conventional tin-lead soldering?		Yes	Yes	Yes	No	No	No	No	No	No	Yes	No	No	No
Surface Mount (SM) or Through Hole (TH)		SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM
JIG A Substances *1	**Lead (Pb) Content**	0	0	0	0	0	0	0	0	0	0	0	0	0
	Mercury Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cadmium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hexavalent Chromium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBB Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBDE Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other JIG A Substances	0	0	0	0	0	0	0	0	0	0	0	0	0
JIG B Substances *2	**Antimony**	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Arsenic	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm
	Brominated flame retardants other than PBBs and PBDEs	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Other JIG B substances	0	0	0	0	0	0	0	0	0	0	0	0	0

*1 JIG A substances : Asbestos, Azocolourants and Azodyes, Cadmium, Hexavalent Chromium, Lead, Mercury, Ozone Depleting Substances, PBB, PBDE, PCB, PCN, Radioactive Substances, Chlorinated Paraffins, TBT and TPT, TBTO

*2 JIG B substances: Antimony, Arsenic, Berylium, Bismuth, Brominated Flame Retardant other PBB or PBDE, Nickel on external application, Phthalates, Selenium, PVC

*3 Solder bumps in Flip Chip BGA packages contain lead (Pb). This application is exempted by EU ROHS

*4 The following part numbers have MIR/MCR TQFP packages with 245°C peak temperature: EP20K100ETC144-1N, EP20K100ETC144-2N, EP20K160ETC144-3N, EP20K30ETC144-3N,

*5 Annealing: 1 hr at 150°C within 24 hours post plating process

*6 Time within 5° of peak Temperature: 20 to 40 sec

*7 Lead (Pb) in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

Material Declaration Data for Altera's Lead-Free Devices (484 FBGA – 672 FBGA)

Package Type		484 FBGA - Option 1	484 FBGA - Option 2	484 FBGA - Option 3	484 HBGA	484 UBGA	600 BGA	652 BGA - Option 1	652 BGA - Option 2	652 BGA - Option 3	672 BGA	672 FBGA - Option 1	672 FBGA - Option 2	672 FBGA - Option 3
Pitch		1.0 mm	1.0 mm	1.0 mm	1.0 mm	0.8 mm	1.27 mm	1.27 mm	1.27 mm	1.27 mm	1.27 mm	1.0 mm	1.0 mm	1.0 mm
Technology		Flip Chip	Wire Bond	Wire Bond	Flip Chip	Wire Bond	Wire Bond	Flip Chip	Wire Bond	Wire Bond	Wire Bond	Flip Chip	Wire Bond	Wire Bond
Weight (g)		7.1	2.6	2.6	10.0	1.6	12.0	23.8	9.6	12.1	5.8	10.2	3.8	3.9
Termination or Ball Finish		SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu
JESD 97 marking		e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1
Whisker mitigation Technique		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plating thickness		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROHS Compliant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROHS technology exemption		Yes *7	None	None	Yes *7	None	None	Yes *7	None	None	None	Yes *7	None	None
Peak Reflow Temperature (IPC/JEDEC J-STD-020C) *6		245°C	260°C	250°C	245°C	260°C	245°C	245°C	245°C	245°C	260°C	245°C	260°C	260°C
Is this Pb-free version backward compatible with conventional tin-lead soldering?		No	No	No	No	No	No	No	No	No	No	No	No	No
Surface Mount (SM) or Through Hole (TH)		SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM
JIG A Substances *1	**Lead (Pb) Content**	0 *3	0	0	0 *3	0	0	0 *3	0	0	0	0 *3	0	0
	Mercury Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cadmium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hexavalent Chromium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBB Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBDE Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other JIG A Substances	0	0	0	0	0	0	0	0	0	0	0	0	0
JIG B Substances *2	**Antimony**	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Arsenic	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm
	Brominated flame retardants other than PBBs and PBDEs	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Other JIG B substances	0	0	0	0	0	0	0	0	0	0	0	0	0

*1 JIG A substances : Asbestos, Azocolourants and Azodyes, Cadmium, Hexavalent Chromium, Lead, Mercury, Ozone Depleting Substances, PBB, PBDE, PCB, PCN, Radioactive Substances, Chlorinated Paraffins, TBT and TPT, TBTO

*2 JIG B substances: Antimony, Arsenic, Berylium, Bismuth, Brominated Flame Retardant other PBB or PBDE, Nickel on external application, Phthalates, Selenium, PVC

*3 Solder bumps in Flip Chip BGA packages contain lead (Pb). This application is exempted by EU ROHS

*4 The following part numbers have MIR/MCR TQFP packages with 245°C peak temperature: EP20K100ETC144-1N, EP20K100ETC144-2N, EP20K160ETC144-3N, EP20K30ETC144-3N,

*5 Annealing: 1 hr at 150°C within 24 hours post plating process

*6 Time within 5° of peak Temperature: 20 to 40 sec

*7 Lead (Pb) in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.

Material Declaration Data for Altera's Lead-Free Devices (724 BGA – 1932 FBGA)

Package Type		724 BGA	780 FBGA (Option 1)	780 FBGA (Option 2)	780 HBGA	896 FBGA	956 BGA	1020 FBGA	1152 FBGA	1152 HBGA	1508 FBGA	1517 FBGA	1760 FBGA	1932 FBGA
Pitch		1.27 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm	1.27 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm	1.0 mm
Technology		Flip Chip	Flip Chip	Wire Bond	Flip Chip	Wire Bond	Flip Chip	Flip Chip	Flip Chip	Flip Chip	Flip Chip	Flip Chip	Flip Chip	Flip Chip
Weight (g)		13.6	11.9	4.0	14.1	4.7	19.6	14.1	15.8	20.4	20.4	20.4	22.5	24.7
Termination or Ball Finish		SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu	SnAgCu
JESD 97 marking		e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1
Whisker mitigation Technique		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plating thickness		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ROHS Compliant		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ROHS technology exemption		Yes *7	Yes *7	None	Yes *7	None	Yes *7	Yes *7	Yes *7	Yes *7	Yes *7	Yes *7	Yes *7	Yes *7
Peak Reflow Temperature (IPC/JEDEC J-STD-020C) *6		245°C	245°C	245°C	245°C	260°C	245°C	245°C	245°C	245°C	245°C	245°C	245°C	245°C
Is this Pb-free version backward compatible with conventional tin-lead soldering?		No	No	No	No	No	No	No	No	No	No	No	No	No
Surface Mount (SM) or Through Hole (TH)		SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM	SM
JIG A Substances *1	**Lead (Pb) Content**	0 *3	0 *3	0	0 *3	0	0 *3	0 *3	0 *3	0 *3	0 *3	0 *3	0 *3	0 *3
	Mercury Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Cadmium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hexavalent Chromium Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBB Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	PBDE Content	0	0	0	0	0	0	0	0	0	0	0	0	0
	Other JIG A Substances	0	0	0	0	0	0	0	0	0	0	0	0	0
JIG B Substances *2	**Antimony**	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Arsenic	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm	~3 ppm
	Brominated flame retardants other than PBBs and PBDEs	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera	Contact Altera
	Other JIG B substances	0	0	0	0	0	0	0	0	0	0	0	0	0

*1 JIG A substances : Asbestos, Azocolourants and Azodyes, Cadmium, Hexavalent Chromium, Lead, Mercury, Ozone Depleting Substances, PBB, PBDE, PCB, PCN, Radioactive Substances, Chlorinated Paraffins, TBT and TPT, TBTO

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*5 Annealing: 1 hr at 150°C within 24 hours post plating process

*6 Time within 5° of peak Temperature: 20 to 40 sec

*7 Lead (Pb) in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages.