



## Materials Declaration Report

Package	TO-220PbF
Device(Selector Guide Name)	Fred
Report Date:	2009.12.21
Supplier Company Name	Vishay Micro-electronics (Xi'an) Co.,Ltd
Supplier Contact Person name	Hudson Huang
Supplier Contact Email	Hudson.Huang@vishay.com
Supplier Phone	86 29 6859 0888 Ext7328

### Exemptions

RoHS - 5 Leaded glass used in Electronics components.	N
RoHS - 7 Lead (Pb) in high melting temperature type solders.	N
ELV II Leaded glass used in Electronics components.	N
ELV II Lead (Pb) in solders.	N

### Compliance Information

Part(s) RoHS Compliant **Yes**

### Test Methods

Test Item (s):	Unit	Method
Cadmium/Cadmium Compounds	ppm	IEC 62321
Chromium VI (Cr+6)	ppm	IEC 62321
Lead/Lead Compounds	ppm	IEC 62321
Mercury/Mercury Compounds	ppm	IEC 62321
Polybrominated Biphenyls (PBBs)	ppm	IEC 62321
Polybrominated Diphenylethers (PBDEs)	ppm	IEC 62321


**VISHAY® Declaration Data Sheet**

<b>Package Family</b>	TO-220PBF	
<b>Date</b>	2009/12/21	

Composition part	Material Description	Weight (g)	Substance Name	CAS Number	Typical Substance weight(g)	%	PPM	% of Total Weight	
Chip	Silicon	0.01960							
			Si	7440-21-3	0.01960	100.000	1000000	1.00%	
Lead Frame	Copper	1.37530							
			Cu	7440-50-8	1.35192	98.300	983000	69.27%	
			Fe	7439-89-6	0.00206	0.150	1500	0.11%	
			Ni	7440-02-0	0.02063	1.500	15000	1.06%	
			P	7723-14-0	0.00069	0.050	500	0.04%	
Die Attach	J-Alloy	0.01150							
			Tin	7440-31-5	0.00748	65.000	650000	0.38%	
			Silver	7440-22-4	0.00288	25.000	250000	0.15%	
			Antimony	7440-36-0	0.00115	10.000	100000	0.06%	
Wire Bond	Aluminum	0.00580							
			Al	7429-90-5	0.00580	99.995	999950	0.30%	
			Ni	7440-02-0	0.00000	0.005	50	0.00%	
Encapsulation	Epoxy resin	0.52430							
			Silicon dioxide	7631-86-9	0.46401	88.500	885000	23.77%	
			Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol	29690-82-2	0.04194	8.000	80000	2.15%	
			Antimony trioxide	1309-64-4	0.01573	3.000	30000	0.81%	
			Pigment Black 7	1333-86-4	0.00262	0.500	5000	0.13%	
Lead Finish	Matte Tin	0.01520							
			Tin	7440-31-5	0.01509	99.300	993000	0.77%	
			Cu	7440-50-8	0.00011	0.700	7000	0.01%	
		1.95170						100.00%	

<b>EDIT</b>	Hudson Huang	<b>REVIEW</b>	Rita Cheng	<b>APPROVE</b>	Jed Wang
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<b>Company</b>	Vishay Micro- electronics (Xi'an) Co., Ltd
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**Vishay Micro-electronics (Xi'an) Co.,Ltd**  
\*\*\*\*APPROVED\*\*\*\*