

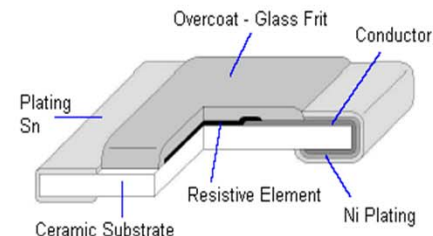
# RESISTOR Material Composition - Thick Film Precision Type & Concave Array

The contents of this specification may change without notice 12/11/07



## CR Series with a suffix of BZM, DYM, DZM, FYM, and FZM CRN10-2V-JBM series

This statement pertains to the following directive: 2002/95/EC of the European Parliament and of the Council of the European Union of January 27, 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment regarding Article 4 and its subsequent annex on the exemption of lead in glass. No. 5 in the annex states that lead in glass of cathode ray tubes, electronic components and fluorescent tubes are exempt from RoHS requirements. Therefore any lead oxide in glass of any size resistor is exempt and all resistors meet RoHS requirements.



CAS no.	Material	Substance	0201		0402		0603		0805		1206		1210		2010		2512	
			Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%
1344-28-1	Ceramic Substrate	Al2O3	0.1349	80.59%	0.4109	80.61%	1.5952	83.02%	3.6667	86.04%	7.4778	87.54%	12.4631	84.80%	19.5421	87.33%	32.4533	86.64%
14808-82-7		SiO2	0.0056	3.36%	0.0171	3.36%	0.0665	3.46%	0.1528	3.58%	0.3116	3.65%	0.5193	3.53%	0.8143	3.64%	1.3522	3.61%
7440-22-4	Conductor Layer (Bottom)	Ag	0.0017	1.05%	0.0053	1.05%	0.0121	0.63%	0.0233	0.55%	0.0266	0.31%	0.0581	0.40%	0.0581	0.26%	0.0775	0.21%
--		Glass	0.0001	0.06%	0.0003	0.06%	0.0006	0.03%	0.0012	0.03%	0.0014	0.02%	0.0031	0.02%	0.0031	0.01%	0.0041	0.01%
7440-22-4	Conductor Layer (Top)	Ag	0.0013	0.80%	0.0041	0.80%	0.0252	1.31%	0.0456	1.07%	0.0919	1.08%	0.1801	1.23%	0.2203	0.98%	0.3416	0.91%
7440-05-03		Pd	0.0000	0.01%	0.0001	0.01%	0.0003	0.02%	0.0006	0.01%	0.0012	0.01%	0.0023	0.02%	0.0028	0.01%	0.0043	0.01%
--		Glass	0.0003	0.20%	0.0010	0.20%	0.0064	0.33%	0.0116	0.27%	0.0233	0.27%	0.0456	0.31%	0.0558	0.25%	0.0865	0.23%
12036-10-1	Resistive Element	RuO2	0.0004	0.23%	0.0012	0.23%	0.0033	0.17%	0.0049	0.11%	0.0109	0.13%	0.0227	0.15%	0.0373	0.17%	0.0653	0.17%
7440-22-4		Ag	0.0006	0.37%	0.0019	0.37%	0.0053	0.27%	0.0078	0.18%	0.0174	0.20%	0.0363	0.25%	0.0596	0.27%	0.1045	0.28%
1317-36-8		Pb	0.0002	0.14%	0.0007	0.14%	0.0020	0.10%	0.0029	0.07%	0.0065	0.08%	0.0136	0.09%	0.0224	0.10%	0.0392	0.10%
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25068-38-6	Over-Coating	Glass Frit	0.0034	2.05%	0.0105	2.05%	0.0304	1.58%	0.0665	1.56%	0.1121	1.31%	0.2100	1.43%	0.3943	1.76%	0.6565	1.75%
25068-38-6	Marking	Glass Frit	0.0000	0.00%	0.0000	0.00%	0.0031	0.16%	0.0036	0.08%	0.0115	0.13%	0.0115	0.08%	0.0244	0.11%	0.0421	0.11%
7440-02-0	End Terminal	Ni	0.0005	0.29%	0.0015	0.29%	0.0020	0.10%	0.0027	0.06%	0.0038	0.04%	0.0076	0.05%	0.0074	0.03%	0.0095	0.03%
1308-38-9		Cr	0.0001	0.07%	0.0004	0.07%	0.0005	0.03%	0.0007	0.02%	0.0010	0.01%	0.0019	0.01%	0.0018	0.01%	0.0024	0.01%
7440-02-0	Ni Plating	Ni	0.0094	5.60%	0.0285	5.60%	0.0877	4.57%	0.1411	3.31%	0.2310	2.70%	0.5835	3.97%	0.5835	2.61%	1.1447	3.06%
7440-31-5	Sn Plating	Sn	0.0084	4.99%	0.0255	4.99%	0.0783	4.07%	0.1259	2.95%	0.2060	2.41%	0.5205	3.54%	0.5205	2.33%	1.0213	2.73%
All of the above are approximate values by the component parts of the material			0.1674	100	0.5098	100	1.9216	100	4.2617	100	8.5426	100	14.6973	100	22.3774	100	37.4572	100

