



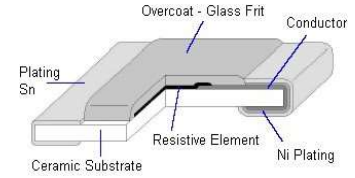
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Resistor Material Composition – Thin Film Precision Type

CT Series with a suffix of BXM, DXM, DYM, DZM, FYM, and FZM, FXM



This statement pertains to the following directive 2011/65/EC of the European Parliament and of the Council of the European Union on the restriction of the use of certain hazardous substances in electrical and electronic equipment. The definition of LEAD- FREE products is external terminal meet Lead Free. RoHS exemption 7 (c)-1, Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronics devices, or in a glass or ceramic matrix compound (2011/65/EU)

CAS no.	Material	Substance	0201 / CT20		0402 / CT05		0603 / CT16		0805 / CT10		1206 / CT18	
			Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%	Mass mg	%
1344-28-1	Ceramic Substrate	Al ₂ O ₃	0.1349	80.62%	0.4109	80.61%	1.5952	83.02%	3.6667	86.04%	7.4778	87.54%
60676-86-0		SiO ₂	0.0056	3.36%	0.0171	3.36%	0.0665	3.46%	0.1528	3.58%	0.3116	3.65%
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%
65997-17-3		Glass	0.0001	0.06%	0.0003	0.06%	0.0006	0.03%	0.0012	0.03%	0.0014	0.02%
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%
7440-05-03		Pd	0.0000	0.01%	0.0001	0.01%	0.0003	0.02%	0.0006	0.01%	0.0012	0.01%
65997-17-3		Glass	0.0003	0.20%	0.0010	0.20%	0.0064	0.33%	0.0116	0.27%	0.0233	0.27%
7440-47-3	Resistive Element	Cr	0.0004	0.23%	0.0012	0.23%	0.0033	0.17%	0.0049	0.11%	0.0109	0.13%
7440-02-0		Ni	0.0006	0.37%	0.0019	0.37%	0.0053	0.27%	0.0078	0.18%	0.0174	0.20%
65997-17-3		Glass	0.0005	0.30%	0.0016	0.31%	0.0046	0.24%	0.0068	0.16%	0.0152	0.18%
25068-38-6	Over-Coating	Epoxy	0.0034	2.05%	0.0105	2.05%	0.0304	1.58%	0.0665	1.56%	0.1121	1.31%
25068-38-6	Marking	Epoxy	0.0000	0.00%	0.0000	0.00%	0.0031	0.16%	0.0036	0.08%	0.0115	0.13%
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%
7440-47-3		Cr	0.0001	0.07%	0.0004	0.07%	0.0005	0.03%	0.0007	0.02%	0.0010	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%
7440-31-5	Sn Plating	Sn	0.0084	5.00%	0.0255	4.99%	0.0783	4.07%	0.1259	2.95%	0.2060	2.41%
All of the above are approximate values by the component parts of the material			0.1673	100%	0.5098	100%	1.9216	100%	4.2616	100%	8.5426	100%