

Material Composition – THR Series Resistor Networks

Part Name: Resistor Networks **Tolerance:** C, J, K
Series: THR-MGI, THR-MGL, THR-MGP, **Note:** Lead Free (RoHS)
Part Weight: 0.3g **Division:** Technical Engineering Group

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 chip resistor array is exempt and all chip resistor arrays meet RoHS requirements.

No.	Material	Substance	Weight (mg)	Inclusion Substance	Inclusion Volume (mg)	Inclusion Rate (%)
1	Substrate	Alumina	80	Alumina	80	26.666667
2	Inner electrode	Ag/Pt	5.3	Silver	4.02	1.34
3				Platinum	0.053	0.0176667
4				Bismuth oxides	0.265	0.0883333
5				Lead oxides	0.053	0.0176667
6				Antimony oxides	0.053	0.0176667
7	Resistor		4.3	Lead oxides	0.01075	0.0035833
8	Glass coating	Lead glass	6.7	Lead compound	3.015	1.005
9				Boron compound	1.005	0.335
10	Lead	Copper alloy	99	Copper	98.28	32.76
11	Plating	Tin (Sn)	3.8	Tin	3.8	1.2666667
12	Inner soldering	High temperature melting point solder	11	Lead	9.35	3.1166667
13	Molding	Molding resin	85	Silica	59.5	19.833333
14				Antimony trioxides	1.7	0.5666667
		Total:	295.1		261.10475	

2010 – Material Composition – Low Value Chip Resistors (Series LCR)

LCR – Low Value Chip Resistors

Size/Series: LCR2010

Total Mass (g): 0.03692

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Part Name	Material	Total Mass (g)	Substance Name	Substance Mass (%)	CAS No.
LCR2010	Metal Alloy Resistive Element	0.0361816	Nickel (Ni)	80	11106-97-1
			Chromium (Cr)	20	7440-02-0
			Manganese (Mn)	12	7439-96-5
			Copper (Cu)	20	7440-50-8
			Aluminum (Al)	5	7429-90-5
			Iron (Fe)	73	7439-89-6
	Protective Layer	0.0003692	Epoxy Resin	50	
			Filler	45	7727-43-7
			Solvent	4	00112-15-2
			Additive	1	
			Amine Compound	30	
			Filler	29	14807-96-6
			Solvent	40	111-76-2
	Marking	0.0003692	Additive	1	
			Acrylic Resin	23	
			Photoinitiator	2	
			Pigment	10	13463-67-7
			Filler	35	14807-96-6
	Electrode	0.0003692	Acrylic Monomer	30	868-77-9
Tin (Sn) Pb Free			100	7440-31-5	

2512 – Material Composition – Low Value Chip Resistors (Series LCR)

LCR – Low Value Chip Resistors

Size/Series: LCR2512

Total Mass (g): 0.061

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Part Name	Material	Total Mass (g)	Substance Name	Substance Mass (%)	CAS No.
LCR2512	Metal Alloy Resistive Element	0.04	Nickel (Ni)	80	11106-97-1
			Chromium (Cr)	20	7440-02-0
			Manganese (Mn)	12	7439-96-5
			Copper (Cu)	88	7440-50-8
	Protective Layer	0.011	Bisphenol A Type Liquid Epoxy Resin	10~20	25068-38-6
			Epoxy Resin	15~25	
			Amine Type Hardener	> 5	
			Color Pigments	30~40	
			Silicon Dioxide	1~5	60676-86-0
			Talc	1~10	14807-96-6
			Additives	> 5	
			Diethylene Glycol Monobutyl Ether (C ₉ H ₁₂ O ₃)	10~20	112-34-5
			Solvent Naptha	1~5	64742-94-5
	Marking	0.01	Acrylic Resin	23	
			Photoinitiator	2	
			Pigment	10	13463-67-7
			Filler	35	14807-96-6
			Acrylic Monomer	30	868-77-9
	Electrode	0.01	Tin (Sn) Pb Free	100	7440-31-5