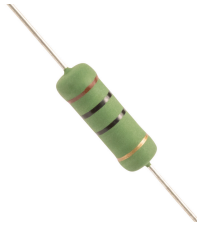


# MATERIAL DECLARATION SHEET



Material Number	<b>W series</b>			
Product Line	<b>Wirewound Fixed Resistors</b>			
Compliance Date	<b>4-21-2014</b>			
RoHS Compliant	<b>Compliant</b>	<b>MSL</b>	<b>N/A</b>	

No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W1M	Substrate (Ceramic)	235.70	Aluminum oxide	1344-28-1	69.20	28.95	41.83
				Silicon dioxide	14808-60-7	24.60	10.29	
				Magnesium oxide	1309-48-4	0.94	0.39	
				Barium oxide	1304-28-5	3.16	1.32	
				Calcium oxide	1305-78-8	1.81	0.76	
				Potassium oxide	12136-45-7	0.29	0.12	
2	W1M	Resistive layer (Ni-Cr Alloy )	3.48	Nickel	7440-02-0	80	0.49	0.61
				Chromium	7440-47-3	20	0.12	
3	W1M	End cap	86.35	Copper	7440-50-8	4.38	0.67	15.32
				Tin	7440-31-5	2.92	0.45	
				Iron	7439-89-6	92.70	14.20	
4	W1M	Lead wire	173.45	Copper	7440-50-8	97	29.86	30.79
				Tin	7440-31-5	3	0.93	
5	W1M	Coating	64.50	Epoxy Resin	26875-67-2	58	6.641	11.45
				Calcium carbonate	471-34-1	26	2.977	
				Titanium dioxide	13463-67-7	16	1.832	
		Total weight	563.48					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W1A	Substrate (Ceramic)	280.90	Aluminum oxide	1344-28-1	69.20	26.46	38.24
				Silicon dioxide	14808-60-7	24.60	9.41	
				Magnesium oxide	1309-48-4	0.94	0.36	
				Barium oxide	1304-28-5	3.16	1.21	
				Calcium oxide	1305-78-8	1.81	0.69	
				Potassium oxide	12136-45-7	0.29	0.11	
2	W1A	Resistive layer (Ni-Cr Alloy )	5.50	Nickel	7440-02-0	80	0.60	0.75
				Chromium	7440-47-3	20	0.15	
3	W1A	End cap	148.20	Copper	7440-50-8	4.38	0.88	20.17
				Tin	7440-31-5	2.92	0.59	
				Iron	7439-89-6	92.70	18.70	
4	W1A	Lead wire	191.00	Copper	7440-50-8	97	25.22	26.00
				Tin	7440-31-5	3	0.78	
5	W1A	Coating	109.00	Epoxy Resin	26875-67-2	58	8.61	14.84
				Calcium carbonate	471-34-1	26	3.86	
				Titanium dioxide	13463-67-7	16	2.37	
		Total weight	734.60					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	<b>W2M</b>	Substrate (Ceramic)	280.90	Aluminum oxide	1344-28-1	69.20	26.46	38.24
				Silicon dioxide	14808-60-7	24.60	9.41	
				Magnesium oxide	1309-48-4	0.94	0.36	
				Barium oxide	1304-28-5	3.16	1.21	
				Calcium oxide	1305-78-8	1.81	0.69	
				Potassium oxide	12136-45-7	0.29	0.11	
2		Resistive layer (Ni-Cr Alloy )	5.50	Nickel	7440-02-0	80	0.60	0.75
				Chromium	7440-47-3	20	0.15	
3		End cap	148.20	Copper	7440-50-8	4.38	0.88	20.17
				Tin	7440-31-5	2.92	0.59	
				Iron	7439-89-6	92.70	18.70	
4		Lead wire	191.00	Copper	7440-50-8	97	25.22	26.00
	Tin			7440-31-5	3	0.78		
5	Coating	109.00	Epoxy Resin	26875-67-2	58	8.61	14.84	
			Calcium carbonate	471-34-1	26	3.86		
			Titanium dioxide	13463-67-7	16	2.37		
		Total weight	734.60					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W2A	Substrate (Ceramic)	421.26	Aluminum oxide	1344-28-1	69.20	27.80	40.18
				Silicon dioxide	14808-60-7	24.60	9.88	
				Magnesium oxide	1309-48-4	0.94	0.38	
				Barium oxide	1304-28-5	3.16	1.27	
				Calcium oxide	1305-78-8	1.81	0.73	
				Potassium oxide	12136-45-7	0.29	0.12	
2	W2A	Resistive layer (Ni-Cr Alloy )	6.25	Nickel	7440-02-0	80	0.48	0.60
				Chromium	7440-47-3	20	0.12	
3	W2A	End cap	172.47	Copper	7440-50-8	4.38	0.72	16.45
				Tin	7440-31-5	2.92	0.48	
				Iron	7439-89-6	92.70	15.25	
4	W2A	Lead wire	225.73	Copper	7440-50-8	97	20.88	21.53
				Tin	7440-31-5	3	0.65	
5	W2A	Coating	222.78	Epoxy Resin	26875-67-2	58	12.32	21.24
				Calcium carbonate	471-34-1	26	5.52	
				Titanium dioxide	13463-67-7	16	3.40	
		Total weight	1048.49					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W3M	Substrate (Ceramic)	421.26	Aluminum oxide	1344-28-1	69.20	27.80	40.18
				Silicon dioxide	14808-60-7	24.60	9.88	
				Magnesium oxide	1309-48-4	0.94	0.38	
				Barium oxide	1304-28-5	3.16	1.27	
				Calcium oxide	1305-78-8	1.81	0.73	
				Potassium oxide	12136-45-7	0.29	0.12	
2	W3M	Resistive layer (Ni-Cr Alloy )	6.25	Nickel	7440-02-0	80	0.48	0.60
				Chromium	7440-47-3	20	0.12	
3	W3M	End cap	172.47	Copper	7440-50-8	4.38	0.72	16.45
				Tin	7440-31-5	2.92	0.48	
				Iron	7439-89-6	92.70	15.25	
4	W3M	Lead wire	225.73	Copper	7440-50-8	97	20.88	21.53
				Tin	7440-31-5	3	0.65	
5	W3M	Coating	222.78	Epoxy Resin	26875-67-2	58	12.32	21.24
				Calcium carbonate	471-34-1	26	5.52	
				Titanium dioxide	13463-67-7	16	3.40	
		Total weight	1048.49					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	<b>W3A</b>	Substrate (Ceramic)	925.00	Aluminum oxide	1344-28-1	69.20	40.35	58.31
				Silicon dioxide	14808-60-7	24.60	14.34	
				Magnesium oxide	1309-48-4	0.94	0.55	
				Barium oxide	1304-28-5	3.16	1.84	
				Calcium oxide	1305-78-8	1.81	1.06	
				Potassium oxide	12136-45-7	0.29	0.17	
2		Resistive layer (Ni-Cr Alloy )	4.00	Nickel	7440-02-0	80	0.20	0.25
				Chromium	7440-47-3	20	0.05	
3		End cap	234.40	Copper	7440-50-8	4.38	0.65	14.78
				Tin	7440-31-5	2.92	0.43	
				Iron	7439-89-6	92.70	13.70	
4		Lead wire	235.00	Copper	7440-50-8	97	14.37	14.81
	Tin			7440-31-5	3	0.44		
5	Coating	188.00	Epoxy Resin	26875-67-2	58	6.87	11.85	
			Calcium carbonate	471-34-1	26	3.08		
			Titanium dioxide	13463-67-7	16	1.90		
		Total weight	1586.40					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W5M	Substrate (Ceramic)	925.00	Aluminum oxide	1344-28-1	69.20	40.35	58.31
				Silicon dioxide	14808-60-7	24.60	14.34	
				Magnesium oxide	1309-48-4	0.94	0.55	
				Barium oxide	1304-28-5	3.16	1.84	
				Calcium oxide	1305-78-8	1.81	1.06	
				Potassium oxide	12136-45-7	0.29	0.17	
2	W5M	Resistive layer (Ni-Cr Alloy )	4.00	Nickel	7440-02-0	80	0.20	0.25
				Chromium	7440-47-3	20	0.05	
3	W5M	End cap	234.40	Copper	7440-50-8	4.38	0.65	14.78
				Tin	7440-31-5	2.92	0.43	
				Iron	7439-89-6	92.70	13.70	
4	W5M	Lead wire	235.00	Copper	7440-50-8	97	14.37	14.81
				Tin	7440-31-5	3	0.44	
5	W5M	Coating	188.00	Epoxy Resin	26875-67-2	58	6.87	11.85
				Calcium carbonate	471-34-1	26	3.08	
				Titanium dioxide	13463-67-7	16	1.90	
		Total weight	1586.40					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	<b>W5A</b>	Substrate (Ceramic)	2736.80	Aluminum oxide	1344-28-1	69.20	43.34	62.63
				Silicon dioxide	14808-60-7	24.60	15.41	
				Magnesium oxide	1309-48-4	0.94	0.59	
				Barium oxide	1304-28-5	3.16	1.98	
				Calcium oxide	1305-78-8	1.81	1.13	
				Potassium oxide	12136-45-7	0.29	0.18	
2		Resistive layer (Ni-Cr Alloy )	77.20	Nickel	7440-02-0	80	1.41	1.76
				Chromium	7440-47-3	20	0.35	
3		End cap	199.40	Copper	7440-50-8	4.38	0.20	4.56
				Tin	7440-31-5	2.92	0.13	
				Iron	7439-89-6	92.70	4.23	
4		Lead wire	319.00	Copper	7440-50-8	97	7.08	7.30
	Tin			7440-31-5	3	0.22		
5	Coating	1038.00	Epoxy Resin	26875-67-2	58	13.78	23.75	
			Calcium carbonate	471-34-1	26	6.17		
			Titanium dioxide	13463-67-7	16	3.80		
		Total weight	4370.40					



# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W7M	Substrate (Ceramic)	2736.80	Aluminum oxide	1344-28-1	69.20	43.08	62.26
				Silicon dioxide	14808-60-7	24.60	15.32	
				Magnesium oxide	1309-48-4	0.94	0.58	
				Barium oxide	1304-28-5	3.16	1.97	
				Calcium oxide	1305-78-8	1.81	1.13	
				Potassium oxide	12136-45-7	0.29	0.18	
2	W7M	Resistive layer (Ni-Cr Alloy )	77.20	Nickel	7440-02-0	80	1.41	1.76
				Chromium	7440-47-3	20	0.35	
3	W7M	End cap	224.50	Copper	7440-50-8	4.38	0.22	5.11
				Tin	7440-31-5	2.92	0.15	
				Iron	7439-89-6	92.70	4.74	
4	W7M	Lead wire	319.00	Copper	7440-50-8	97	7.04	7.26
				Tin	7440-31-5	3	0.22	
5	W7M	Coating	1038.00	Epoxy Resin	26875-67-2	58	13.69	23.61
				Calcium carbonate	471-34-1	26	6.14	
				Titanium dioxide	13463-67-7	16	3.78	
		Total weight	4395.50					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	W7A, W8M	Substrate (Ceramic)	3355.00	Aluminum oxide	1344-28-1	69.20	45.33	65.50
				Silicon dioxide	14808-60-7	24.60	16.11	
				Magnesium oxide	1309-48-4	0.94	0.62	
				Barium oxide	1304-28-5	3.16	2.07	
				Calcium oxide	1305-78-8	1.81	1.18	
				Potassium oxide	12136-45-7	0.29	0.19	
2	W7A, W8M	Resistive layer (Ni-Cr Alloy )	17.65	Nickel	7440-02-0	80	0.28	0.35
				Chromium	7440-47-3	20	0.07	
3	W7A, W8M	End cap	315.10	Copper	7440-50-8	4.38	0.27	6.15
				Tin	7440-31-5	2.92	0.18	
				Iron	7439-89-6	92.70	5.70	
4	W7A, W8M	Lead wire	319.00	Copper	7440-50-8	97	6.04	6.23
				Tin	7440-31-5	3	0.19	
5	W7A, W8M	Coating	1115.20	Epoxy Resin	26875-67-2	58	12.63	21.77
				Calcium carbonate	471-34-1	26	5.66	
				Titanium dioxide	13463-67-7	16	3.48	
		Total weight	5121.95					

# MATERIAL DECLARATION SHEET



No .	Construction Element(subpart)	Homogeneous Material	Material weight [mg]	Homogeneous Material\ Substances	CASRN if applicable	Materials Mass %	Material Mass % of total unit wt.	Subpart mass of total wt. (%)
1	<b>W9A, W9M</b>	Substrate (Ceramic)	6324.00	Aluminum oxide	1344-28-1	69.20	48.627	70.271
				Silicon dioxide	14808-60-7	24.60	17.287	
				Magnesium oxide	1309-48-4	0.94	0.661	
				Barium oxide	1304-28-5	3.16	2.220	
				Calcium oxide	1305-78-8	1.81	1.272	
				Potassium oxide	12136-45-7	0.29	0.204	
2		Resistive layer (Ni-Cr Alloy )	0.20	Nickel	7440-02-0	80	0.0016	0.002
				Chromium	7440-47-3	20	0.0004	
3		End cap	315.10	Copper	7440-50-8	4.38	0.153	3.501
				Tin	7440-31-5	2.92	0.102	
				Iron	7439-89-6	92.70	3.246	
4		Lead wire	319.00	Copper	7440-50-8	97	3.439	3.545
	Tin			7440-31-5	3	0.106		
5	Coating	2041.20	Epoxy Resin	26875-67-2	58	13.155	22.681	
			Calcium carbonate	471-34-1	26	5.897		
			Titanium dioxide	13463-67-7	16	3.629		
		Total weight	8999.50					

Updated: May 28, 2015