

Dear Customers,

# Material Data Sheet

Date : July 25, 2022

Company : Panasonic Industry Co., Ltd.  
 Address : 401 Sadamasa-cho, Fukui City, Fukui Japan  
 Department : Engineering Planning Section, Morita Engineering Group  
 Approved by : Hideki Tanaka  
 Prepared by : Takeshi Torii  
 Telephone : +81-776-56-8028

Product P/N	ERJ2RKF@@@X				
Product Classification	Electric/Electronic component(Passive component)				
Product Name	Chip Resistor	Substitute P/N	No	Weight TOTAL(mg)	0.63141
Pb	Pb free	Packaging Material	Not included		

Part Name		Material Name	Chemical Name	CASNo.	Remark	Weight of each chemical material in a part (mg)	Weight of a part(mg)	Rate of each chemical material in a part(%)	Rate of each chemical material in a product(wt%)	Rate of each part in a product(wt%)	
Substrate		Ceramics	Aluminum oxide ; Alumina, Corundum; Al2O3	1344-28-1		0.4443600	0.4600000	96.6000000	72.851230	70.374232	
			Quartz; SiO2	14808-60-7		0.0096600		2.1000000		1.52991	
			Magnesium oxide; MgO	1309-48-4		0.0046000		1.0000000		0.728529	
			Calcium oxide; CaO	1305-78-8		0.0013800		0.3000000		0.218559	
Top Terminal		Other special metals	Silver; Ag	7440-22-4		0.0056200	0.0061600	91.2337650	0.975753	0.89023	
			Palladium; Pd	7440-05-3		0.0004070		6.6071430		0.064459	
			Lead(II) oxide; Lead oxide (PbO); C.I. Pigment Yellow 46; Lead monooxide; Lead(2+) oxide	1317-36-8		0.0000800		1.2987020		0.01267	
			Silica; Silicon dioxide	7631-86-9		0.0000530		0.8603900		0.008394	
Bottom Terminal	EU RoHS exemption 7(c)-I	Glass	Silver; Ag	7440-22-4		0.0077800	0.0079800	97.4937330	1.263997	1.232322	
			Lead(II) oxide; Lead oxide (PbO); C.I. Pigment Yellow 46; Lead monooxide; Lead(2+) oxide	1317-36-8		0.0001200		1.5037600		0.019005	
			Silica; Silicon dioxide	7631-86-9		0.0000800		1.0025070		0.01267	
			Ruthenium(IV) oxide; RuO2	12036-10-1		0.0025210		42.8741490		0.399582	
Resistive Element		Glass	Silica; Silicon dioxide	7631-86-9		0.0011760	0.0058800	20.0000000	0.931567	0.18625	
			Boron oxide; B2O3	1303-86-2		0.0004180		7.1088440		0.066201	
			Manganese dioxide; MnO2	1313-13-9		0.0001420		2.4149660		0.02249	
			Lead(II) oxide; Lead oxide (PbO); C.I. Pigment Yellow 46; Lead monooxide; Lead(2+) oxide	1317-36-8		0.0016230		27.6020410		0.257044	
First Protective Coating	EU RoHS exemption 7(c)-I	Glass	Lead(II) oxide; Lead oxide (PbO); C.I. Pigment Yellow 46; Lead monooxide; Lead(2+) oxide	1317-36-8		0.0032320	0.0058800	54.9659840	0.931567	0.512187	
			Silica; Silicon dioxide	7631-86-9		0.0015060		25.6122450		0.238514	
			Boron oxide; B2O3	1303-86-2		0.0007590		12.9081640		0.120208	
			Zinc oxide; ZnO	1314-13-2		0.0002470		4.2006810		0.039119	
Second Protective Coating		Ceramics	Chromium(III) oxide; Pigment green 17 (C.I.); Cr2O3	1308-38-9		0.0001360	0.0093100	2.3129260	1.474797	0.021539	
			Silica; Silicon dioxide	7631-86-9		0.0062360		66.9817400		0.987948	
			Epichlorohydrin, o-cresol, formaldehyde polymer; Formaldehyde, polymer with (chloromethyl)oxirane and 2-methylphenol			0.0027930		30.0000000		0.442344	
			Bisphenol A, epichlorohydrin polymer; Epoxy resin; Epon 820; Araldite GY 250	-		0.0000940		1.0096670		0.014888	
Side Terminal		Others (Powder,etc)	Carbon black; C	1333-86-4		0.0001870	0.0532000	2.0085930	8.425906	0.029617	
			Other special metals	Silver; Ag	7440-22-4			0.0241800		45.4511270	3.829525
			Others (Powder,etc)	Carbon black; C	1333-86-4			0.0048420		9.1015040	0.766856
			Nickel and Nickel alloys	Nickel; Ni	7440-02-0			0.0430000		100.0000000	6.810155
Middle Terminal											
Outer Terminal		Other nonferrous metals	Tin; Sn	7440-31-5		0.0400000	0.0400000	100.0000000	6.335028	6.335028	

EU RoHS exemption 7(c)-I  
 Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound