

**Supplier's Declaration
On Restricted or Banned Materials and
Chemical Substances**



TITLE : RoHS 2 Compliance		
CUSTOMER	PRODUCT Thick Film Chip Resistor (Glass Coating Type)	Prepared by Eun-Hee Ma
SAMSUNG ELECTRO-MECHANICS DOCUMENT		
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We, Samsung, declare that our **Chip Resistor** is in compliance with European Directive 2011/65/UE

The detail information about ingredients of requested items is as below.

☉ **Section I . Banned Substances**

Substance	USE	Application	Purposes of Use
Lead and its compounds	O	Pb-Oxide in Glass Frits (RoHS's Exemption) 7(c)-I Electrical and electronic components containing lead in a glass.	Resistive Layer
Mercury and compounds	X		
Hexavalent Chromium	X		
Cadmium and its compounds	X		
Polybrominated biphenyls(PBBs)	X		
Polybrominated diphenyls ethers(PBDEs)	X		

☉ **Section II . Controlled substances**

Substance	USE	Application	Purposes of Use
Antimony and its compounds	X		
Arsenic and its compounds	X		
Beryllium and its compounds	X		
Barium and its compounds	X		
Manganese and its compounds	X		
Organic-tin compounds	X		
Nickel and its compounds	O	Ni Plating	Barrier Layer
Bismuth and its compounds	X		
Copper and its compounds	X		
Asbestos etc.	X		
Cyanides	X		
Polychloroterphenyls(PCTs)	X		
Polychlorinated biphenyls(PCBs)	X		
Polyvinyl chloride(PVC)	X		

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◎ Ingredient Table

Product Family Name	SMD	Samsung P/N : RC, RT, RP / RN Series					
Date	Sep 25 ,2013						
Version	2.0						
Construction Element	Material group	Materials	CAS if applicable	min	Typical mass [wt-%]	max	Typical Sum [wt-%]
Substrate	Ceramic	Al ₂ O ₃	1344-28-1	80.0	85.0	95.0	85.0
Resistive layer	Metal	Ru-Oxide	12036-10-1	0.1	0.2	0.4	0.6
	Glass	Glass	65997-18-4	0.3	0.4	0.7	
Termination (Conductor,plating)	Metal	Ag,Pd,Ni,Sn	7440-22-4	5.0	10.4	15.0	11.8
	Glass	Glass	65997-18-4	0.9	1.2	2.8	
	Polymer	Epoxy resin	-	0.0	0.2	0.3	
Insulation layer	Glass	Glass	65997-18-4	1.3	2.3	4	2.6
	Polymer	Epoxy resin	-	0.0	0.3	0.5	

	Size Code (inch)	D x L x H [mm]	Avg W.t [g]
Case sizes and weight range :	RC1005 Series (0402)	1.00 x 0.50 x 0.35	0.0006
	RC1608 Series (0603)	1.60 x 0.80 x 0.45	0.0021
	RC2012 Series (0805)	2.00 x 1.25 x 0.50	0.0049
	RC3216 Series (1206)	3.20 x 1.60 x 0.55	0.0096
	RC3225 Series (1210)	3.20 x 2.55 x 0.55	0.0156
	RC5025 Series (2010)	5.00 x 2.50 x 0.55	0.0256
	RC6432 Series (2512)	6.30 x 3.20 x 0.55	0.0410
	RP102P Series (0402*2)	1.00 x 1.00 x 0.35	0.0011
	RP104P Series (0402*4)	2.00 x 1.00 x 0.35	0.0022
	RP164P Series (0603*4)	3.20 x 1.60 x 0.50	0.0091
	RN162P Series (0603*2)	1.60 x 1.60 x 0.60	0.0050
	RN164P Series (0603*4)	3.20 x 1.60 x 0.60	0.0100
	RF062P Series (0603*2)	0.85 x 0.60 x 0.23	0.0003

※ All statements herein are based on our present knowledge.

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A handwritten signature in black ink, appearing to be "Hyukjoon Youn".

Signature of Authorized Company Representative

Position

E-mail

General Manager

hyukjoon.youn@samsung.com

Address

Phone

314, Maetan-3dong, Youngtong-Gu, Suwon-Si, Kyungki-Do, 442-743, Korea

82-31-210-3694

Product Environmental Contact (if other than above)

E-mail

Eun-Hee Ma

eunhee.ma@samsung.com

Address

Phone

The same as above

82-31-300-7531

Date

July 19,2013

※ If you have any questions, feel free to contact our salesperson.