

# Varistor

# Material Data Sheet

<b>Product Class</b>	<b>Housed Varistor B72220T*</b>
<b>Date</b>	<b>30.09.2019</b>
IMDS ID if available	
<b>Version</b>	<b>5.05</b>

Product Part (IMDS: semi component)	Material Class (IMDS: Material)	Material (Classification) VDA 231	Substance	TMPS**) [wt%]	CAS if applicable	typical mass of material [wt-%]	Traces see 1)
<b>Active Part</b>	Ceramic	3B	ZnO	91	1314-13-2	53,5	
			Bi2O3	4,0	1304-76-3		
			Sb2O3	2,5	1309-64-4		
			Co3O4	1	1308-06-1		
			NiO others*)	0,5 1	1313-99-1		
<b>Termination</b>	Composite	4D	Ag	95	7440-22-4	0,2	
			Glass frit (boro-silicate)	5			
<b>High melting point solder</b>	Heavy Metal	1C8	Sn Ag Cu	96,5 3 0,5	7440-31-5 7440-22-4 7440-50-8	2,2	
<b>Low melting point solder</b>	Heavy Metal	1C8	Sn Bi	42 58	7440-31-5 7440-69-9	0,2	
<b>Leads</b>	Heavy Metal	1C12	Cu	100	7440-50-8	5,24	
	Heavy Metal	1C8	Sn	100	7440-31-5	0.16	
<b>Spring</b>	Heavy Metal	1C12	Cu Sn	93,5 6,5	7440-50-8 7440-31-5	1.16	
	Heavy Metal	1C8	Sn	100	7440-31-5	0.14	
<b>Encapsulation</b>	Duromer	2D Halogen-free coating	SiO2	46	60676-86-0	4,6	
			Epoxy	40	25036-25-3		
			Pyromellitic dianhydride	6,5	89-32-7		
			Phosphated epoxy	5			
			others*)	2,5			
<b>Housing</b>	Thermoplastic	2A	PBT (Poly butylene terephthalate)	69,5	26062-94-2	32,6	
			Glass fibre	25	65997-17-3		
			Sb2O3	3	1309-64-4		
			Carbon black	0,5	1333-86-4		
			Brominated flame retardant	0,5			
			Additives	1,5			
			<b>Sum in total:</b>				

sizes [mm]	weight range [g]	material number	part numbers
34,0 x 32,0	12,6-18,7	B72220T*	ETFV20K510-K1000*

<b>Not part of a Product Class</b>		
<b>Contact</b>	Mr. Christoph Ronner	<b>Important remarks:</b>  1) The declaration limit is 0.1% as defined by IEC 62474 (IEC PAS 61906). Traces are product parts, substances etc. that are below a percentage of 0.1 % by weight, if not otherwise regulated.  2) This Material Data Sheet contains typical values of the respective products set forth herein. We expressly point out that all values and statements contained herein are based on our best present knowledge and cannot be regarded as binding statements or binding product specifications, unless otherwise explicitly agreed in writing. TDK ELECTRONICS AG AND ITS AFFILIATES HEREBY EXPRESSLY DISCLAIM ANY REPRESENTATION OR WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, WITH REGARD TO THE STATEMENTS AND VALUES CONTAINED HEREIN, INCLUDING BUT NOT LIMITED TO ANY REPRESENTATION OR WARRANTY OF MERCHANTABILITY OR SUITABILITY FOR ANY PURPOSE..
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*) others: (not declarable or prohibited substances acc. GADSL)		
**) typical mass percentage of substance		

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**The products set forth herein are "RoHS-compatible".** RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8<sup>th</sup>, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

**RoHS - Exemptions for the Product Class / Product according to Annex III:** (  valid  not valid )

**no exemptions;**

- Exemption 6 (a): Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight;
- Exemption 6 (b): Lead as an alloying element in aluminium containing up to 0,4 % lead by weight;
- Exemption 6 (c): Copper alloy containing up to 4 % lead by weight;
- Exemption 7 (a): Lead in high melting temperature type solder (i.e. lead-based alloys containing 85 % by weight or more lead);
- 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;
- Exemption 7 (c)-II: Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher;
- Exemption 7 (c)-III: Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC;
- Exemption 15: Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages;
- Other Exemption than above .....