

Section 1 - Chemical Product and Company Identification

Product Name

Chip-Resistor

Name of Manufacturer or Supplier of the goods

Premier Farnell plc

150 Armley Road, Leeds, LS12 2QQ

+44 (0) 8701 202530

Emergency telephone number

+44 1865 407333

Section 2 - Hazards Identification

Product hazard class : Not Available

Product hazard class : Not Available

Other hazards : Not Available

Section 3 - Composition/information on ingredients Pure material/Mixtures

Substance	CAS No.	Formula	Main purpose	Typical %
Aluminium Oxide	1344-28-1	Al ₂ O ₃	Substrate	83.9144
Silicon dioxide		SiO ₂	Substrate	1.6127
Magnesia		MgO	Substrate	0.5175
Calcium oxide		CaO	Substrate	0.1984
Silver		Ag	Backside layer	1.6284
Bismuth oxide		Bi ₂ O ₃	Backside layer	0.4140
Calcium oxide		CaO	Backside layer	0.1656
Silicon oxide		SiO	Backside layer	0.1104
Aluminium oxide		Al ₂ O ₃	Backside layer	0.1104
Ethyl cellulose		[C ₆ H ₇ O ₂ (OH) ₃ -n(OC ₂ H ₅) _n] _x	Backside layer	0.3312
Silver		Ag	Topside layer	2.7880
Ceramic frits		Ceramic frits	Topside layer	0.2296
Palladium		Pd	Topside layer	0.1312
Ethyl cellulose		[C ₆ H ₇ O ₂ (OH) ₃ -n(OC ₂ H ₅) _n] _x	Topside layer	0.1312
Silver		Ag	Resistive layer	0.0700
Palladium		Pd	Resistive layer	0.1267
Ruthenium		RuO ₂	Resistive layer	0.1689
Lead oxide		PbO	Resistive layer	0.2833
Aluminium oxide		Al ₂ O ₃	Resistive layer	0.0278
Silicon dioxide		SiO ₂	Resistive layer	0.1978
Copper oxide		CuO	Resistive layer	0.0144
Glass Frit		Glass Frit	Resistive layer	0.1411
Lead Free Glass		Lead Free Glass Frit	Primary coating	0.9568

Substance	CAS No.	Formula	Main purpose	Typical %
Ethyl cellulose	9004-57-3	$[C_6H_7O_2(OH)_3-n(OC_2H_5)_n]_x$	Primary coating	0.0728
Cobalt	7440-48-4	Co	Primary coating	0.0104
Epoxy Resin	29690-82-2	Epoxy Resin	Protective coating	1.5580
Phenolic Resin	9003-35-4	$(C_6H_6O \cdot CH_2O)_x$	Protective coating	0.3420
Carbon black	1333-86-4	C	Protective coating	0.4940
Silicon dioxide	14808-60-7	SiO ₂	Protective coating	1.1780
Talc	14807-96-6	3MgO-4SiO ₂ -H ₂ O	Protective coating	0.2280
Nickel	7440-02-0	Ni	Side termination	0.0935
Chromium	7440-47-3	Cr	Side termination	0.0735
Nickel	7440-02-0	Ni	Plating Ni	0.9200
Tin	7440-31-5	Sn	Plating Sn	0.7600

Section 4 - First Aid Measures

The first aid measures for different exposure routes:

Inhalation : Not Available
Skin contact : Not Available
Eye contact : Not Available
Ingestion : Not Available

The most important symptoms and hazardous effects
None

The protection of first-aiders : None
Notes to Physician : None

Section 5 - Fire-fighting measures

Suitable fire extinguishing media : This product is incombustible
Specific hazards may be encountered during fire-fighting : None
Specific fire-fighting methods : No
Special equipment for the protection of firefighters : No

Section 6 - Accidental release measures

Personal precautions : No
Environmental precautions : No
Methods for cleaning up : No

Section 7 - Handling and storage

Handling : No special advice
Storage : Following the method defined in MSL level 1

Section 8 - Exposure controls/personal protection

Engineering control : No

Control parameters:

8 hours time weighted average
exposure limits/Short-term exposure
limits/maximum exposure limits : No

Biological standards : No

Personal protective equipment:

Respiratory protection : No

Hand protection : No

Eye protection : No

Skin and body protection : No

Hygiene measures : No special requirement

Section 9 - Physical and chemical properties

Appearance
(physical state, colour, etc.) : Cuboid ceramic

Odor threshold : No defined

pH value : Not available

Flammability (solid, gas) : Incombustible

Decomposition temperature : Not be tested

Auto-ignition temperature : Incombustible

Vapor pressure : Not Available

Density : =6

Partition coefficient
(n-octanol/water,log Kow) : -

Odor: : No

Melting point : 1500°C

Boiling point/boiling point range : Not be tested

Flash point : °F °C: Not be tested

Test method : Open cup Closed cup

Explosion limits : Not Available

Vapor density : Not Available

Solubility : Not Available

Evaporation rate : Not Available

Rated watt hour (WH) : N/A

(Note: resistor, capacitor, conductor could not provide energy, they are called passive component)

Section 10 - Stability and reactivity

Stability : Stable

Possible hazardous reactions
under specific conditions : No

Conditions to avoid : No

Materials to avoid : No

Hazardous decomposition products : No

Section 11 - Toxicological information

Routes of exposure : Not available
Symptoms : No
Acute toxicity : No
Chronic toxicity or long term toxicity : No

Section 12 - Ecological information

Ecotoxicity : No
Persistence and degradability : -
Bioaccumulative potential : -
Mobility in soil : -
Other adverse effects : No

Section 13 - Disposal considerations

Methods of waste disposal : Follow the local regulation

Section 14 - Transport information

United Nations number (UN No) : Not Available.
UN Proper shipping name : Not Available.
Transport hazard class (es) : Not Available.
Packing group : Not Available.
Marine pollutant (Yes/No) : No
Specific transport measures
and precautionary conditions : No

15. Regulatory information

Applicable regulations : 2011/65/EU, EC-1907-2006, (EU) 2015/863

16. Other information

No Information are available.

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