



## Declaration of Conformity European Union RoHS

The Restriction of Hazardous Substances (RoHS) Directive was established by the European Union (EU) in 2002 with Directive 2002/95/EC restricting use of 6 hazardous materials found in Electrical and Electronic Equipment. Legislation was amended by Directive 2011/65/EU and further amended by Directive 2015/863/EU. RoHS requires that each separate homogenous part of a component does not contain more than the specified concentrations for the following substances:

<u>RoHS Restricted Substances</u>	<u>Limit</u>
Lead (Pb)	0.10%
Mercury (Hg)	0.10%
Cadmium (Cd)	0.01%
Hexavalent chromium (Cr6+)	0.10%
Polybrominated biphenyls (PBB)	0.10%
Polybrominated diphenyl ether (PBDE)	0.10%
Bis(2-ethylhexyl) phthalate (DEHP)	0.10%
Butyl benzyl phthalate (BBP)	0.10%
Dibutyl phthalate (DBP)	0.10%
Diisobutyl phthalate (DIBP)	0.10%

Annex III of RoHS Directive provides exemptions for products with concentrations above the listed limits based on the end use of the product. State of the Art, Inc. thick film materials contain lead (Pb) in the glass and resistive constituent materials. End users may be able to apply Exemption 7c-I for lead (Pb) in glass or ceramic materials if still active and applicable to the end user’s category of use.

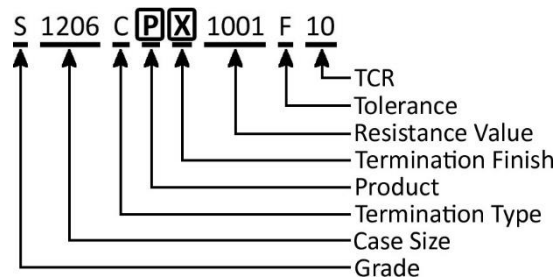
To the best of its knowledge, State of the Art, Inc. products compliance with RoHS along with the relevance of Exemption 7c-I can be identified by part number as listed on subsequent pages.

We work with our suppliers to ensure accurate data for all products. We will continue to identify any potential use of materials as specified in the RoHS directive and confirm the representation made in this compliance statement remains accurate. To that end, we reserve the right to amend this statement at any time based on subsequent developments or information.

If you need more detailed information, please contact [sales@resistor.com](mailto:sales@resistor.com) for further information.

## Semi-Precision Thick Film Chip Resistors and Zero-Ohm Resistors (Jumpers)

The RoHS compliance for semi-precision thick film and zero-ohm resistor products is determined by the product and termination finish codes in our part number as shown below. The boxed P is the product and the boxed X is the termination finish code.



Zero-ohm jumpers have a resistance value code of “000” and do not have tolerance or TCR codes.

The following semi-precision thick film chip and zero-ohm resistors are **not** ROHS compliant:

- Product codes B or R (high power thick film resistors) may contain Cadmium Oxide (1306-19-0) in the termination material. Please contact State of the Art, Inc. with purchase and lot information to confirm if present.
- Termination finish code P (platinum/gold) contains Cadmium Oxide (1306-19-0).
- Value codes between 0.05Ω and 1.0Ω may contain Cadmium Oxide (1306-19-0) in the resistor material. Please contact State of the Art, Inc. with purchase and lot information to confirm presence.
- Termination finish codes X, N, or K contain Lead (7439-92-1) in the solder finish.
- Product codes B, F, K, P, R, or U having values between 1.5Ω to 300Ω may contain Dilead Diruthenium Hexaoxide (37194-88-0) in the resistor material. Please contact State of the Art, Inc. with purchase and lot information to confirm presence.

The following semi-precision thick film and zero-ohm chip resistors require RoHS Annex III Exemption 7c-I for RoHS compliant use:

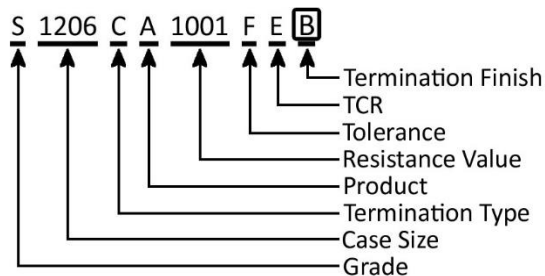
- Product codes F, H, K, P, U, or V having termination finish codes C (silver bearing), G (gold), or Y (silver over nickel barrier).

No semi-precision thick film or zero-ohm chip resistors are currently offered which provide RoHS compliance without applying RoHS Annex III Exemption 7c-I for use.

## Precision Thin Film Chip Resistors

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The RoHS compliance of precision thin film chip resistors is determined by the termination finish code in our part number as shown below. The boxed B is the termination finish code.



The following precision thin film Chip Resistors are **not** RoHS compliant:

- Termination finish codes B, N or K contain Lead (7439-92-1) in the solder finish.

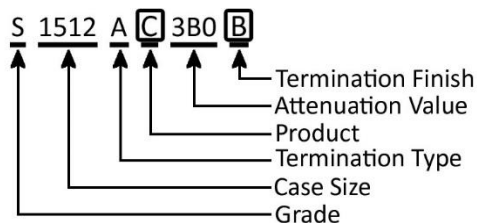
The following precision thin film Chip Resistors are RoHS compliant:

- Termination finish codes A (aluminum), W (gold), or Y (silver over nickel barrier)

## Fixed Attenuators (Thick and Thin Film)

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The RoHS compliance of fixed attenuators is determined by the product and termination finish codes in our part number as shown below. The boxed B is the termination finish and boxed C is the product code.



The following fixed attenuators are **not** RoHS compliant:

- Termination finish code B (tin-lead) contain Lead (7439-92-1).

The following fixed attenuators that require RoHS Annex III Exemption 7c-I for RoHS compliant use:

- Product codes D or W having termination finish codes W (gold) or Y (silver over nickel barrier).

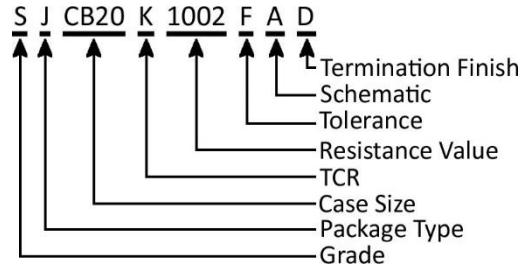
The following fixed attenuators are RoHS compliant:

- Product code C having termination finish codes W (gold) or Y (silver over nickel barrier).

## Semi-Precision Thick Film Networks (JEDEC and SLAMDIP)

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All semi-precision thick film networks contain Lead (7439-92-1) in the termination material and are **not** RoHS compliant. Product can be identified using example part number shown below.

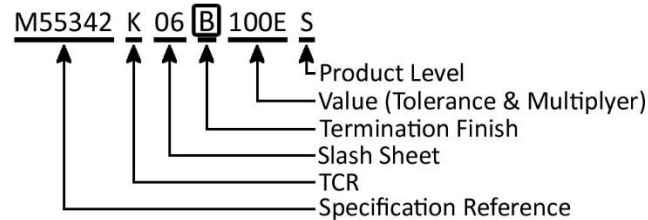


- Semi-precision thick film networks having values between  $1.5\Omega$  to  $300\Omega$  may contain Dilead Diruthenium Hexaoxide (37194-88-0) in the resistor material. Please contact State of the Art, Inc. with purchase and lot information to confirm presence.

## MIL-PRF-55342 Resistors

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The RoHS compliance of MIL-PRF-55342 resistors is determined by the termination material code in the MIL-PRF-55342 part number. Both TCR and value codes as identified below may be required to resolve product RoHS compliance. The boxed B is the termination finish code in the example part number below.



The following MIL-PRF-55342 chip resistors are **not** RoHS compliant:

- Termination finish code U (platinum/gold) contains Cadmium Oxide (1306-19-0).
- Termination finish code B (tin/lead) contains Lead (7439-92-1).
- MIL-PRF-55342 thick film resistors represented by TCR codes  $\geq 100$  ppm/ $^{\circ}$ C with Tolerances  $\geq 1\%$  having values between  $1.5\Omega$  to  $300\Omega$  may contain Dilead Diruthenium Hexaoxide (37194-88-0) in the resistor material. Please contact State of the Art, Inc. with purchase and lot information to confirm presence.

The following MIL-PRF-55342 resistors that require RoHS Annex XIII Exemption 7c-I for RoHS compliant use:

- MIL-PRF-55342 thick film resistors represented by TCR codes  $\geq 100$  ppm/ $^{\circ}$ C with Tolerances  $\geq 1\%$  having termination codes C (Silver bearing), G (gold), or W (gold).

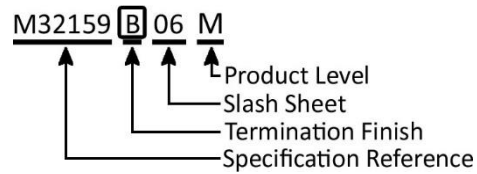
The following MIL-PRF-55342 resistors are RoHS compliant:

- MIL-PRF-55342 thin film resistors represented by TCR codes  $< 100$  ppm/ $^{\circ}$ C and Tolerances  $< 1\%$  having a termination code W (gold).

## MIL-PRF-32159 Zero-Ohm Resistors (Jumpers)

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The ROHS compliance of MIL-PRF-32159 zero-ohm jumpers is determined by the termination material code in the MIL-PRF-32159 part number shown below. The boxed B is the termination finish code.



The following MIL-PRF-55342 chip resistors are **not** RoHS compliant:

- Termination Finish code U (platinum/gold) contains Cadmium Oxide (1306-19-0).
- Termination Finish code B (tin/lead) contains Lead (7439-92-1).

The following MIL-PRF-32159 zero-ohm chip resistors require RoHS Annex III Exemption 7c-I for RoHS compliant use:

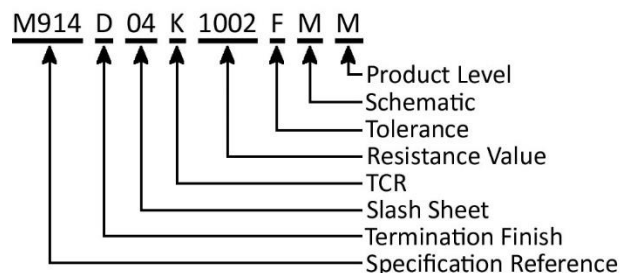
- Termination finish code G (gold).

No MIL-PRF-32159 zero-ohm chip resistors are currently offered which provide RoHS compliance without applying RoHS Annex III Exemption 7c-I for use.

## MIL-PRF-914 Resistor Networks

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All MIL-PRF-914 resistor networks contain Lead (7439-92-1) in the termination material and are **not** RoHS compliant. Product can be identified using example part number shown below.



- MIL-PRF-914 networks having values between 1.5Ω to 300Ω may contain Dilead Diruthenium Hexaoxide (37194-88-0) in the resistor material. Please contact State of the Art, Inc. with purchase and lot information to confirm presence.