

Caddock Resistor Products and the EU RoHS Directive

This document describes the Compliance of Caddock High Performance Film Resistors to the EU RoHS Directive, 2011/65/EU including the substances included in 2015/863/EU, and other Hazardous Substances frequently mentioned by customers.

“RoHS Compliant” Caddock Resistor Products are those that comply with the European Union’s (RoHS) “Restriction on the Use of Hazardous Substances in Electrical and Electronic Equipment”, Directive 2011/65/EU (including 2015/863/EU), which means that either:

- 1) the levels of Restricted Substances listed in Annex II of 2011/65/EU in the Caddock Resistor Product are below the maximum concentration values as described by 2011/65/EU, or
- 2) an “Application Exemption” described in Annex III of 2011/65/EU applies

The following Caddock Catalog Resistor products, manufactured January 1, 2013 or later, are “RoHS Compliant”. Many of these models have been RoHS compliant since 2005:

- Type CC Resistors
- Type CHR Resistors
- Type HVD Voltage Dividers
- Type MG Resistors
- MK200 and MK700 Series Resistors (See Note 1)
- Model MP2060
- MP800 Series
- MP900/9000 Series
- Type MS Resistors
- Type MV Resistors
- Type MX Resistors with black conformal coating
- Type SR Resistors (See Note 1)
- Type TF Resistors
- Type TG Resistors
- Type THV Voltage Dividers
- TK200 and TK700 Series Resistors (See Note 1)
- Type USF Resistors
- Type USG Resistors
- Type USVD Voltage Dividers
- Type T912 and T914 Resistor Networks
- Type 1776 Decade Voltage Dividers
- Type 1787 Resistor Networks
- Type VMN Resistor Networks
- Type T1794 Resistor Networks

Note 1: These resistors are RoHS Compliant, but require extra care during “Lead(Pb)-Free” wave soldering. The temperature of the resistor terminal adjacent to the resistor body must be maintained below 219°C during soldering.

“RoHS Non-Compliant” Caddock Resistor Products

The Type MM Resistors are Non-Compliant with the EU RoHS Directive. The Type MM are currently NRND and can be replaced with Type MS Resistors

Comments about Exemptions 7(c)-I and 7(c)-v for Lead in Glass and Ceramics

As of the date of this revision, the original Exemption 7(c)-I, has been requested to be extended by many parties in the electronics industry. This exemption continues to be essential to all Caddock High Performance Resistor Products. The new, and more narrowly defined replacement exemptions, including 7(c)-v, do not cover all of the important uses of Lead-containing glasses in high-performance electronics that have originally relied on 7(c)-I.

Caddock continues to rely on Exemption 7(c)-I for all of our resistor products. Caddock's film resistor elements contain a small amount of lead oxide that is part of the complex molecular structure in the special glasses used in the resistance films (with resistivities from 0.040 Ohm/sq to 100 Megohm/sq), passivation films, and conductor films. These various films are deposited and fired on a ceramic substrate to form the resistor element.

Notes on Terminal Finish and Soldering:

For the Standard Catalog Terminal finish and the compatibility with Lead (Pb)-Free Soldering Processes, please see the Caddock Applications Note AEN-0104.

Some Caddock Resistor Products are supplied to customers (using a unique ordering part number assigned to that customer) with a non-standard Sn/Pb Hot Solder Dipped Terminal Finish based on the customer requirement for this terminal finish. Parts supplied with this non-standard Sn/Pb Hot Solder Dipped Terminal Finish are Non-Compliant with the EU RoHS Directive and are Not supplied to other customers

Caddock SMT Resistors that are Not Compatible with High Temperature Lead-Free Solder Reflow Processes.

These resistors are RoHS Compliant, but are not compatible with high temperature lead-free solder reflow processes. The bodies of these resistors must not exceed 219°C:

Type CD, Model MP725

Caddock’s Statement about other Hazardous Materials:

The following materials are not included, by design, in any Caddock resistor product: Asbestos, Formaldehyde, Mercury, or Radioactive Substances.

Additional Caddock Documents:

AEN-0104: “Terminal Finish and Solder Process Information for Caddock Resistor Products”

AEN-0107: “Caddock REACH Compliance Statement”

For questions regarding any Environmental Compliance or Part Status please contact Caddock Applications Engineering.

The EU RoHS Directive and Legislation are subject to change. If there are any changes in the legislation that affect any Caddock resistor products, Caddock will provide timely notification on the Caddock website: www.caddock.com