

## Company Overview

U.S. Resistor manufactures Non-inductive, Special Purpose, and Industrial Resistors that have found uses in many applications, including high power and high energy surge applications, such as Energy Transmission and Distribution systems to Wind Power systems. Larger Ceramic Resistors offer excellent protection in any electrical apparatus where electrical spikes of high energy are unwanted, such as circuit breakers, surge protection, or load banks.

These Resistors can be manufactured in a variety of sizes and shapes including rods, discs, sleeves, and rings, depending on the application and needs of the customer. We are able to produce both large and small lot quantities based on the need of each application. Electrical contact is established by means of depositing various metals such as brass, aluminum, or copper, on the resistors, molded on contacts, capped leads, or secured metal caps.

**Two distinct materials are used to manufacture these resistors:**

### Ceramic Resistor Material

Sintered body of ceramic material with conductive particles distributed throughout the matrix to produce a resistor that is 100% active and non-inductive. Chemically inert which can withstand high energy, high voltages at high temperatures such as those encountered in the protection of high voltage surge equipment, discharge banks, and in high frequency radiation suppression.

### Organic Resistor Material

Resin bonded body of ceramic material with conductive particles distributed throughout the matrix to produce a resistor that is 100% active and non-inductive. The organic bonded resistors offer a wider resistance range for those applications where only medium steady state heat dissipation is required, or where high energy pulses are of relatively short duration, as in automotive noise suppression or lightning arrestors.

## Design Guidelines

1. Submit a sketch or drawing of the part with space limitations.
2. Describe the function of the part, with resistance required (ohms) and mechanical tolerances.
3. Physical size, OD, ID, and length with tolerances.
4. List system Voltage, Wattage, and Current.
5. Contacts; Metal Spray of Brass, Copper, Monel, or attached leads.
6. Lead length and diameter.
7. Operating temperature and maximum temperature: in air, oil, or other?
8. Is application steady state or pulse? If pulse, list duty cycle, peak voltage, and peak current.
9. Provide sample of resistor now being used, if any.
10. Describe other engineering parameters, such as continuous or intermittent power level operating temperature requirements, applied voltages, or other ambient conditions.

	Ceramic Material	Organic Material
<b>Resistivity Range</b>	0.8 to 4,000 ohm-in	0.04 to $8 \times 10^8$ ohm-in
<b>Peak Power</b>	12 watts/in <sup>3</sup> 0.75 watts/cm <sup>3</sup>	10 watts/in <sup>3</sup> 0.60 watts/cm <sup>3</sup>
<b>Peak Energy</b>	4920 joules/in <sup>3</sup> 300 joules/cm <sup>3</sup>	100 joules/in <sup>3</sup> 6 joules/cm <sup>3</sup>
<b>Maximum Voltage</b>	10 KV/in 4 KV/cm	8 KV/in 3 KV/cm
<b>Maximum Temp.</b>	250°C	120°C
<b>Voltage Coefficient</b>	-0.3% to -7.5% / volt	-0.5% to -10% / volt
<b>Temp. Coefficient</b>	-0.03% to -0.16% / °C	0% to -0.25% / °C

## Contact Us

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## Manufacturer of Special-Purpose & Industrial Resistors

**U.S. Resistor, Inc.** was formed from the sale of the Special Purpose and Industrial Resistor Division of the Stackpole Corporation to St. Marys Carbon in 1992. U.S. Resistor utilizes 32,000 square feet of manufacturing space to produce a wide array of non-inductive resistors utilized in many diverse applications.

We serve industries such as power transmission and distribution, military, research, medical, windpower, industrial, and automotive. U.S. Resistor is ISO certified, manufacturing High Voltage, High Power Resistors from small quantities to large quantities.

## Applications

Special purpose and industrial resistors cover a wide range of applications, including high-voltage and high energy surges. Large ceramic resistors are the perfect answer for use in circuit breakers. Resistors inserted at high-voltage load points, such as spark plugs, distributor points, or coil leads, will limit spurious high frequency signals from being emitted or carried on transmission lines.

- Rods may be used in large high-impulse power circuit breaker resistors, small RFI suppression resistors, and general purpose resistors.
- Rings become part of lightning arrestors, small heaters, automotive horn button resistors, thermostat controls, and other resistors where center mounting is required.
- Discs are used where solid rings are required.
- Sleeves are for applications such as RF coaxial terminating resistors, low temperature heaters, and high power carrying resistors where large surface-to-volume ratios are needed.

## Surge Protection & Dummy Loads

U.S. Resistor materials offer excellent protection in any electrical apparatus where electrical spikes of high energy are unwanted. One example is line chokes or dummy loads used in some radios to absorb transmission interference.

## Circuit Breakers

As safety devices for the protection of valuable equipment, ceramic resistors can absorb and dissipate high energy surges. Resistor size can vary from very small to as large as 6.0" diameter x 1.5" in thickness.

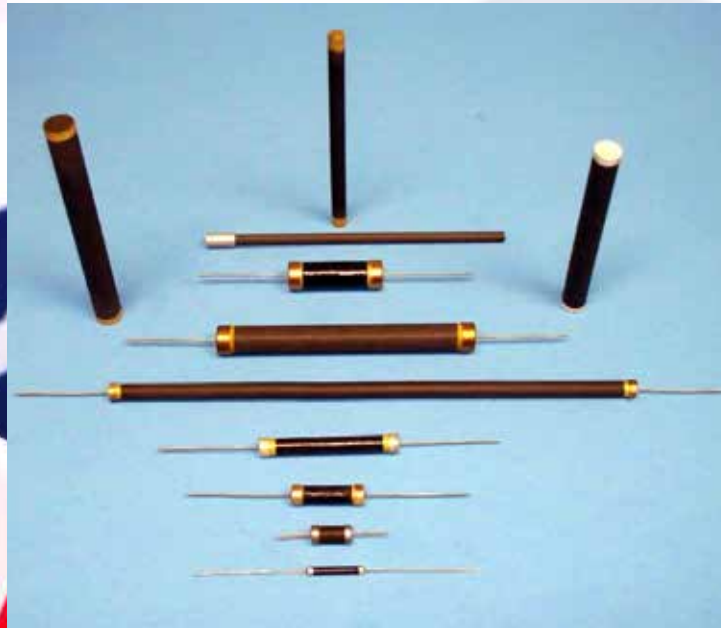
## Voltage Dropping & Suppression

These resistors are used to decrease line voltage to a usable operating voltage. Applications are found in specialty lighting equipment and thermostats.

## Lightning Arrestors

These resistors can be used as a protective device to sidetrack or absorb electrical energy from lightning striking a receiving or transmitting antenna. The protective circuit routes the current directly to ground and prevents electrical burnout.

## Axial Leads & Small Diameter Rods



## Rods & Tubes



## Resistor Assemblies



## Discs & Washers

