

# 7282 PTC Carbon Resistor

Thick Film Composition

All values reported here are results of experiments in our laboratories intended to illustrate product performance potential with a given experimental design. They are not intended to represent the product's specifications.

## Product Description

Carbon-based PTC resistor paste 7282 can be used in self-regulating heating devices (<80°C). The Positive Temperature Coefficient (PTC) of the cured film can be used to design circuits which heat up quickly to an equilibrium temperature and then stabilize at that temperature without external controls.

## Product Benefits

- Self-thermostating temperature control
- Power reduction at operating temperature
- Fast warm-up to operating temperature

## Self-Regulating Features

For heating/de-misting applications, the required circuit resistance is designed around the approximate 15K paste by placing varying geometry resistors in series or parallel. Depending on the power applied and the ambient temperature, when the circuit is powered up, it will rapidly heat and self-regulate at the designed operating temperature. At this point, a considerable increase in resistance will have occurred and a lower power consumption will result.

## Processing

### Screen Printing Equipment

Semi-automatic or manual

### Screen Types

Polyester, stainless steel

### Typical Cure Conditions

Box oven: 120-130°C for 5 minutes

Table 1  
Typical Physical Properties

Sheet Resistivity (KΩ/sq)	12.0 - 21.0
TCR approx. (25-125°C) ppm/°C	> 25,000
Adhesion/Tape Pull (3M Scotch Tape # 600)	No Material Transfer

Table 2  
Composition Properties

Viscosity (Pa.S) (Brookfield RVT, UC&SP, 10 rpm, 25°C)	15 - 70
Thinner	8211 Dibutyl carbitol

**Typical Circuit Line Thickness Printed width  
280-mesh Stainless Steel Screen**  
7-10 microns

### Clean-up Solvent

Ethylene glycol diacetate

### Storage and Shelf Life

Containers should be stored, tightly sealed, in a clean, stable environment at room temperature (<25°C). Shelf life of material in unopened containers is six months from date of shipment. Some settling of solids may occur and compositions should be thoroughly mixed prior to use.

## Safety and Handling

DuPont thick film products are intended for industrial use by trained personnel. These products contain organic and inorganic ingredients. It is important for workers to avoid overexposure to chemicals contained in these products or that might be become available when processing them. Overexposure to other materials used in the operation should also be avoided, for example, cleaning solvents and degreasing fluids.

Well-designated area and personal air sampling/analysis can show if exposures are within required and recommended limits. Properly designed engineering controls, such as local ventilation and process enclosures, are effective in limiting employee exposure and to avoid the creation of hazardous conditions (e.g. forming an explosive vapor concentration). Engineering controls and procedures must comply with all applicable federal, state and local safety, health and environmental laws and regulations.

The following additional precautions should be taken when handling these products:

- Read the Material Safety Data Sheet (MSDS) and product labels before using the products;
- Use appropriate personal protective equipment (PPE) and practice good industrial hygiene. **DO NOT INGEST! DANGEROUS IS SWALLOWED!**
- Keep product container closed when not in use to prevent solvent evaporation and spilling hazards;
- If contact with skin occurs, wash affected area immediately with soap and water;
- Avoid prolonged breathing of vapors and dust/particulates. Keep exposure levels within the required or recommended limits. Always use sufficient ventilation as noted above.

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**Caution:** Do Not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement," H-50102

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