

EVANOHM[®] R



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Evanohm[®] R is a unique resistance alloy with high electrical resistivity and very low temperature coefficient of resistivity (TCR). The alloy is produced by melting and conditioning practices which result in a low level of pinholes at ultra-thin thicknesses. This combination of attributes with inherent corrosion resistance makes it suitable for a variety of strain gauge and foil resistor applications.

GENERAL INFORMATION

The alloy is supplied with 90% cold reduction which has a positive TCR of about 70 PPM/°C. A stabilizing heat treatment (approximately 475°C) during manufacture of finished parts adjusts the TCR to a desired value. The heat treatment virtually eliminates any drift tendency of the resistivity. A heat-treat curve for each melt is developed at Hamilton and is made available as a guide in regulating TCR. A typical heat-treat curve is shown in Figure 1.

AVAILABILITY

Evanohm[®] R is available from Hamilton Precision Metals as foil and strip product in thicknesses from 0.0005" to 0.010" (0.0127 mm to 0.254 mm) and in widths up to 12.0" (304.8 mm) maximum. It is available in foil as thin as 0.000100" (0.00254 mm) in widths of 4.0" (101.6 mm) maximum.



Technical Data

TYPICAL MECHANICAL PROPERTIES ¹			
	ANNEALED	COLD ROLLED	HEAT TREATED
Ultimate Tensile Strength	120,000 PSI	200,000 PSI	240,000 PSI
Yield Strength (0.2% Offset)	70,000 PSI	195,000 PSI	235,000 PSI
Elongation in 2" *	30%	1%	1%

*The measured elongation will be less as thickness decreases to 0.002" and less.

¹ These values may be adjusted by control of process variables – consult HPM for desired values.

PHYSICAL PROPERTIES ²	
Density	0.293 lbs/cu.in.
Melting Point (Approx.)	1350°C
Electrical Resistivity @ R.T.	133 Microhm · cm
Temperature Coefficient of Resistivity (TCR) (-55°C to 105°C) - Heat Treated	±10 PPM/°C
Thermal Expansion Coefficient (20°C to 100°C)	13 X 10 ⁻⁶ /°C
Thermal EMF vs. Copper (0°C to 100°C)	<1.0 Microvolts/°C
Thermal Conductivity @ R.T.	14.6 W/m · K
Magnetic Attraction	None
Specific Heat	0.104 gram · cal./°C

² Typical values to guide alloy selection but are not a guarantee of minimum or maximum.

NOMINAL COMPOSITION	
Chromium	20.0%
Aluminum	2.8%
Copper	2.0%
Silicon	1.0%
Manganese	0.90%
Zirconium	0.08%
Nickel	Balance

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