



Home > Product Information > Electric Resistance Materials > Enameled Resistance Wire

# Enameled Resistance Wire

## The features of enameled resistance wire

Using our enamel coating insulation technology which we have been developing since our company's foundation in 1916, we supply the following enameled resistance wires.

1. Copper Nickel resistance wire (CN5W,CN10W,CN15W,CN30W,CN49W) [Details](#)
2. Nickel Chromium electric resistance wire Class 1, Class 2 (NCHW-1, NCHW-2) [Details](#)
3. Precision resistance wire, Manganin wire. [Details](#)
4. Precision resistance wire, Karmalloy wire. [Details](#)

These enameled resistance wires have been broadly used for standard resistors, automobile parts, winding resistors, etc. using the insulation processing best suited for these applications, taking full advantage of the distinctive features of enamel coating. Furthermore, we will carry out enamel coating insulation of precious metal wire such as silver and platinum wire upon order. Please make use of this production-on-order.

- [List of resistance values](#)
- [List of insulation types](#)

Product List
<a href="#">Electric Resistance Materials</a>
<a href="#">Copper Nickel Electric resistance materials</a>
<a href="#">Nickel Chromium Electric resistance materials</a>
<a href="#">Precision resistance material Manganin</a>
<a href="#">Precision resistance material Karmalloy</a>
<a href="#">Enameled resistance wire</a>

Explanation of each symbol

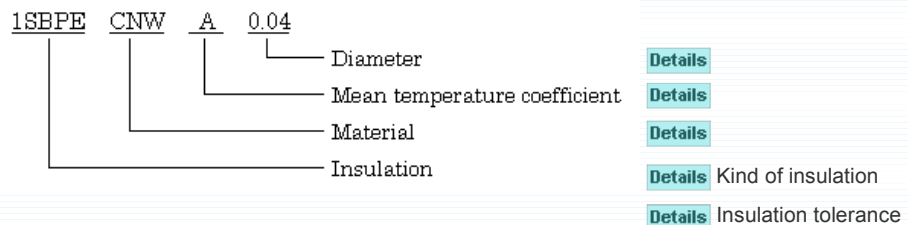


Table 8 Types and Features of Enamelled Coating of Resistance Wire

Name	Symbol	Temperature class °C	Feature
Polyvinyl fluoride	PVF	105	<ul style="list-style-type: none"> <li>● It has high flexibility, and the coating has excellent mechanical strength.</li> <li>● It has high durability during processing and high windability.</li> <li>● It has high chemical and solvent resistance.</li> <li>● Coating must be stripped before any soldering.</li> </ul>
Polyurethane	UE	105	<ul style="list-style-type: none"> <li>● It has excellent workability, since soldering possible without stripping insulation.</li> <li>● Soldering at the temperature 380 °C is possible.</li> <li>● It has high chemical resistance.</li> <li>● It has high colorability, and wires in various colors are available.</li> </ul>
Polyester	PE	155	<ul style="list-style-type: none"> <li>● It has high heat resistance, and is widely usable in various products.</li> <li>● It has high chemical and solvent resistance.</li> <li>● Caution required where used in airtight equipment, as it has low hydrolysis resistance.</li> <li>● Coating must be stripped before any soldering.</li> </ul>
Polyamide imide	PAI	200	<ul style="list-style-type: none"> <li>● It has high heat resistance, and also has excellent electric, chemical, and mechanical characteristics.</li> <li>● It has high wear and abrasion resistance, high refrigeration resistance, and high moisture resistance.</li> <li>● It can be safely used in electric products that require high heat resistance.</li> <li>● It has high durability against rough use because of its slippery surface.</li> <li>● Coating must be stripped before any soldering.</li> </ul>
Self bonding enamel	ISB	80 (Where bonding strength is 1/2 that at room temperature)	<ul style="list-style-type: none"> <li>● The bonding initiation temperature is 120 ~ 130 °C. (bonding by hot air flow possible)</li> <li>● After enameling of the coating, self-bonding enameling is carried out.</li> <li>● More stable bonding of the coating achieved with heat treatment at 120 ~ 130 °C after the winding of insulation material.</li> </ul>

Table 9 Various Features of the Enamelled Coating of Resistance Wire

Symbol	Insulation property	Flexibility	Softening resistance	Shock resistance	Wear and abrasion resistance	Moisture resistance	Acid - resistance	Alkali resistance	Colorability	Solderability
PVF	⊙	○	○	○	○	△	△	○	×	×
UE	⊙	○	○	○	△	△	⊙	⊙	○	⊙
PE	⊙	⊙	○	⊙	○	△	⊙	○	×	×
PAI	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	×	×

Table 10 Tolerance of insulation enameled resistance wire

Diameter mm	Enameled resistance wire	
	min. Thickness of insulation mm	max. Overall diameter mm
0.025	0.003	0.037
0.030	0.003	0.044
0.040	0.003	0.056
0.050	0.004	0.069
0.060	0.004	0.081
0.070	0.004	0.091
0.080	0.005	0.103
0.090	0.005	0.113
0.100	0.005	0.125
0.110	0.005	0.135
0.120	0.006	0.147
0.150	0.006	0.177
0.160	0.007	0.189
0.180	0.008	0.211
0.200	0.008	0.231
0.230	0.009	0.264
0.250	0.009	0.284
0.280	0.009	0.314
0.300	0.010	0.337
0.320	0.010	0.357
0.350	0.010	0.387
0.400	0.011	0.439
0.450	0.011	0.490
0.500	0.012	0.542
0.550	0.012	0.592
0.600	0.012	0.644
0.650	0.012	0.694
0.700	0.013	0.746
0.750	0.014	0.798
0.800	0.015	0.852
0.850	0.015	0.904
0.900	0.016	0.956
1.000	0.017	1.062