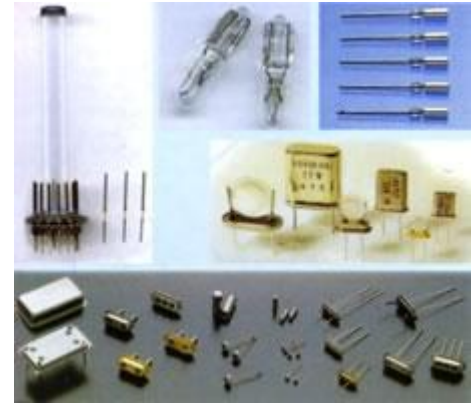


## From the heating wire to the precision machinery.

### Responding to customer's needs by excellent accuracy

IC advanced by miniaturizing and making to large-scale integration. An excellent characteristic in respects of thermal conductivity and the thermal expansion coefficient, etc. is requested from the material that supports the ultra-advanced technology of micro. The Nippon Koshuha's materials for the electronic part have low thermal expansion and good seal wear, and achieve the stable thermal expansion coefficient. It receives high appraisal as materials such as the precision machinery component, lead frames, and magnetic shielding. The electric heat materials have small difference of the volume resistivity. Moreover, the materials have corrosion resistance, heat resistance, and the workability, and are used as parts such as hot plates and resistors. Nippon Koshuha's and electron and electrothermal material have various usages by the high quality to which the manufacturing technology with results crystallizes and are recommended.



Special alloy wire

Arrester product

#### Electrothermal material

Class	grade	Equivalent alloy	Principal chemical composition	Volume resistivity ( $\mu\Omega/\text{cm}^3$ )	Highest working temperature $^{\circ}\text{C}$	Mechanical property		Example of usage
						Tensile strength ( $\text{N}/\text{mm}^2$ )	elongation (%)	
Nicorm	<b>KTA-NC1</b>	NCHW-1	80Ni-20Cr	108 $\pm$ 6	1100	690~780	20 or more	Electric heat wire
	<b>KTA-NC2</b>	NCHW-2	60Ni-17Cr-Fe	112 $\pm$ 6	1000	590~680	20 or more	

#### Low thermal expansion, and seal wear material

Class	Grade	Equivalent alloy	Principal chemical composition	Thermal expansion coefficient up to $100^{\circ}\text{C}(\times 10^{-6}/^{\circ}\text{C})$	Thermal conductivity ( $\text{cal}/\text{cm} \cdot \text{S} \cdot ^{\circ}\text{C}$ )	Volume resistivity ( $\mu\Omega/\text{cm}^3$ )	Curie point ( $^{\circ}\text{C}$ )	Example of usage
Low and thermal expansion raw material	<b>KTA-IN</b>	INVAR	36Ni-Fe	0.5~2.0	0.033	80	225	Precision machinery part, Bimetal low expansion material
	<b>KTA-SI</b>	SUPER INVAR	32Ni-4Co-Fe	0.01~0.5	-	78	-	

Seal wear raw material	<b>KTA-KV</b>	KOVAR	29Ni-17Co-Fe	5.1~5.5	0.040	49	435	Lead frame, Dumet wire, Magnetic shielding
	<b>KTA42N</b>	42Ni	42Ni-Fe	6.4~7.4	0.035	70	375	
	<b>KTA46N</b>	46Ni	46Ni-Fe	8.2~8.9	0.027	45	450	
	<b>KTA52N</b>	52Ni	52Ni-Fe	9.6~10.1	0.032	43	510	
	<b>KTA426</b>	42Ni-6Cr	42Ni-6Cr-Fe	9.7~10.4	0.029	95	295	

The trademark quoted on this page and the proprietary rights are as shown in the following.

Trade mark	Name of the company	Trade mark	Name of the company
DISCALOY	Westinghouse Electric	KOVAR	Carpenter technology
ELINVAR	Imphy Alloys	MONEL	INCO Alloys
HASTELLOY	Haynes International	NIMONIC	INCO Alloys
INCONEL	INCO Alloys	NISPANC	INCO Alloys
INCOLOY	INCO Alloys	WASPALOY	United Technologies.
INVAR	Imphy Alloys		