



Kovar

1. Brief introduction:

It's Ni-Fe-Co controlled-expansion alloy with Ni29% nominal value.

Its coefficient of expansion matches the expansion rate of borosilicate glasses and alumina ceramics.

It's used for glass-to-metal seals applications, for example:high-power transmitting valves, transistor leads and headers, integrated-circuit lead frames and photography flash bulbs.

2. Main specifications:

Chinese grade	UNS	ASTM	DIN	Werkstoff Nr.	Germany	Russia	UK
4J29	K94610(FeNi29Co17)	F15	17745	1.3981	Silvar 48	29HK	Nilo K

3. Chemical composition under YB/T5231-2005 standard:

Grade	chemical composition,%										
	C	P	S	Mn	Si	Cu	Cr	Mo	Ni	Co	Fe
	MAX										
4J29	0.03	0.02	0.02	0.5	0.3	0.2	0.2	0.2	28.5~29.5	16.8~17.8	Remainder

Remarks: If require adjustments for some chemical compositions, pls consult with us.

4. Tensile strength under YB/T5231-2005 standard:

delivery condition	Tensile strength of strip ,N/mm2	Tensile strength of wire,N/mm2
soft	<570	<585
Hard 1/4	520-630	585-725
Hard 1/2	590-700	655-795
Hard 3/4	600-770	725-860
Hard	>700	>860



5. Typical average linear expansion coefficient value $\alpha_{10-6}/^{\circ}\text{C}$:

Grade	20°C~100°C	20°C~200°C	20°C~300°C	20°C~400°C	20°C~450°C	20°C~500°C	20°C~600°C	20°C~700°C	20°C~800°C
4J29	-	5.9	5.3	5.1	5.3	6.2	7.8	9.2	10.2

6. Main product types:

wire,rod, bar,strip, plate/sheet,tube,capillary tube, ring,forging.

7. Kovar Source URL:

<https://www.hitealloy.com/product/kovar-4j29.html>