



Brand Name	ISA®-NiFe 126 *		
Material Code	acc. ASTM B267 Alloy class 8		
Abbreviation	NiFe28		
Chemical Composition (mass components) in %.			
Average values of alloy components			
Ni	Fe	Mn	
Rem.	28	0.5	

Features and Application Notes

ISA®-NiFe 126 is well known for having a high temperature coefficient at a relatively high resistivity. Up to +610 °C, this alloy is ferromagnetic. It is mainly used in wire form for temperature-dependent resistors. Also for shielded resistors for spark-plug connectors as well as self-regulating heaters. The maximum working temperature in air is +600 °C.

Form of Delivery

ISA®-NiFe 126 is supplied in the form of round wires in the range 0.02 to 0.25 mm Ø in bare or enamelled condition and also in the form of stranded wires.

Electrical Resistance in Annealed Condition

Temperature coefficient of electrical resistance between	Electrical resistivity in: $\mu\Omega \times \text{cm}$ (first line) and Ω/CMF (second line) Reference Values					
0 °C and +100 °C 10 ⁻⁶ /K	+20 °C tolerance $\pm 5\%$	+100 °C	+200 °C	+300 °C	+400 °C	+500 °C
approx. +4,500	21	28	38	48	59	71
	126	168	229	289	355	427

Physical Characteristics (Reference Values)

Density at +20 °C	Melting point	Specific heat at +20 °C	Thermal conductivity at +20 °C	Average linear thermal expansion coefficient between +20 °C and		Thermal EMF against copper at
				+100 °C	+400 °C	+20 °C
g/cm³	°C	J/g K	W/m K	10⁻⁶/K	10⁻⁶/K	$\mu\text{V/K}$
8.45	+1,450	0.52	17	15	15	-39

Strength Properties at +20 °C in Annealed Condition

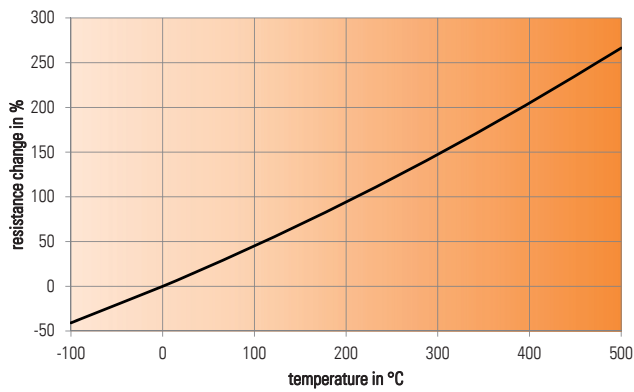
Tensile Strength ¹⁾		Elongation ($L_0 = 100 \text{ mm}$) % at nominal diameter in mm				
MPa	psi	0.020 to 0.063	> 0.063 to 0.125	> 0.125 to 0.50	> 0.50 to 1.00	> 1.00
650	94,250	≈ 8	≈ 15	≈ 20	≥ 20	≥ 30

Notes on Treatment // ISA®-NiFe 126 can easily be spot-welded. Under certain conditions it can also be soldered and brazed (see Technical Information).

Special Remarks on the Temperature Coefficient // The variation of the electrical resistance vs. temperature in the range between -100 and +500 °C, referred to 0 °C, is shown in graph 1.

1) This value applies to wires of 0.5 mm diameter. For thinner wires the minimum values will substantially increase, depending on the dimensions.

* Formerly NiFe28



Graph 1: Electrical resistance vs. temperature (range -100 °C to +500 °C)

Nominal Diameter	Cross Section	Weight per 1,000 m	DC Resistance Referred to Length at +20 °C Ω/m			
mm	mm ²	g	Nominal Value	Tolerance	Minimum Value	Maximum Value
0.020	0.0003142	2.65	668	±10 %	602	735
0.022	0.0003801	3.21	552		497	608
0.025	0.0004909	4.15	428		385	471
0.028	0.0006158	5.20	341		307	375
0.030	0.0007069	5.97	297		273	321
0.032	0.0008042	6.80	261	±8 %	240	282
0.036	0.001018	8.60	206		190	223
0.040	0.001257	10.6	167		154	180
0.045	0.001590	13.4	132		121	143
0.050	0.001963	16.6	107		98	116
0.056	0.002463	20.8	85.3		78.4	92.1
0.060	0.002827	23.9	74.3		68.3	80.2
0.063	0.003117	26.3	67.4		62.0	72.8
0.070	0.003848	32.5	54.6		50.2	58.9
0.071	0.003959	33.5	53.0		48.8	57.3
0.080	0.005027	42.5	41.8	±7 %	38.4	45.1
0.090	0.006362	53.8	33.0		30.4	35.7
0.100	0.007854	66.4	26.7		24.6	28.9
0.110	0.009503	80.3	22.1		20.6	23.6
0.112	0.009852	83.2	21.3		19.8	22.8
0.120	0.01131	95.6	18.6		17.3	19.9
0.125	0.01227	104	17.1		15.9	18.3
0.130	0.01327	112	15.8		14.7	16.9
0.140	0.01539	130	13.6		12.7	14.6
0.150	0.01767	149	11.9		11.1	12.7
0.160	0.02011	170	10.4	±6 %	9.71	11.2
0.180	0.02545	215	8.25		7.67	8.83
0.200	0.03142	265	6.68		6.28	7.09
0.220	0.03801	321	5.52		5.19	5.86
0.224	0.03941	333	5.33		5.01	5.65
0.250	0.04909	415	4.28		4.02	4.53

