

GENERAL INFORMATION

Alloys for heaters make special group of alloys which differ in combination of heat resistance and high electric resistance. It is necessary to admit such combination as rare, because achievement of each of specified properties separately is a difficult task.

Heat resistance is the most important parameter, which is predetermining service durability of heaters. More strict requirements are imposed on heat resistance of alloys for heaters, than to structural steels and alloys, namely, it is necessary more high working temperature – up to 1400°C.

SPECIALTY OF NICHROME

Nichroma – generalizing name of a class of the nickel-based alloys intended for manufacture of resistors and heating elements.

The manufacturing techniques of a cold-drawn nichrome wire of grade Nichroma® provide uniform structure, uniformity of a protective oxidic layer and its high durability. The high plasticity of a wire, lack of tendency to intercrystallite high-temperature corrosion, a high limit of creep resistance, and also stability against oxidation, sulfidization and carburizing at the increased temperatures are guaranteed because of lowered content of carbon.

Alloy **Nichroma®80H** is widely used for production of heating elements in high-temperature electric furnaces, furnaces for annealing and drying, various electric devices of thermal action.

Nichroma®80H – Due to modern and advanced technologies in production, **Nichroma®80H** wire differs in higher quality of surface (lack of cracks, tears, rippling, impressions, folds, shells), less content detrimental impurities (Mn, Fe, S, P), high ductility, that finally results in higher durability and considerably bigger service life of products from **Nichroma®80H**. Maximal working temperature – 1250°C.

Classification	
DIN	2.4869
UNS	N06003

Chemical composition, %				
Ni	Cr	C	Mn	Si
rest	19.0-21.0	≤0.06	≤0.6	1.0-1.5
Fe	Cu	Al	REE	
≤1.0	≤0.5	≤0.2	0.01-0.04	

Mechanical properties at 20°C	
Diameter, mm	Elongation, %, not less
0,12 – 0,5	18
0,5 – 1,00	18
1,0 – 12,0	25

CREEP CHARACTERISTICS	
Temperature, °C	Creep resistance, 10 ⁻⁶ /K
600	80
800	15
1000	4
1200	0,5

PHYSICAL PROPERTIES

Temperature, °C	Resistance μΩm	Exten. 10 ⁻⁶ /K
20	1,12	-
200	1,13	14,0
400	1,15	15,0
500	1,16	15,4
600	1,15	15,5
800	1,14	16,0
1000	1,15	17,0
1200	1,17	-

PROCESSING PROPERTIES

Melting point	1400°C
Density	8,4 g/cm ³
Heat conductivity	14,6 W/m·K
Elastic modulus	200 KN/mm ²
Maximal work temperature	1250°C
Operating time	4500 hours

The electric and enameling furnaces, heaters, annealing furnaces with the changing atmosphere, powerful heating elements