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.

Nichroma ®80H, Nichroma ®80, Nichroma ®70, Nichroma ®60 и Nichroma ®30 have high specific electric resistance and are used in electroheating furnaces for all industries, in furnaces for annealing and drying, in household appliances and thermal action devices.

Alloy Nichroma ®80 has good indicators of air oxidation resistance, especially in the conditions of frequent heatchanges or considerable temperature drops. Alloy has density 8,31 g/cm^3 and melting point 1400°C. Nichroma®80 wire is used at working temperature up to 1200°C. Alloy is used for maintenance of maximal temperatures, with cyclic heating and cooling

Classification	
DIN	2.4869
UNS	N06003

Chemical composition, %				
Ni	**Cr**	**C**	**Mn**	**Si**
rest	19.0-21.0	≤0.10	≤0.7	1.0-1.75
Fe	**Cu**	**Al**	**REE**	
≤1.5	≤0.5	≤0.3	≤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	8,31 g/cm^3
Heat conductivity	13,4 W/m·K
Elastic modulus	200 KN/mm^2
Maximal work temperature	1200°C
Operating time	4300 hours

APPLICATION

Alloy is used for maintenance of maximal temperatures, with cyclic heating and cooling