



# SUPERALLOY SN254708 SPECIFICATIONS

## 1. Overview

SN254708 is the new type of nickel-base aging alloy with good high temperature strength. It has excellent oxidation resistance and limited weldability and it can be used for a long period up to 900 °C.

### 1.1. Material Grade

SN254708

### 1.2. Similar grades

XH62BMIOT-BД(ЭП708-BД) (Russia)

### 1.3. Technical Standard material

GB/T 14992-2005 - Classification and designation for superalloys and high temp. intermetallic materials

### 1.4. Chemical composition

C	Cr	Ni	Co	W	Mo	Al	Ti	Fe	B	Ce	No more than			
											Si	Mn	P	S
0.05~0.10	17.5~20.0	Rest	<0.5	5.5~7.5	4.0~6.0	1.9~2.3	1.0~1.4	<4.0	<0.008	<0.03	0.4	0.5	0.015	0.015

### 1.5. Heat Treatment

State	Solution treatment	Aging
Cold-rolled sheet	1140°C, air-cooled	800°C, 15h, air-cooled
Bar	1140°C, air-cooled	800°C, 15h, air-cooled

### 1.6. Product Form

These alloys available in bar, sheet.

### 1.7. Applications

Used for steam, gas and hydraulic turbines due to increasing demands on strength, durability and ability to withstand extreme loads.

## 2. Physical Properties

### 2.1. Thermal Performance

2.1.1. Thermal Conductivity -  $\lambda = 10.4 \text{ W/(m}\cdot\text{°C)}$

2.1.2. Coefficient of linear expansion -  $\alpha = 11.3 \cdot 10^{-6} \cdot \text{°C}^{-1}$

2.2. Density -  $\rho = 8.55 \text{ g/cm}^3$



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## 3. Mechanical Properties

### 3.1. Performance of technical standards

State	Tensile Properties					
	$\theta/^\circ\text{C}$	$\sigma_b/\text{MPa}$	$\sigma_{0.2}/\text{MPa}$	$\delta_5/\%$	$\varphi/\%$	Impact
Cold-rolled sheet	20	1078		15		
	800	670		10		
Bar	20	1100	700	18	20	46J
	800	700	600	14	25	

### 3.2. Durability and creep properties

#### 3.2.1. Durability properties

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	Time [hours]
Colled-rolled plate	700	400	690

#### 3.2.2. High temperature creep properties

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	Time [hours]	$\delta_5/\%$
Colled-rolled plate	700	560	100	0.889

#### 3.2.3. Fatigue performance

Material	$\theta/^\circ\text{C}$	$\sigma/\text{MPa}$	N [no. of times]
Bar	500	380	>10E7

### 3.3. Elastic properties

#### 3.3.1. Modulus of elasticity

Dynamic [ $E_D$ ] modulus of elasticity at different temperatures.

$^\circ\text{C}$	20	310
$E_D$ [GPA]	218	161