

STEEL GRADE

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12NiCrMo13-6*

All

General Information

12NiCrMo13-6* or 9313 as it is also named in US standards is a case hardening steel used in forgings to eg rock drilling tools.

For additional Heat Treatment Data, please visit the Heat Treatment Guide.

* Designation followed by "*" is not an official EN standard grade but named according to the rules in EN 10027.

Similar designations

AISI 9313

Chemical composition

Variant	Cast	Weldability		C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Cu %
254R	IC	CEV 0.8 _{max}	Min	0.11	0.20	0.65	-	-	1.40	3.15	0.10	-
		Pcm 0.33 _{max}	Max	0.15	0.26	0.75	0.010	0.015	1.50	3.35	0.14	0.25
4708	CC	CEV 0.76 _{max}	Min	0.11	0.20	0.60	-	-	1.35	3.15	0.10	-
		Pcm 0.3 _{max}	Max	0.14	0.35	0.70	0.015	0.015	1.45	3.35	0.14	0.25

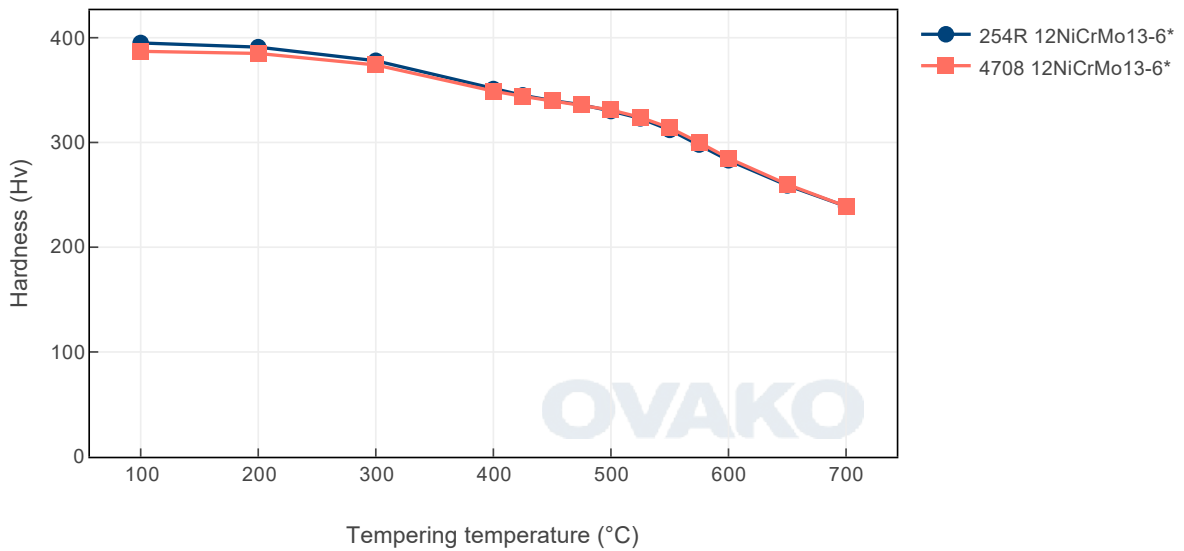
Transformation temperatures

	Temperature °C
MS	386
AC1	693
AC3	806

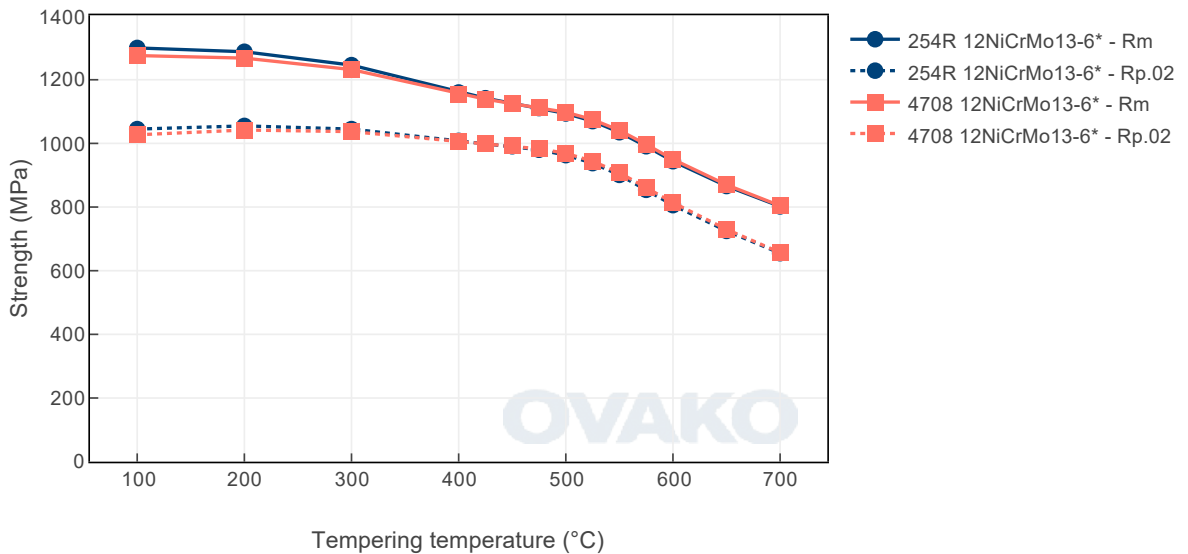
Heat Treatment Guide generated Graphs

The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.

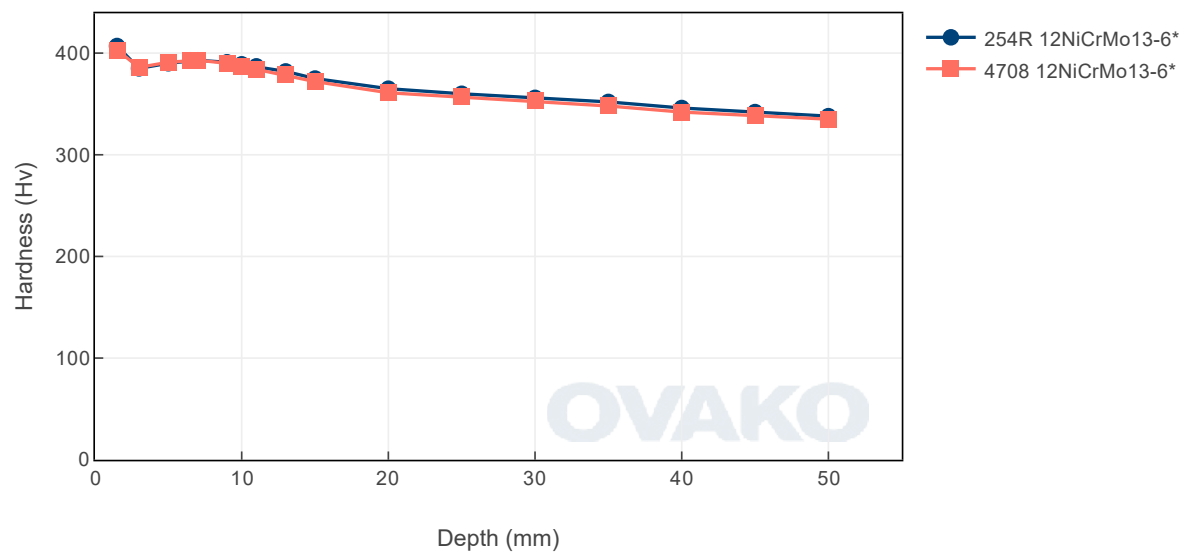
Tempering Diagram (hardness)



Tempering Diagram (strength)



Jominy



SUSTAINABILITY-ENVIRONMENTAL IMPACT DATA

At Ovako sustainability and reduction of our environmental impact is a major focus in everything we do.

Further information is found [here](#).

Steel works	Hofors	Smedjebacken	Imatra
CO2e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO₂ emission sources.

Not only the steel work Scope 1-2 itself, but all operations downstream in our production, heating and heat treatment furnaces etc (full scope 1-2) as well as all the emission from input material, eg. alloys, scope 3.

Steel Grade	Format	Condition	Scope 1-3 (CO2e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO2e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
254R	Round bar	+AR	1179	780
254R	Round bar	+A	1186	785
254R	Tube,wall	+AR	1245	847
254R	Tube,wall	+A	1247	850
4708	Round bar	+AR	1043	740

All above data are to be seen as typical values for the specified format and condition. Detailed information about your specific product please contact your sales contact.

Other properties (typical values)

Youngs module (GPa)	Poisson 's ratio (-)	Shear module (GPa)	Density (kg/m3)
210	0.3	80	7800
Average CTE 20-300°C (µm/m°K)	Specific heat capacity 50/100°C (J/kg °K)	Thermal conductivity Ambient temperature (W/m°K)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

Contact us

Would you like to know more about our offers? Don't hesitate to contact us:

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For more detailed information please visit <http://www.ovako.com/en/Contact-Ovako/>

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