Material data sheet
Steel grade

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# 25CrMnSiMo7-4-4* All

## General Information

The steel grade 25CrMnSiMo7-4-4* is a high-strength steel grade suitable for water quenching. It is designed for demanding applications such as rock demolition tools.

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

## Chemical composition

| Variant | Cast | Di | Weldability | | C % | Si % | Mn % | P % | S % | Cr % | Ni % | Mo % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 375J | IC | | CEV $0.889_{max}$ | Min | 0.23 | 0.80 | 1.00 | - | - | 1.65 | 0.20 | 0.15 |
| | | | Pcm $0.466_{max}$ | Max | 0.27 | 1.05 | 1.20 | 0.025 | 0.015 | 1.95 | 0.35 | 0.20 |
| 5910 | CC | 8.8 | CEV $0.85_{max}$ | Min | 0.23 | 0.80 | 1.00 | - | - | 1.65 | 0.20 | 0.15 |
| | | | Pcm $0.44_{max}$ | Max | 0.27 | 1.05 | 1.20 | 0.025 | 0.015 | 1.95 | 0.35 | 0.20 |

## Mechanical Properties

| Variant | Condition | Format | Dimension [mm] | Yield strength min [MPa] | Tensile strength [MPa] | Elongation $A_5$ [%] | Reduction of area $Z_{min}$ [%] | Hardness | Impact (ISO-V) $strength_{min}$ |
|---|---|---|---|---|---|---|---|---|---|
| 5910 | +AR | Round bar | 30 < 140 | - | - | - | - | < 340 HB | - |
| | +A | Round bar | 30 < 140 | - | - | - | - | < 248 HB | - |
| | +QT | Round bar | 30 < 140 | 1200 | 1400-1600 | 10 | 30 | 420-470 HB | 20 °C 30 J (long) |

$Rp_{0.2}$ * $R_{eh}$, ** $R_{el}$

## Transformation temperatures

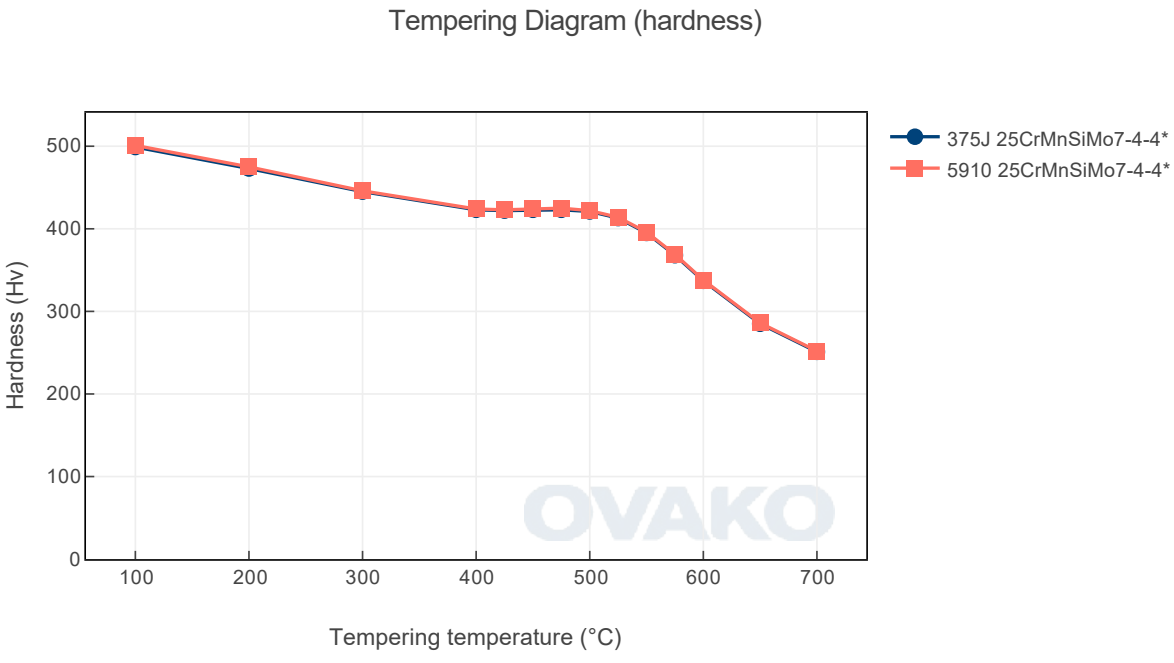
| | Temperature °C |
|---|---|
| MS | 365 |
| AC1 | 765 |
| AC3 | 840 |

## Heat treatment recommendations

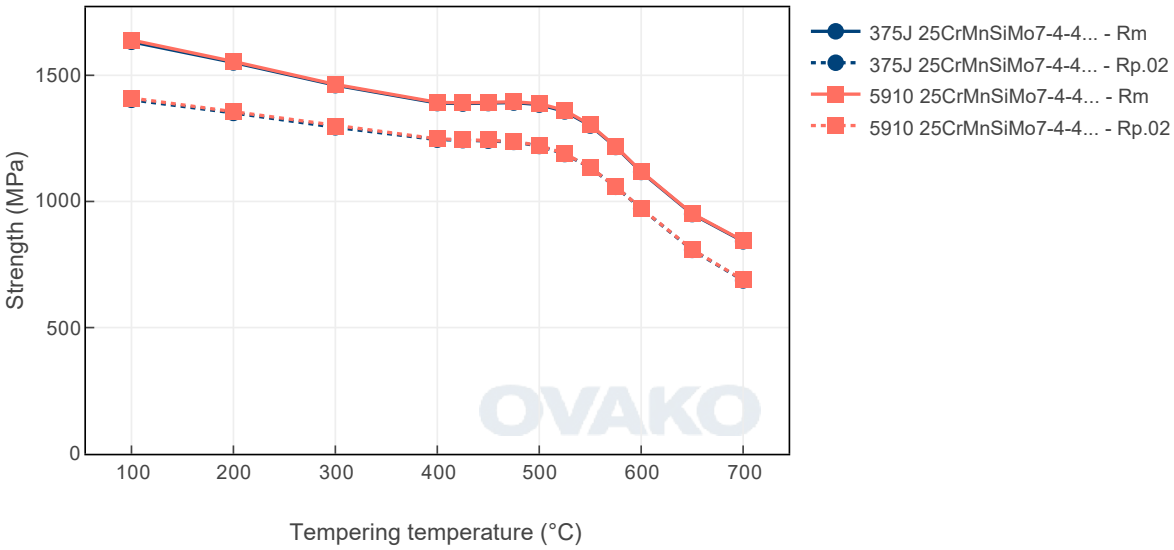
| Treatment | Condition | Temperature cycle | Cooling/quenching |
|---|---|---|---|
| Hot forging | +AR | Soaking at 1000 - 1200ºC | In air |
| Normalizing | +N | Soaking at 880 - 920ºC | In air |
| Hardening | +QT | Soaking at 860 - 920ºC | In water or polymer |
| Tempering | +Q | Soaking at 180 - 300ºC 1h | In air |

## Heat Treatment Guide generated Graphs

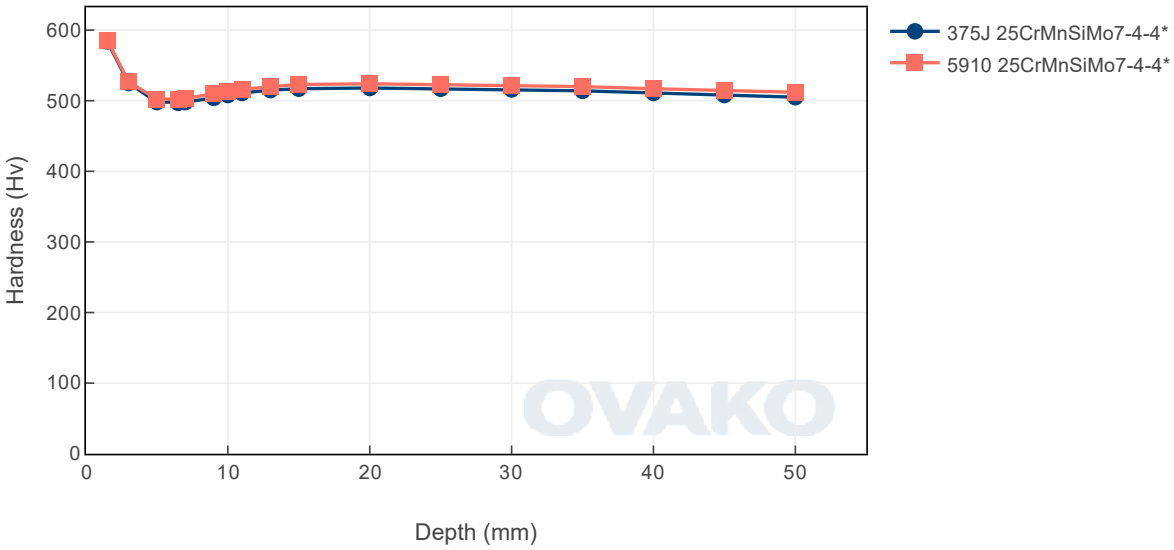
The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.



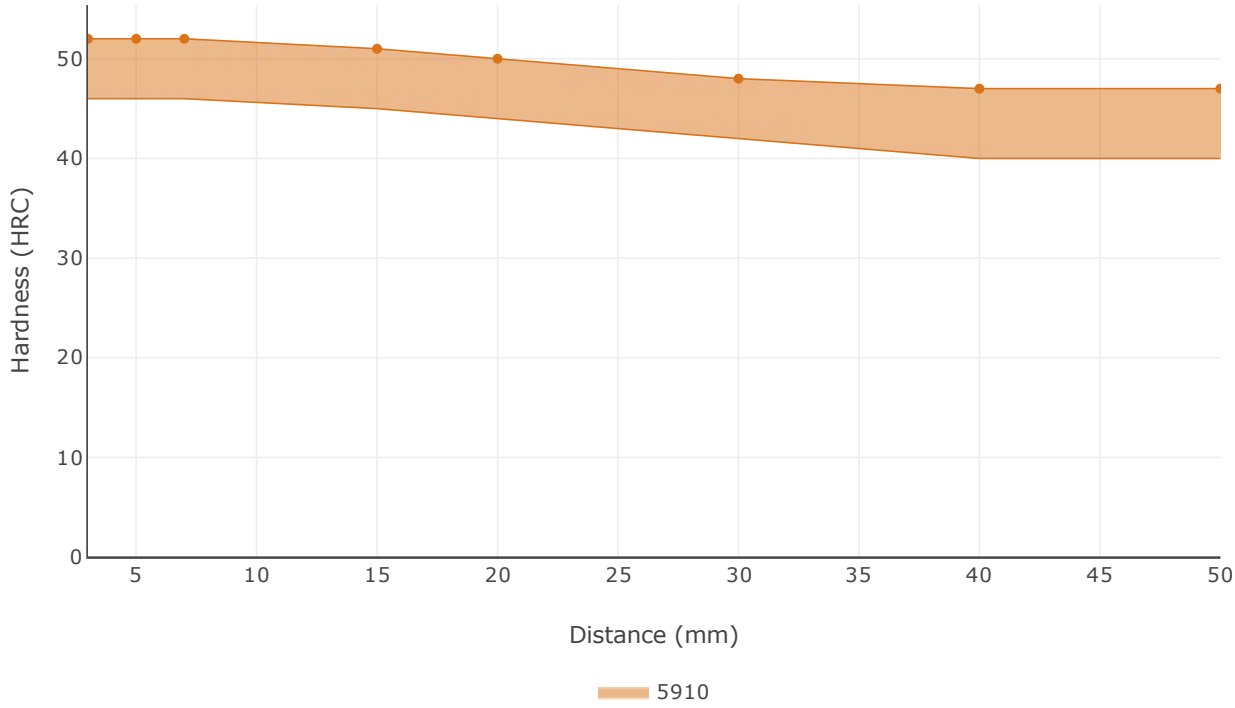
## Tempering Diagram (strength)



# Jominy


600
500
400
300
200
100
0
Hardness (Hv)
0
10
20
30
40
50
Depth (mm)
375J 25CrMnSiMo7-4-4*
5910 25CrMnSiMo7-4-4*
OVAKO

## Hardenability




## 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.

In many international comparisons the crude steel Scope 1-2 emission is a key parameter,
ie. the $CO_2$ emission from the steel works itself.
As of 1 January 2022 we carbon offset all our scope 1 and 2 volume shown below.

| 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 $CO_2$ 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) |
|---|---|---|---|---|
| 375J | Round bar | +AR | 674 | 274 |
| 375J | Round bar | +A | 678 | 277 |
| 5910 | Round bar | +A | 595 | 295 |

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 resistivityAmbient 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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Via telephone: +46 8 622 1300

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