

STEEL GRADE

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39MnCrB6-2 All

General Information

EN 10083-3 is one of the standards met by this steel grade.

This grade is classified as a WR-steel, which stands for wear-resistant steel. This group of steel includes a broad range of grades with a wide range of hardness levels 350 – 650 HV, dimensions and steel grades designed to give you a wear-resistant advantage when making product exposed to a high degree of wear and where service life is important. WR-steels are characterised by consistent properties and cost effectiveness due to optimized alloy content for different end applications.

WR-Steel®(Wear resistant) WR-steel, stands for wear-resistant steel. This group of steel includes a broad range of grades with a wide range of hardness levels 350 – 650 HV, dimensions and steel grades designed to give you a wear-resistant advantage when making product exposed to a high degree of wear and where service life is important. WR-steels are characterised by consistent properties and cost effectiveness due to optimized alloy content for different end applications.

Similar designations

1.7189

Chemical composition

| Variant | Cast | | C % | Si % | Mn % | P % | S % | Cr % | B % |
|---------|------|-----|------|------|------|-------|-------|------|--------|
| BCM414 | CC | Min | 0.36 | 0.15 | 1.30 | - | - | 0.30 | 0.0008 |
| | | Max | 0.42 | 0.35 | 1.70 | 0.035 | 0.035 | 0.60 | 0.0050 |

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} |
|---------|-------------|-----------|----------------|--------------------------|------------------------|-------------------------------|--|-----------|--|
| BCM414 | +QT | Round bar | 30 < 70 | 1150 | 1350-1550 | 9 | 45 | 43-48 HRC | 20 °C 20 J (long) |

*R_{p0.2} * R_{eh}, ** R_{el}*

Transformation temperatures

| | Temperature °C |
|-----|----------------|
| MS | 350 |
| AC1 | 720 |
| AC3 | 805 |

Heat treatment recommendations

| Treatment | Condition ⓘ | Temperature cycle | Cooling/quenching |
|----------------|-------------|--|---------------------------------|
| Soft annealing | +AR | Soft annealing 650 - 700°C soaking 3-10hrs | Followed by slow cooling in air |
| Normalizing | +AR | 840 - 870°C 1-2 hrs | In air |
| Hardening | +AR | Soaking at 840 - 870°C | Quenching in oil |
| Tempering | +QO | Tempering 180 - 230°C 1hr at temperature | In air |

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 |
|----------------------|--------|--------------|--------|
| CO ₂ e/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.

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/m ³) |
|-------------------------------|---|--|--|
| 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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Via telephone: +46 8 622 1300

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

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