

## STEEL GRADE

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# 19MnVS6

All

## General Information

19MnVS6 according to EN10267 may with its generous chemical analysis and moderate mechanical requirements host a number of grades. It does at Ovako's! All variants are microalloyed with vanadium which gives a fine grain size and a good start for excellent toughness. The most frequent usage is as rolled, but all members in the family may be heat-treated in different ways. A heat-treatment will naturally affect the mechanical properties.

The Ovako program starts with a yield strength of minimum 400 MPa and finishes at minimum 520 MPa where each variant is carefully balanced to give the desired properties without a wasteful addition of alloying elements. Weldability goes from excellent to good with increasing alloying content and yield strength.

19MnVS6 is also available as M-steel.

## Similar designations

SB280 - 18Mn6, E470, SS2134, 1.5217, 19MnV6

## Chemical composition

| Variant | Cast | Weldability             |     | C %  | Si % | Mn % | P %   | S %   | Cr % | Ni % | V %   |
|---------|------|-------------------------|-----|------|------|------|-------|-------|------|------|-------|
| SB500   | CC   | CEV 0.56 <sub>max</sub> | Min | -    | 0.15 | 1.25 | -     | -     | -    | -    | -     |
|         |      | Pcm 0.33 <sub>max</sub> | Max | 0.20 | 0.50 | 1.60 | 0.035 | 0.035 | 0.30 | 0.25 | 0.150 |

## Mechanical Properties

| Variant | Condition | Format    | Dimension [mm] | Yield strength min [MPa] | Tensile strength [MPa] | Elongation A <sub>5</sub> [%] | Hardness   | Impact (ISO-V) strength <sub>min</sub> |
|---------|-----------|-----------|----------------|--------------------------|------------------------|-------------------------------|------------|--|
| SB500   | +AR       | Round bar | 14 < 25        | 500*                     | 670-830                | 19                            | 200-250 HB | -                                      |
|         |           | Round bar | 25 < 60        | 500*                     | 650-750                | 19                            | 190-230 HB | -20 °C 27 J (long)                     |
|         |           | Flat bar  | 6 < 10         | 500*                     | 630-780                | 19                            | 190-250 HB | -                                      |
|         |           | Flat bar  | 10 < 15        | 500*                     | 630-750                | 19                            | 190-230 HB | -                                      |
|         |           | Flat bar  | 15 < 30        | 500*                     | 630-750                | 19                            | 190-230 HB | -                                      |
|         |           | Flat bar  | 30 < 70        | 470*                     | 610-730                | 19                            | 180-225 HB | -20 °C 27 J (long)                     |

*R<sub>p0.2</sub> \* R<sub>eh</sub>, \*\* R<sub>el</sub>*

## Transformation temperatures

|     | Temperature °C |
|-----|----------------|
| MS  | 410            |
| AC1 | 720            |
| AC3 | 810            |

## 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 CO<sub>2</sub> 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) |
|--------------|-----------|-----------|------------------------------------|
| SB500        | Flat bar  | +AR       | 416                                |
| SB280        | Round bar | +AR       | 410                                |
| SB280X       | Flat bar  | +AR       | 411                                |
| SB450        | Round bar | +AR       | 411                                |
| SB280XM      | Round bar | +AR       | 429                                |
| 7256         | Round bar | +AR       | 511                                |
| 280 M (7266) | Round bar | +AR       | 516                                |
| 7255         | Flat bar  | +AR       | 513                                |

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:

Via e-mail: [info@ovako.com](mailto:info@ovako.com)

Via telephone: +46 8 622 1300

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

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