

durostat®

durostat®

greentec steel

## MACHINERY INDUSTRY

Superior solutions made of  
wear-resistant steel



Martin Klein, Material Technology Expert

...because  
**we care.**  
[voestalpine.com/stella](http://voestalpine.com/stella)

voestalpine Steel Division  
[www.voestalpine.com/durostat](http://www.voestalpine.com/durostat)

voestalpine

ONE STEP AHEAD.



# durostat<sup>®</sup>

## SUPERIOR SOLUTIONS MADE OF WEAR- RESISTANT STEEL

Highest wear resistance and hardness  
for the highest stresses

**Just like diamonds, durostat<sup>®</sup> steels stand for highest hardness.** This special property of durostat<sup>®</sup> steels is the reason for their essentially higher resistance to wear than conventional steels. They are optimally suited to applications with high mechanical stress and high levels of abrasion. durostat<sup>®</sup> steels also are characterized by excellent toughness at low application temperatures.



Find out more about durostat<sup>®</sup>  
on our website at  
[www.voestalpine.com/durostat](http://www.voestalpine.com/durostat)







...because  
**we care.**  
voestalpine.com/stella

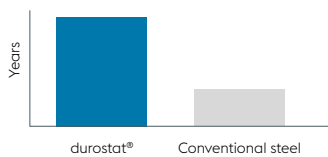


Information on sustainability in the voestalpine Steel Division is bundled in Stella Sustainable:  
[www.voestalpine.com/stella](http://www.voestalpine.com/stella)

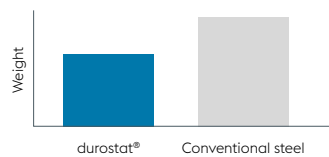
# SEE FOR YOURSELF WHAT durostat® CAN DO FOR YOU.

For a longer service life

Service life of durostat®



Weight savings with durostat®



**durostat® can be used in a wide variety of applications.** We offer our customers the highest quality standards, yet we continually define the limits of feasibility and never lose sight of our partners' best performance. durostat® is a wear-resisting steel with excellent properties that have set new standards Set wear resistance and hardness.

durostat® is now also available as a greentec steel in proven quality with a reduced CO<sub>2</sub> footprint.

Premium quality with reduced carbon footprint

**durostat®**  
greentec steel

On the following pages you will find out more about durostat®, our wear-resistant steel for machinery. Discover what added value it can bring to your business.

- » Tipper bodies
- » Scrap containers
- » Wheel loader shovels
- » Excavators
- » Chutes
- » Truck bodies
- » Snow plows
- » Loading and conveying systems
- » and much more





# BEST PRODUCT PROPERTIES

**For new standards in the machinery industry.** Our durostat® steel grades set new standards with their highest quality and withstand the greatest stresses. They offer a wide variety of mechanical properties and stand for highest-quality processing. These steels can also decisively prolong the service life of your products and significantly reduce their weight.



## Longer service life

We developed the durostat® product range in order to prolong the service life of your components in abrasive environments. Our steel grades have a significantly longer service life than conventional steels and withstand the most stringent environments.

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## Weight savings

When compared to conventional construction steels, sheet thicknesses can be significantly reduced while maintaining the same length of service life. This leads to lower dead weights and higher payloads, especially in automotive engineering.

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## High degree of hardness

Their high level of hardness is adjusted by means of accelerated cooling after hot rolling (direct hardening) or through conventional quenching. We prefer direct hardening because this method improves toughness and reduces scale formation. We offer unhardened steels to customers who would like to use their own heat treatment process.

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### Very good cold formability

Our durostat® steel grades are very well suited to cold forming, independently of whether the steel is direct-hardened or non-hardened. This is achieved through a homogeneous, fine-grained structure as well as a high degree of purity.

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### Good weldability

Our modern alloying strategies with optimized carbon equivalents guarantee good weldability, a factor that especially applies to direct-hardened durostat® steels. Preheating can be completely eliminated for lower sheet thicknesses.

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### Excellent flatness

The outstanding flatness is achieved through precisely controlled rolling processes in combination with modern leveling units. This is highly advantageous during cutting and further processing and achieves optimized dimensional accuracy of the manufactured components.

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### Clean surface

A uniform layer of scale forms on the sheet surface following hot rolling in our process route. The natural protective layer acts against corrosion during transport and can easily be removed through sand blasting. Selected dimensions can be supplied with a pickled surface, which makes it possible to forgo descaling prior to coating.

# durostat®

## RANGE OF SUPPLY

**Highest product quality and best processing properties distinguish durostat® steel grades.** We have developed the special durostat® steel grades in order to prolong the service life of components used in abrasive environments. This service life lies significantly higher than that of conventional steels. durostat® steels withstand the most stringent environments.

| Steel grade  |   | Sheet thickness<br>[mm]                       | Max. width<br>[mm]                        | Max. length<br>[mm] | Hardness<br>reference<br>value<br>[HB] | Hardness<br>guarantee<br>value <sup>2)</sup><br>[HB] | Yield strength<br>R <sub>p0.2</sub><br>reference value<br>[MPa] | Tensile strength<br>R <sub>m</sub><br>reference value<br>[MPa] |
|--------------|---|---|---|---------------------|--|--|---|--|
| durostat 250 |    | 3.0 – 8.0                                     | 1,520                                     | 12,000              | 250                                    | 220 – 300  | 650   | 750  |
| durostat 300 |    | 3.0 – 8.0                                     | 1,520                                     | 12,000              | 300                                    | 260 – 340  | 850   | 950  |
|              |    | 8.0 – 25.0                                    | 3,000                                     | 12,000              | 300                                    | 270 – 350  | 850   | 950  |
| durostat 400 |    | 2.5<br>3.0<br>3.5<br>4.0 ≤ 6.0<br>> 6.0 ≤ 8.0 | 1,250<br>1,520<br>1,570<br>1,620<br>1,550 | 12,000              | 400                                    | 360 – 440  | 1,100   | 1,250  |
|              |  | 5.0 ≤ 12.0<br>> 12.0 ≤ 120.0                  | 2,500<br>3,000                            | 12,000              | 400                                    | 360 – 440  | 1,000   | 1,250  |
|              |  | 20.0 ≤ 90.0                                   | 3,000                                     | 12,000              | 400                                    | 360 – 440  | 1,000   | 1,250  |
|              |  | 2.5<br>3.0<br>3.5<br>4.0 ≤ 6.0                | 1,250<br>1,520<br>1,570<br>1,620          | 12,000              | 450                                    | 410 – 490  | 1,200   | 1,400  |
| durostat 450 |  | 5.0 ≤ 12.0<br>> 12.0 ≤ 70.0                   | 2,500<br>3,000                            | 12,000              | 450                                    | 410 – 490  | 1,100   | 1,400  |
|              |  | 20.0 ≤ 40.0                                   | 3,000                                     | 12,000              | 450                                    | 410 – 490  | 1,100   | 1,400  |
| durostat 500 |  | 3.0 < 4.0<br>4.0 ≤ 6.0                        | ⊖<br>1,500                                | 12,000              | 500                                    | 460 – 540  | 1,300   | 1,550  |
|              |  | 8.0 ≤ 50.0                                    | 2,500                                     | 12,000              | 500                                    | 460 – 540  | 1,200   | 1,550  |
| durostat B2  |  | 1.8 ≤ 15.0                                    | 1,620                                     | 12,000              | 500 <sup>1)</sup>                      | -  | < 550   | < 700  |
|              |  | 8.0 ≤ 50.0                                    | 2,500                                     | 18,700              | 500 <sup>1)</sup>                      | -  | 400   | 650  |
| durostat B4  |  | 1.5 ≤ 12.0                                    | 1,620                                     | 12,000              | 600 <sup>1)</sup>                      | -  | < 600   | < 800  |

1) Achievable hardness after quenching, supplied in non-hardened condition

2) Hardness measurements are conducted pursuant to EN ISO 6506. Test condition HBW2.5/187.5 is applied to plate thicknesses ≤ 3mm.

\*) Guaranteed value at -40°C, t.s. Click here for more information on durostat toughcore: [www.voestalpine.com/toughcore](http://www.voestalpine.com/toughcore)











### Note

durostat 400 and durostat 450 are wear-resistant, direct-hardened carbon steels. As a heavy plate, durostat 500 is a directly or conventionally hardened steel. As a hot-rolled strip, it is a directly hardened plain carbon steel. durostat B2 and durostat B4 are supplied in non-hardened condition and are intended for heat treatment after being processed at the customer. The properties of the individual steel grades are described in the durostat® data sheets (heavy plate and hot-rolled steel strip).



Depending on the customer requirements, durostat® steel grades are supplied in direct-hardened, hardened or non-hardened condition. Both heavy plates and steel strips are accelerated-cooled directly after hot rolling. The desired hardness is adjusted to 400, 450 or 500 HB.

| Elongation [A <sub>5</sub> ] min.<br>reference value<br>[%] | impact energy A <sub>v</sub> [Joule]<br>reference value<br>test temperature -40 °C<br>longitudinal | Edging radii R <sub>i</sub> min at 90° edging<br>position of bending edge<br>edge to rolling direction<br>(s = sheet thickness) |              | delivery condition  |
|---|--|---|--------------|---|
|   |  | transverse  | longitudinal |   |
| 12  |                   | 3 s   | 4 s          |  |
| 11  |                   | 3 s   | 4 s          |  |
| 11  |                   | 3 s   | 4 s          | directly hardened   |
| 10  | 50   | 3 s   | 4 s          | directly hardened   |
| 10  | 50   | 3 s   | 4 s          | directly hardened   |
| 10  | 40*  | 3 s   | 4 s          | directly hardened   |
| 9   | 40   | 3 s   | 4 s          | directly hardened   |
| 9   | 30   | 4 s   | 5 s          | directly hardened   |
| 9   | 27*  | 4 s   | 5 s          | directly hardened   |
| 8   | 30   | 4 s   | 5 s          | directly hardened   |
| 8   | 20   | 4 s   | 5 s          | directly hardened / hardened  |
| > 20  | -  | -   | -            | unhardened  |
| 20  | -  | -   | -            | unhardened  |
| > 18  | -  | -   | -            | unhardened  |

 Cut-to-length sheets made of hot-rolled steel strip     Heavy plate     upon request



### Conversion table

Conversion of maximum values pursuant to EN ISO 18265. This comparison serves as a reference and does not replace actual measurements or standardized conversions

|        |            |          |
|--------|------------|----------|
| 400 HB | ~ 420 HV10 | ~ 43 HRC |
| 450 HB | ~ 470 HV10 | ~ 47 HRC |
| 500 HB | ~ 520 HV10 | ~ 51 HRC |



# MORE THAN JUST A QUALITY PRODUCT

**When solutions are in demand**

**We have been a reliable partner to the machinery industry for many years.** We offer innovative and sustainable product solutions and outstanding welding expertise in addition to our full service for best-possible support and process performance. State-of-the-art technologies in manufacturing and processing help reduce your costs and provide a decisive competitive advantage for your operations.

# THE ADDED VALUE

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OUR TECHNICAL SPECIALISTS  
WILL BE HAPPY TO ADVISE  
YOU WITH THEIR EXTENSIVE  
EXPERTISE.



## **durostat® service**

Our own logistics company and well stocked warehouse of sample parts in Linz make it possible for us to supply short-term trial samples for welding and bending trials. We are in a position to quickly meet your requirements and will supply small lots and cut shapes upon request. Our specialists will be happy to support you with all of your concerns.



## **durostat® efficiency**

The material properties of durostat® steel grades and state-of-the-art quality processes eliminate revision work to the largest extent and make it possible for you to begin immediately with your production. This reduces any downtimes and increases your productivity.



## **durostat® tailor welded**

The steel sheets used in the production of trailers, tippers and many other applications are becoming thinner and required widths larger as time progresses, and component complexity is increasing substantially. In an effort to meet these ever changing requirements, we offer laser-welded and laser-hybrid welded sheets cut from hot-rolled strip. High-quality joints:

- » Thinner, wider, more wear resistant with excellent flatness
- » Combination of different sheet thicknesses and/or material grades in one component
- » Laser/laser hybrid welded joints with perfect properties

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durostat® service



durostat® efficiency



durostat® tailor welded



