

durostat®



Premium quality with
reduced carbon footprint

durostat®
greentec steel

**MADE FOR TRUE
RESISTANCE.**

voestalpine Steel Division
www.voestalpine.com/durostat

voestalpine

ONE STEP AHEAD.

durostat[®]

MORE POWER WITH durostat[®]

Premium steel with maximum hardness
for minimum wear

Robust endurance for extreme conditions. durostat[®] is a wear-resistant premium steel with the highest levels of hardness for applications under enormous mechanical stress. Its excellent wear resistance, robustness and durability are impressive. The high hardness of durostat[®] steels ensures a much higher wear resistance when compared to conventional steels. They are optimally suited to applications with intense loads and high levels of abrasion. The durostat[®] steels also exhibit excellent toughness, even at low operating temperatures.



Find out more about durostat[®]
on our website at
www.voestalpine.com/durostat/en

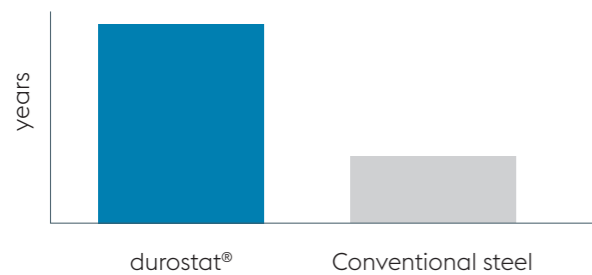


Stella Sustainable keeps you informed of greentec steel products, environmental protection and sustainability in the voestalpine Steel Division:
www.voestalpine.com/stella/en

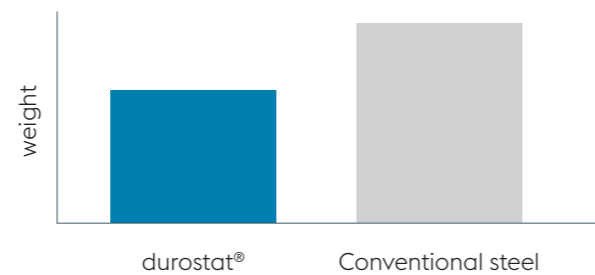
SEE FOR YOURSELF WHAT **durostat**[®] CAN DO!

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 in wear resistance and hardness.

durostat[®] is now also available in proven quality in the greentec steel Edition with a reduced carbon footprint.



Premium quality with reduced carbon footprint

durostat[®]
greentec steel

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

Premium durostat[®] steels are ideally suited for use in the following applications:

- » Tippers
- » Scrap bins
- » Wheel loader buckets
- » Dredgers
- » Chutes
- » Truck superstructures
- » Snowplows
- » Loading and conveying systems



BEST PRODUCT PROPERTIES

For new standards in the machinery industry. Our premium 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.



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.



High degree of hardness

The high level of hardness in hot-rolled sheets and heavy plates 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. The high hardness of cold-rolled sheets is achieved by a suitable combination of chemical composition and cooling conditions during the continuous annealing process. We offer unhardened steels to customers who would like to use their own heat treatment process.



Very good cold formability

The durostat® steel grades are highly suitable for cold forming, regardless of their production route. This is achieved through a homogeneous, fine-grained structure as well as a high degree of purity.



Good weldability

Our modern alloying strategies with optimized carbon equivalents guarantee good weldability. Preheating is necessary for durostat® B2 and B4 steel grades, depending on welding geometry. Preheating can be completely eliminated for lower sheet thicknesses. The preheating temperature for sheet thicknesses ≥ 6 mm can be estimated using AWS/ANSI D1.1 (PCM method) or the Welding Calculator.



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.



Clean surface

A uniform layer of rolling scale forms on the sheet surface of hot-rolled sheets and heavy plates when they come directly from the rolling heat during production. 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. Cold-rolled steel strip is always delivered in pickled condition. Pickled products can be provided with an anti-corrosion oil for storage and transport protection.



Learn more about the advantages of durostat® in our Material and Performance Facts.

www.voestalpine.com/durostat/en/Downloadcenter

durostat® RANGE OF SUPPLY

Highest product quality and best processing properties distinguish our premium 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.

Depending on 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. Cold-rolled steels achieve their high hardness through a combination of chemical composition and cooling conditions during the continuous annealing process.

Steel grade	Sheet thickness [mm]	Maximum width [mm]	Maximum length [mm]	Reference value for hardness	Guaranteed value for hardness ²⁾	R _{p0,2} reference value for yield strength	R _m reference value for tensile strength	Reference value for elongation at break [A ₅ /A ₈₀]	Reference value for notch impact energy Av [Joule] Test temperature of - 40 °C	Edge radii Ri min. 90° edging Location of bending edge in direction of rolling (s = sheet thickness)		As-delivered condition
				[HB/HV10]	[HB/HV10]	[MPa]	[MPa]	[%]	Longitudinal	Transverse	Longitudinal	
durostat 250	3,0 - 8,0	1.520	12.000	250 HB	220 - 300 HB	650	750	A ₅ = 12	☹	3 s	4 s	☹
durostat 300	3,0 - 8,0	1.520	12.000	300 HB	260 - 340 HB	850	950	A ₅ = 11	☹	3 s	4 s	☹
	8,0 - 25,0	3.000	12.000	300 HB	270 - 350 HB	850	950	A ₅ = 11	☹	3 s	4 s	Direct-hardened
durostat 400 CR	1,5	1580	6.000	400 HV	360-440 HV	1050	1220	A ₈₀ = 5			3,5 s	Cold-rolled and annealed
	2,0	1180										
durostat 400	2,0	1.300	12.000	400 HB	360 - 440 HB	1.100	1.250	A ₅ = 10	50	3 s	4 s	Direct-hardened
	2,5	1.400										
	3,0	1.520										
	4,0 ≤ 6,0	1.620										
durostat 400 toughcore®	> 6,0 ≤ 8,0	1.550	12.000	400 HB	360 - 440 HB	1.000	1.250	A ₅ = 10	50	3 s	4 s	Direct-hardened
	5,0 ≤ 12,0	2.500										
durostat 450	> 12,0 ≤ 120,0	3.000	12.000	400 HB	360 - 440 HB	1.000	1.250	A ₅ = 10	40*	3 s	4 s	Direct-hardened
	20,0 ≤ 90,0	3.000										
durostat 450	2,5	☹	12.000	450 HB	410 - 490 HB	1.200	1.400	A ₅ = 9	40	3 s	4 s	Direct-hardened
	3,0	1.520										
	4,0 ≤ 7,0	1.600										
durostat 450 toughcore®	8,0	1.450	12.000	450 HB	410 - 490 HB	1.100	1.400	A ₅ = 9	30	4 s	5 s	Direct-hardened
	5,0 ≤ 12,0	2.500										
durostat 500	12,0 ≤ 70,0	3.000	12.000	450 HB	410 - 490 HB	1.100	1.400	A ₅ = 9	27*	4 s	5 s	Direct-hardened
	20,0 ≤ 40,0	3.000										
durostat 500	3,0	1.450	12.000	500 HB	460 - 540 HB	1.300	1.550	A ₅ = 8	30	3,5s	4,5 s	Direct-hardened
	3,5	1.550										
	4,0 ≤ 6,0	1.600										
durostat B2	8,0	☹	12.000	500 HB	460 - 540 HB	1.200	1.550	A ₅ = 8	20	4 s	5 s	Direct-hardened / Hardened
	8,0 ≤ 50,0	☹										
durostat B2	1,8 ≤ 15,0	1.620	12.000	500 HB ¹⁾	-	< 550	< 700	A ₅ > 20	-	-	-	Non-hardened
	8,0 ≤ 50,0	2.500		500 HB ¹⁾	-	400	650	A ₅ = 20	-	-	-	Non-hardened
durostat B4	1,5 ≤ 12,0	1.620	12.000	600 HB ¹⁾	-	< 600	< 800	A ₅ > 18	-	-	-	Non-hardened

☹ Cut-to-length sheets made of cold-rolled steel strip ☹ Cut-to-length sheets made of hot-rolled steel strip ☹ Heavy plates ☹ Upon request

1) Achievable hardness after quenching, supplied in non-hardened condition
 2) Hardness measurements on hot-rolled steels are conducted pursuant to EN ISO 6506. Test condition HBW2.5/187.5 is applied to plate thicknesses ≤ 3 mm. Cold-rolled steels are tested according to EN ISO 6507.
 *) Guaranteed value at 40 °C, transverse. Click here for more information on durostat toughcore: www.voestalpine.com/toughcore
 Additional dimensions 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

See the pertinent data sheets for further information:
www.voestalpine.com/durostat/en/Downloadcenter



Premium quality with reduced carbon footprint

- Cut-to-length sheets made of hot-rolled steel strip – greentec steel Edition
Max. carbon footprint 1,95 kg CO₂e per kg of steel ¹⁾
 - Cut-to-length sheets made of cold-rolled steel strip – greentec steel Edition
Max. carbon footprint 1,97 kg CO₂e per kg of steel ¹⁾
 - Heavy plates (excl. bottoms and clad plates) – greentec steel Edition
Max. carbon footprint 2,21 kg CO₂e per kg of steel ¹⁾
- ¹⁾ per EN 15804+A2 (EPD methodology) cradle to gate

All products, dimensions and steel grades listed in each voestalpine supply range are available in the greentec steel edition.



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



durostat® service

Our own logistics company and well stocked warehouse of sample parts in Linz make it possible for us to supply short-term sample deliveries 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 plan 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 sheets cut from hot-rolled strip. High-quality joints:

- » Thinner, wider and more wear-resistant with excellent flatness
- » Different sheet thicknesses and/or material grades combined in one component
- » Laser-welded joints with perfect properties



Download the voestalpine Welding Calculator now

Download the voestalpine Welding Calculator App free of charge! Register for additional benefits and perform flexible calculations for your materials on your smartphone or desktop.

Please find more information about the voestalpine Welding Calculator at:
www.voestalpine.com/durostat/en/insights/voestalpine-welding-calculator-for-best-welding-results



OUR TECHNICIANS WITH
EXTENSIVE EXPERTISE IN
THE INDUSTRY WILL BE
HAPPY TO ASSIST YOU!

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