durostat®

SUPERIOR SOLUTIONS MADE OF WEAR-RESISTANT STEEL

For the machinery industry

Martin Klein, Materials specialist

voestalpine Steel Division
www.voestalpine.com/durostat

voestalpine
ONE STEP AHEAD.

durostat®

SUPERIOR SOLUTIONS MADE OF WEAR-RESISTANT STEEL

Highest wear resistance and hardness for the highest stresses

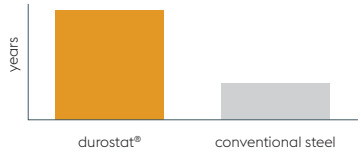
Just like a diamond, our durostat® steels stand for highest hardness. This special property of our durostat® steels is the reason for their essentially higher resistance to wear than conventional steels. They are optimally suited to applications with high mechanical stress and high levels of abrasion. Our durostat® steels also guarantee excellent toughness at low application temperatures.

Find out more about wear-resistant steel by visiting us at
www.voestalpine.com/durostat

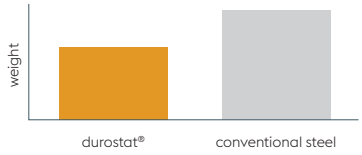
SEE FOR YOURSELF WHAT durostat® IS CAPABLE OF

For a longer service life and higher weight savings

Service life of durostat®



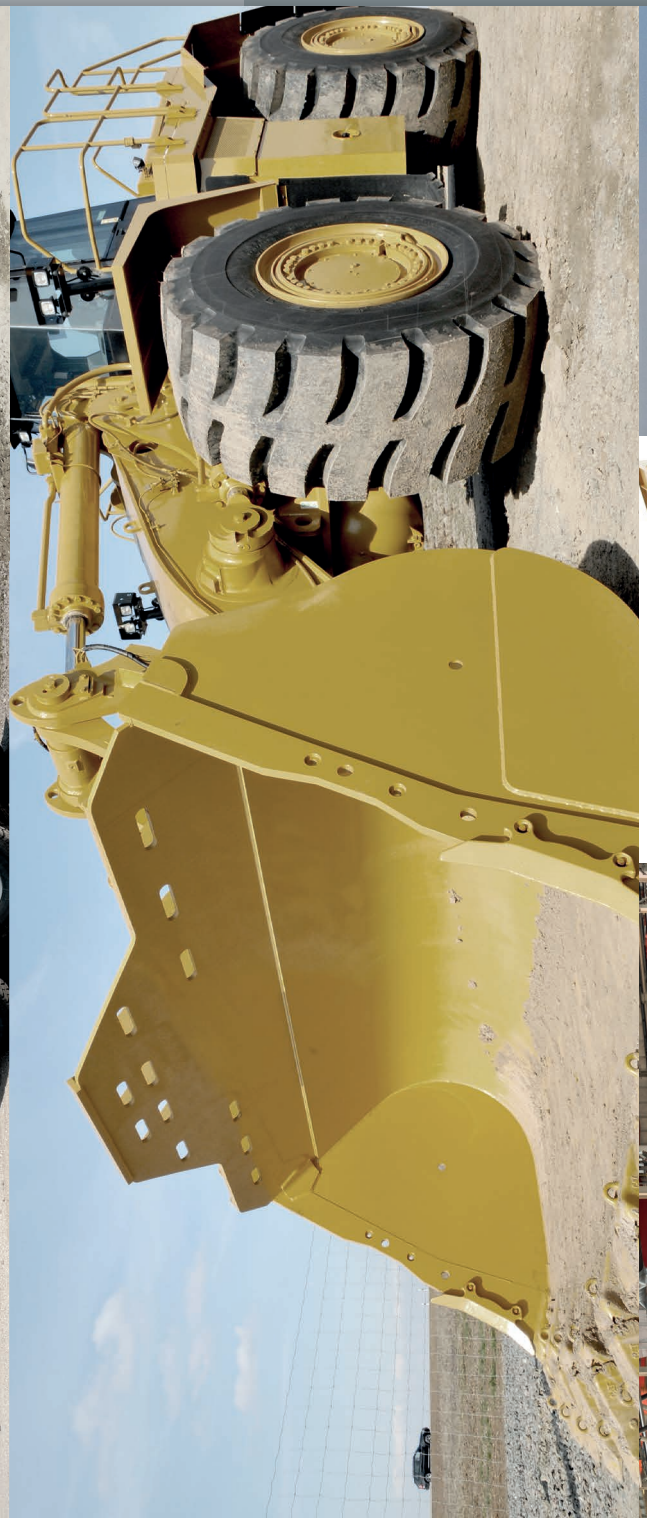
Weight savings with durostat®

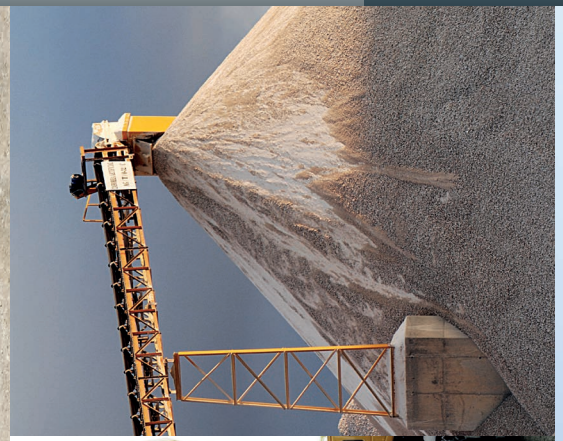


durostat® can be used in a wide variety of applications. We offer our customers the highest quality standards, yet we continually define the limits of feasibility and never lose sight of our partners' best performance. durostat® is a wear-resisting steel with excellent properties that have set new standards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

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

- Truck tippers
- Scrap containers
- Wheel loader buckets
- Dredgers
- Chutes
- truck superstructures
- snow plows
- loading equipment and conveying machinery






MEILLER-KIPPER


Made of durostat®
Verschleißfester Stahl von voestalpine

BEST PRODUCT PROPERTIES

Our durostat® steel grades are setting new standards with their highest quality and in withstanding the greatest stresses. They offer a wide variety of mechanical properties and stand for highest-quality processing. The service life of your products is also decisively prolonged, and the weight significantly reduced.

Longer service life

We developed the durostat® product range in order to prolong the service life of your components in abrasive environments. These steel grades have a significantly higher 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

Their high level of hardness is adjusted by means of accelerated cooling after hot rolling (direct hardening) or conventional quenching. Direct hardening is preferred because this method improves toughness and reduces scale formation.

Very good cold formability

Our durostat® steel grades are best suited for 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.

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.

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 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 avoid descaling prior to coating.

durostat®
PRODUCT RANGE

We 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.

Tensile test Brinell hardness	Thickness [mm]	Max. width [mm]	Max. length [mm]	Hardness Typical value [HB]	Hardness guarantee value [HB]	Yield strength $R_{p0.2}$ Typical value [MPa]	Tensile strength R_m Typical value [MPa]
durostat 400	2.5 3.0 3.5 4.0 ≤ 6.0 > 6.0 ≤ 8.0	1,250 1,520 1,570 1,620	12,000	400	360 – 440	1,000	1,250
	6.0 ≤ 12.0 > 12.0 ≤ 120.0	2,500 3,000	12,000	400	360 – 440	1,000	1,250
durostat 450	2.5 3.0 3.5 4.0 ≤ 6.0	1,250 1,520 1,570 1,620	12,000	450	410 – 490	1,100	1,400
	6.0 ≤ 12.0 > 12.0 ≤ 70.0	2,500 3,000	12,000	450	410 – 490	1,100	1,400
durostat 500	3.0 ≤ 4.0 > 4.0 ≤ 6.0	1,500	12,000	500	460 – 540	1,200	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 [1]	-	< 550	< 700
	8.0 ≤ 50.0	2,500	18,700	500 [1]	-	400	650
durostat B4	1.5 ≤ 12.0	1,620	12,000	600 [1]	-	< 600	< 800

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

Note

durostat 400 and durostat 450 are wear-resistant, direct-hardened carbon steels.
As a heavy plate, durostat 500 is a directly hardened 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 cut-to-length sheets made of hot-rolled strip)

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

Elongation [%] min. Typical value	Notch impact energy Av [Joule] Typical value Test temperature of -40 °C	Edging radii Ri min. at 90° edging Location of bending edge in direction of rolling (s = sheet thickness)		Delivery condition
A_5	longitudinal	transverse	longitudinal	
10	40	3 s	4 s	direct-hardened
10	50 (upon request)	3 s	4 s	direct-hardened
9	30	3 s	4 s	direct-hardened
9	30	4 s	5 s	direct-hardened
(upon request)	(upon request)	4 s	5 s	direct-hardened
8	20	4 s	5 s	direct-hardened / hardened
> 20	-	-	-	non-hardened
20	-	-	-	non-hardened
> 18	-	-	-	non-hardened

cut-to-length sheets made of hot-rolled strip heavy plates upon request

NEW now!
durostat 500 is now also available as cut-to-length sheets made of hot-rolled strip.

More information:
www.voestalpine.com/durostat

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

WITH THEIR GREAT INDUSTRY EXPERTISE OUR voestalpine TECHNICAL SUPPORT WILL BE PLEASED TO ADVISE YOU.

durostat® service
Our own logistics company and well stocked warehouse of sample parts in Linz make it possible 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 voestalpine specialists will be happy to support you with all of your concerns.

durostat® efficiency
The material properties of our 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 ever thinner and required widths ever 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 sheets with excellent flatness
- Different sheet thicknesses and/or material grades combined in one component
- Laser-welded and laser-hybrid-welded joints with perfect properties

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