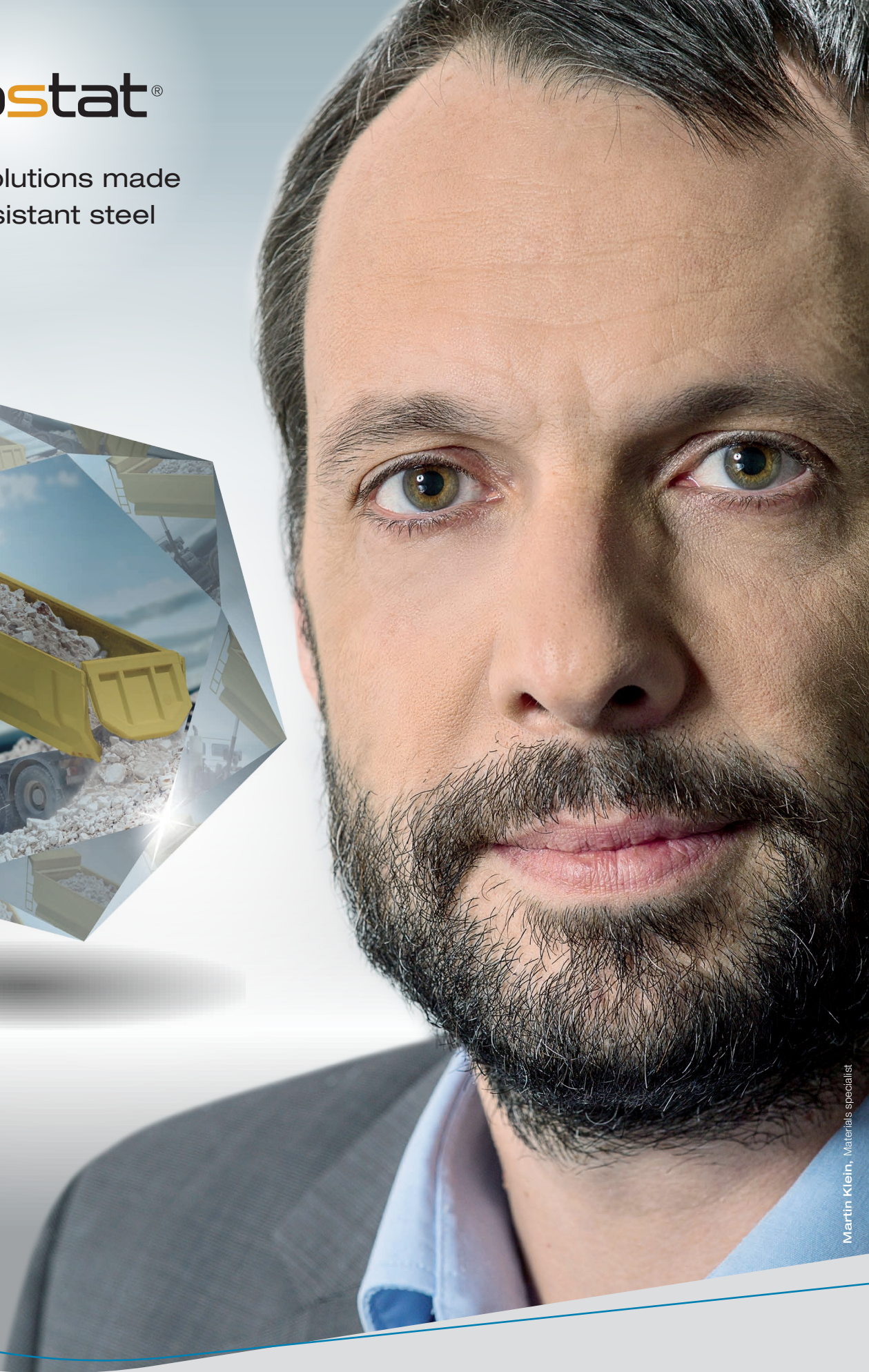


# durostat®

Superior solutions made  
of wear-resistant steel



Martin Klein, Materials specialist

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

**voestalpine**

ONE STEP AHEAD.





Find out more about  
wear-resistant steel by visiting us at  
[www.voestalpine.com/durostat](http://www.voestalpine.com/durostat)





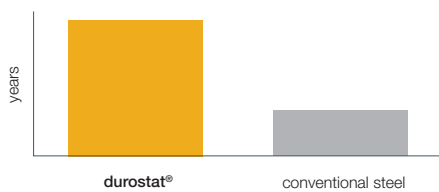
# Superior solutions made of wear-resistant steel

Highest wear resistance and hardness for the highest stresses

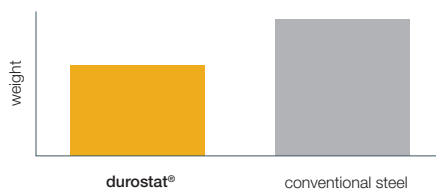
Just like a diamond, our **durostat®** steels stand for highest hardness. This special property of our **durostat®** steels is the reason for their essentially higher resistance to wear than conventional steels. They are optimally suited to applications with high mechanical stress and high levels of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

## Decisive advantages

Service life of durostat®



Weight savings with durostat®



- Longer service life
- Weight savings
- High degree of hardness
- Very good cold formability
- Good weldability
- Excellent flatness
- Clean surface

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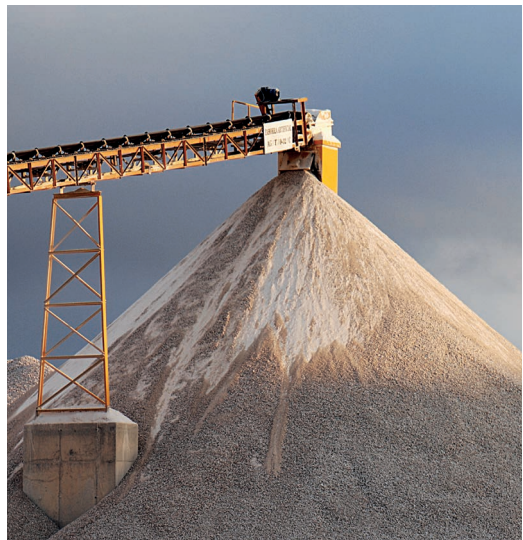
# For a longer service life and higher weight savings



**durostat®** steels are best suited to applications in truck tipper, wheel loader buckets, dredgers, chutes, truck superstructures, snow plows, loading equipment, conveying machinery and much more.







durostat® service



durostat® efficiency



durostat® environment

# Best product properties

## For new standards in machinery

Our **durostat**<sup>®</sup> 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 are also decisively prolonged, and the weight significantly reduced.



### Longer service life

We developed the **durostat**<sup>®</sup> 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 through conventional quenching. Direct hardening is preferred because this method improves toughness and reduces scale formation.



### Very good cold formability

Our **durostat**<sup>®</sup> steel grades are very 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.



### Good weldability

Our modern alloying strategies with optimized carbon equivalents guarantee good weldability, a factor that especially applies to direct-hardened **durostat**<sup>®</sup> 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 forego descaling prior to coating.



# durostat® product range

## Available dimensions

Depending on customer requirements, **durostat®** steel grades are supplied in direct-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.

		Thickness [mm]	Max. width [mm]	Max. length [mm]	Delivery condition
durostat 400		2.5	1,250	12,000	direct-hardened
		3.0	1,520		
		3.5	1,570		
		4.0 – 6.0	1,620		
		6.0 ≤ 12.0	2,500	12,000	direct-hardened up to 50 mm
		12.0 – 100.0	3,000		
durostat 450		2.5	1,250	12,000	direct-hardened
		3.0	1,520		
		3.5	1,570		
		4.0 – 6.0	1,620		
		6.0 ≤ 12.0	2,500	12,000	direct-hardened
		12.0 – 50.0	3,000		
durostat 500		4.0 – 6.0	1,500	12,000	direct-hardened
		8.0 ≤ 50.0	2,500	12,000	hardened
durostat B2		1.8 ≤ 15.0	1,620	12,000	non-hardened
		8.0 ≤ 50.0	2,500	18,700	non-hardened
durostat B4		1.5 ≤ 12.0	1,620	12,000	non-hardened



cut-to-length sheets made of hot-rolled strip



Heavy plates



### NEW now!

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



### Note

**durostat 400** and **durostat 450** are wear-resistant, direct-hardened carbon steels.

As a heavy plate, **durostat 500** is a 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)






# Cut-to-length sheets made of hot-rolled strip

For a wide variety of applications

Hot-rolled steel strip is a true all-rounder for a variety of applications. Our **durostat**® steel grades are characterized by product quality, best processing properties and a wide range of applications.

Tensile test Brinell hardness	Sheet thickness	Hardness Standard value	Hardness Guarantee value	Yield strength R <sub>p0.2</sub> Standard value	Tensile strength R <sub>m</sub> Standard value	Elongation [%] min. Standard value
	[mm]	[HB]	[HB]	[Mpa]	[MPa]	A <sub>5</sub>
durostat 400 	3.0 ≤ 6.0	400	360 – 440	1,150	1,350	10
durostat 450 	3.0 ≤ 6.0	450	410 – 490	1,250	1,450	9
durostat 500 	4.0 – 6.0	500	460 – 540			-
durostat B2 	1.8 ≤ 15.0	-	-	< 550	< 700	> 20
durostat B4 	1.8 ≤ 12.0	-	-	< 600	< 800	> 18

 upon request

Notch impact energy / Edging radii	Notch impact energy A <sub>v</sub> [Joule] Standard value		Edging radii R <sub>i</sub> min. at 90° edging	
	Sheet thickness [mm]	Test temperature of -40 °C longitudinal	Location of bending edge in direction of rolling (s = sheet thickness)	
			transverse	longitudinal
durostat 400 	3.0 ≤ 6.0	40	3 s	4 s
durostat 450 	3.0 ≤ 6.0	30	4 s	5 s
durostat 500 	4.0 – 6.0	-	4 s	5 s
durostat B2 	1.8 ≤ 15.0	-	-	-
durostat B4 	1.8 ≤ 12.0	-	-	-



**NEW now!**

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






# Heavy plates






For the most stringent applications


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	Sheet thickness [mm]	Hardness Standard value [HB]	Hardness Guarantee value [HB]	Yield strength $R_{p0.2}$ Standard value [Mpa]	Tensile strength $R_m$ Standard value [MPa]	Elongation [%] min. Standard value $A_5$
<b>durostat 400</b> 	6.0 ≤ 100.0	400	360 – 440	1,000	1,250	10
<b>durostat 450</b> 	6.0 ≤ 50.0	450	410 – 490	1,100	1,400	9
<b>durostat 500</b> 	8.0 ≤ 50.0	500	460 – 540	1,200	1,550	8
<b>durostat B2</b> 	8.0 ≤ 50.0	200	500 <sup>1)</sup>	400	650	20

<sup>1)</sup> Delivered in non-hardened condition, achievable hardness after quenching in water

Notch impact energy / Edging radii	Notch impact energy $A_v$ [Joule]		Edging radii $R_i$ min. at 90° edging Location of bending edge in direction of rolling (s = sheet thickness)	
	Sheet thickness [mm]	Test temperature of -40 °C longitudinal	transverse	longitudinal
<b>durostat 400</b> 	6.0 ≤ 50.0	27	3 s	4 s
	50.0 ≤ 100.0		3 s	4 s
<b>durostat 450</b> 	6.0 ≤ 50.0	20	4 s	5 s
<b>durostat 500</b> 	8.0 ≤ 50.0	-	4 s	5 s
<b>durostat B2</b> 	8.0 ≤ 50.0	-	-	-

 upon request



## 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.





### 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® environment

Our investments in material expertise and production technologies make it possible to forego reheating in the annealing furnace. We create the desired steel properties through direct hardening. This production route additionally results in excellent surface quality that simplifies further processing. This is how we minimize environmental impact and reduce material and energy consumption in manufacturing as well as in product processing.

## If you're reading this, your successful future has already begun.

Together with us, you are always one step ahead because we offer more than optimized products made of high-quality material.

- If you are looking for customized solutions, we will be pleased to work with you on the creation of new products and services.
- If you are looking for new ideas on materials, technologies and services, we want to help you find them.
- If you are looking for a fair and reliable partner, you are at the right place. We know that we can only be successful together with our customers when they benefit as much as we do from our partnership.
- Our customers take advantage of the most widely used technology: Two thirds of the steel produced worldwide is made using the LD process, and we're rather proud of that.

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**voestalpine**

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