

Steel

perdur[®]

Product information for wear-resistant steels



thyssenkrupp

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Profile

perdur[®] steels from thyssenkrupp are wear-resistant steels with excellent workability and exceptionally high toughness. perdur[®] stands for "performance" and "durability", i.e. for particularly pronounced wear resistance. Hardnesses of 400 and 450 HBW and sheet thicknesses from 4.0 to 8.0 mm make these steels ideal for a wide range of applications, from moderate wear to heavy abrasion.

Modern, low carbon equivalent alloying concepts that are optimally matched to the thickness range ensure good cutting and welding properties.

These steels are ideal for applications subject to wear such as:

1. Tipper bodies
2. Agricultural machinery
3. Snowplow blades
4. Laser-cut parts
5. Scrap containers

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Available steel grades

perdur® steels are available as cut-to-length sheet in nominal hardnesses of 400 and 450 HBW and in the sizes listed under “Available sizes”.

Table 1: perdur® family overview

	Material number	Special feature	Delivery form
Steel grade			
perdur® 400	1.8714	Guaranteed notch impact	Cut-to-length sheet
perdur® 450	1.8722	Guaranteed notch impact	Cut-to-length sheet

Remarks

Permissible dimensions and shape tolerances for cut-to-length sheet are based on DIN EN 10051.

Cut-to-length sheet is supplied with maximum flatness tolerances in accordance with DIN EN 10029, Table 5, steel group H. Closer flatness tolerances can be agreed upon ordering.

Surface quality requirements for cut-to-length sheet are set out in DIN EN 10163. Cut-to-length sheet is supplied untrimmed as standard.

Unless otherwise agreed in the order, the provisions of DIN EN 10021 apply for delivery.

Information on the application and processing of perdur® steels can be found in our processing recommendation at: www.thyssenkrupp-steel.com/en/publications/.

Technical features

Table 2: Chemical composition

	Mass fraction in ladle analysis									Carbon equivalent			
	C [%] max.	Si [%] max.	Mn [%] max.	P [%] max.	S [%] max.	Cr [%] max.	Mo [%] max.	B [%] max.	Ni [%] max.	CE [%] max.	CET [%] max.	CE [%] typ.	CET [%] typ.
Steel grade													
perdur® 400	0.20	0.80	1.50	0.020	0.010	1.00	0.50	0.005	1.50	0.47	0.32	0.37	0.26
perdur® 450	0.22	0.80	1.50	0.020	0.010	1.30	0.50	0.005	1.50	0.49	0.36	0.42	0.30

$$CE [\%] = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$$

$$CET [\%] = C + (Mn + Mo)/10 + (Cr + Cu)/20 + Ni/40$$

The steel has a fine-grain microstructure. The nitrogen is bound as nitrides with Al as well as Nb or Ti where applicable.

Table 3: Mechanical properties, guaranteed values

Test direction in rolling direction	Brinell hardness	Impact energy
	[HBW]	KV min. [J] at -20 °C
Steel grade		
perdur® 400	370–430	27
perdur® 450	420–480	27

Delivery condition: Thermomechanically rolled and direct quenched

Table 4: Mechanical properties, not guaranteed values

Test direction in rolling direction	Yield strength	Tensile strength	Elongation	Impact energy
	R _{p0.2} typ. [MPa]	R _m typ. [MPa]	A typ. [%]	KV typ. [J] at -40 °C
Steel grade				
perdur® 400	1,100	1,300	11	45
perdur® 450	1,200	1,450	10	40

The Brinell hardness is determined in accordance with DIN EN ISO 6506, measured approx. 1 mm below the sheet surface.

Notch impact testing to DIN EN ISO 148-1 is carried out on longitudinal samples from the area of the product surface. The minimum values represent an average of three samples, for which no single value may be less than 70% of the prescribed value.

For thicknesses below 10 mm the impact energy value stated in the table decreases in proportion to the sample width (product thickness). No notch impact tests are carried out on products of less than 6 mm thickness.

Scope of testing

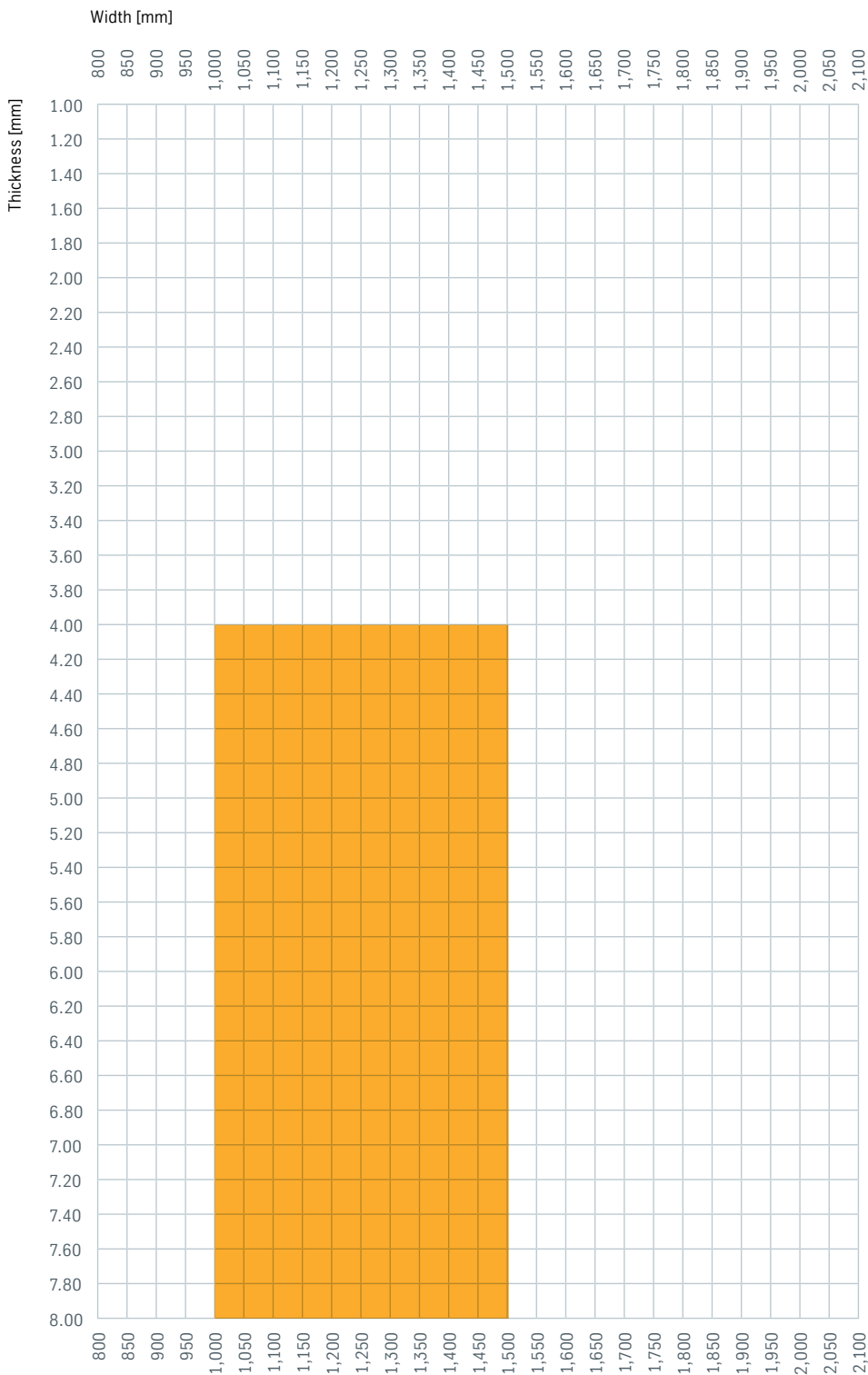
Unless otherwise agreed when ordering, the following scope applies for acceptance testing:


Table 5: Scope of testing hardness and impact energy

	Hardness	Impact energy at -20 °C (1 set = 3 samples)
Steel grade		
perdur® 400	Min. 1 x per coil	Thickness: ≥ 6 mm: mind. 1 x per coil
perdur® 450	Min. 1 x per coil	Thickness: ≥ 6 mm: mind. 1 x per coil

Available sizes

Cut-to-length sheet perdur® 400

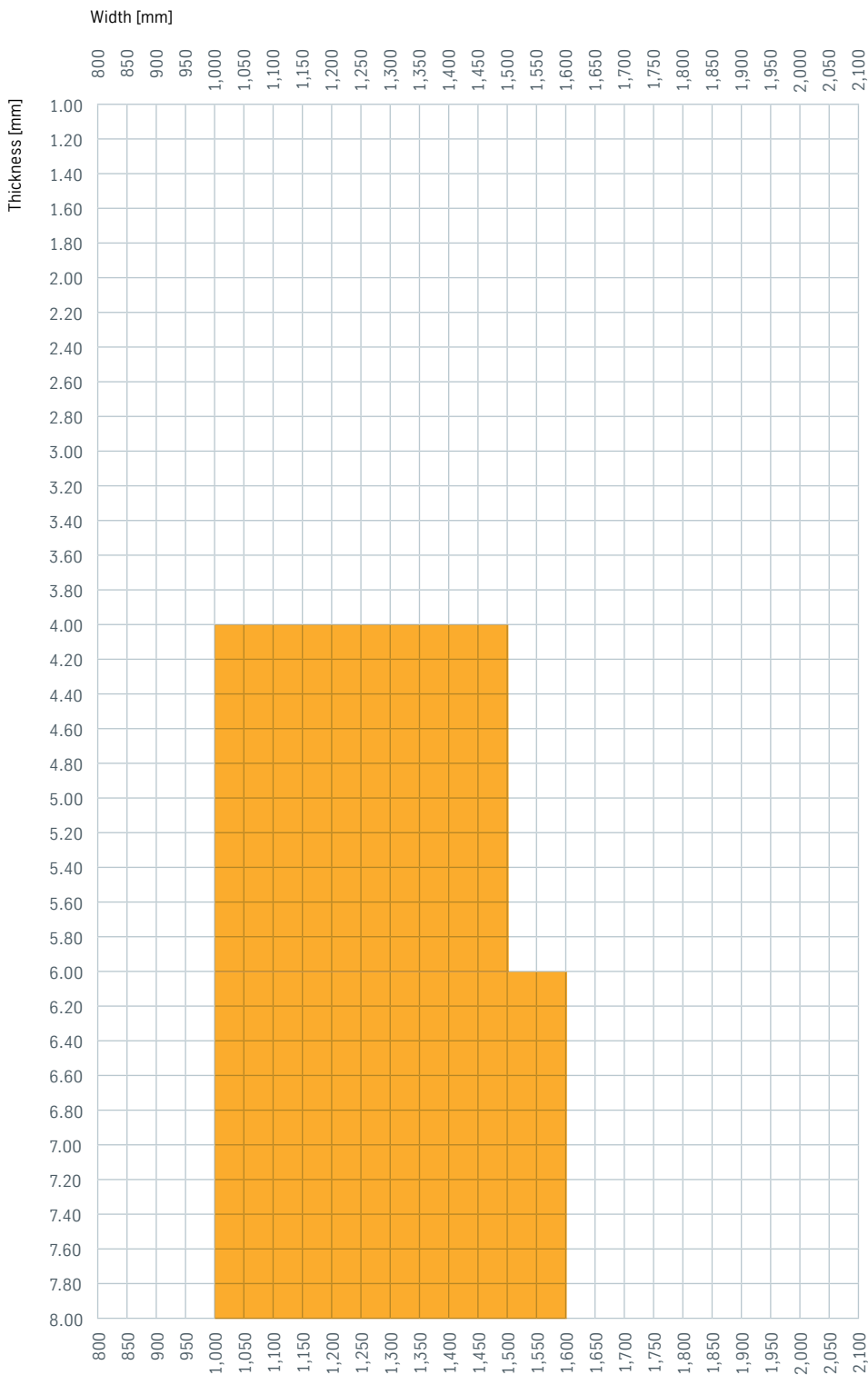


 Cut-to-length sheet

Length: Min. 2,000 mm, max. 16,000 mm
other sizes on request.

Available sizes

Cut-to-length sheet perdur® 450



Legend: ■ Cut-to-length sheet

Length: Min. 2,000 mm, max. 16,000 mm
other sizes on request.

Sample applications



Special mill grades are supplied subject to the special conditions of thyssenkrupp. Other delivery conditions not specified here will be based on the applicable specifications. The specifications used will be those valid on the date of issue of this product information brochure.

General information

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