

Abrasion Resistant steels

Quard 450



Quard[®]

ABRASION RESISTANT STEEL

1 Steel description and applications

Quard 450 is a martensitic abrasion resistant steels, with an average hardness of 450 HBW. The steel offers very high resistance to abrasive wear and impact granting a longer service life. The combination of very good cold forming properties and excellent weldability makes Quard 450 an optimal choice for most wear applications.

Quard 450 is mainly recommended for the following applications:

- on road tipper and dumper bodies
- cement drum mixer barrels,
- refuse haulers, scrap containers
- buckets, knives
- feeders, skips, screw conveyors
- mining and earthmoving machinery

2 Technical characteristics

Hardness guarantee

Hardness

HBW = 420 - 480

Brinell hardness test, HBW according to EN ISO 6506-1, is performed 1 - 2 mm below the plate surface once per heat and 40 tonnes.

Other mechanical properties (typical values)

Charpy-V notch impact test	Yield Strength (MPa)	Tensile Strength - Transverse - (MPa)	Elongation A5 (%)
35 J (longitudinal at -40°C)	1250	1400	10

Chemical composition

The steel is grain refined.

Thickness	Max ladle analysis, %								
	C	Si	Mn	P	S	Cr	Ni	Mo	B
3,2 - 20 mm	0,20	0,60	1,40	0,025	0,010	0,20	0,10	0,25	0,005
20,1 - 40 mm	0,21	0,60	1,60	0,025	0,010	0,75	0,10	0,30	0,005
40,01 - 64 mm	0,23	0,60	1,60	0,025	0,010	1,30	0,50	0,50	0,005

Carbon equivalent, typical values, %

Plate thickness	CEV ⁽¹⁾	CET ⁽²⁾
3,2 - 7,99 mm	0,41	0,30
8 - 20 mm	0,41	0,32
20,01 - 40 mm	0,56	0,37
40,01 - 64 mm	0,64	0,40

(1) CEV = C+Mn/6+ (Ni+Cu)/15+ (Cr+Mo+V)/5
 (2) CET = C+(Mn+Mo)/10+Ni/40 +(Cr+Cu)/20

3 Dimensions

Quard 450 at present is supplied in the following range:

- thickness: 3,2 - 64 mm
- width: 1500 - 3100 mm

For more information, please check our website or contact your local representative.

4 Flatness, tolerances & surface properties

Quard 450 is delivered with a unique combination of excellent flatness, tight thickness tolerances and superior surface finish.

Feature	Norm	
FLATNESS	- EN 10029: . Class N (standard) & . Class S	PLUS
THICKNESS tolerance	- meets and exceeds EN 10029 Class A - tighter tolerances upon request	PLUS
Shape, length, width tolerances	meets EN 10029	
SURFACE properties	exceeds the usual market standards, EN 10163-2 Class B3	PLUS

5 Delivery conditions

Our Quard plates are supplied as standard in the **shotblasted and primed** condition. In order to maintain a good weldability and laser cutting performance, a low zinc silicate primer is applied. Plates can also be delivered unprimed.

6 Heat treatment

Quard 450 receives its properties by quenching and when applicable by subsequent tempering. The properties of the delivery condition can not be retained after exposure at service or preheating temperatures above 250 °C. Quard 450 is not intended for any further heat treatment.