

# HARDOX<sup>®</sup> 450

## Data sheet

### ABRASION RESISTANT PLATE

HARDOX 450 is an abrasion resistant plate with a hardness of 450 HBW, intended for applications where demands are imposed on abrasion resistance in combination with good cold bending properties. HARDOX 450 offers very good weldability.

#### Applications

Dumper bodies, containers, crushers, sieves, feeders, measuring pockets, skips, cutting edges, conveyors, buckets, knives, gears, sprockets, etc

#### Chemical Composition

(ladle analysis)

| Plate thickness<br>mm | C<br>max<br>% | Si<br>max<br>% | Mn<br>max<br>% | P<br>max<br>% | S<br>max<br>% | Cr<br>max<br>% | Ni<br>max<br>% | Mo<br>max<br>% | B<br>max<br>% | CEV<br>typv. | CET<br>typv. |
|-----------------------|---------------|----------------|----------------|---------------|---------------|----------------|----------------|----------------|---------------|--------------|--------------|
| 3*) -10               | 0,19          | 0,70           | 1,60           | 0,025         | 0,010         | 0,25           | 0,25           | 0,25           | 0,004         | 0,41         | 0,30         |
| (10)- 20              | 0,21          | 0,70           | 1,60           | 0,025         | 0,010         | 0,50           | 0,25           | 0,25           | 0,004         | 0,47         | 0,34         |
| (20)- 40              | 0,23          | 0,70           | 1,60           | 0,025         | 0,010         | 1,00           | 0,25           | 0,25           | 0,004         | 0,57         | 0,37         |
| (40)- 50              | 0,23          | 0,70           | 1,60           | 0,025         | 0,010         | 1,40           | 0,25           | 0,60           | 0,004         | 0,59         | 0,36         |
| (50)- 80              | 0,26          | 0,70           | 1,60           | 0,025         | 0,010         | 1,40           | 1,00           | 0,60           | 0,004         | 0,72         | 0,41         |

\*) Plate thickness below 4 mm only after special agreement.

$$CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40}$$

The steel is grain refined.

#### Hardness

HBW  
425-475

#### Mechanical Properties

Typical values for  
20 mm plate thickness

| Yield strength<br>$R_e$<br>MPa | Tensile strength<br>$R_m$<br>MPa | Elongation<br>$A_5$<br>% |
|--------------------------------|----------------------------------|--------------------------|
| 1200                           | 1400                             | 10                       |

#### Impact Properties

Typical value for  
20 mm plate thickness

| Test temperature<br>°C | Impact energy<br>Charpy-V, longitudinal<br>J |
|------------------------|--|
| -40 (40 F)             | 40   |

#### Testing

Brinell hardness, HBW according to EN ISO 6506-1, on a milled surface 0,5–2 mm below plate surface per heat and 40 tons. Tests are made for every variation of 15 mm in the thickness of plates from the same heat.

#### Delivery Conditions

Q.

#### Dimensions

HARDOX 450 is supplied in plate thicknesses of 3\*)-80 mm. More detailed information on dimensions is provided in our brochure 042-UK General Product Information WELDOX, HARDOX and ARMOX.

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### Tolerances

Thickness tolerances according to SSAB Oxelösund thickness precision guarantee AccuRollTech™.  
- AccuRollTech™ meets the requirements of EN 10 029 Class A, but offers more narrow tolerances.  
More detailed information is given in our brochure 042-UK General Product Information WELDOX, HARDOX and ARMOX.

According to EN 10 029.  
- Tolerances on shape, length and width.  
- Tolerances on flatness according to Class N (Normal tolerances).

### Surface Properties

According to EN 10 163-2  
- Requirements according to Class A.  
- Repair conditions according to Subclass 1.  
(Repair welding is allowed)

### General Technical Delivery Requirement

According to our brochure 042-UK General Product Information WELDOX, HARDOX and ARMOX.

### Heat Treatment and Fabrication

HARDOX 450 has obtained its mechanical properties by quenching and when necessary by means of subsequent tempering. The properties of the delivery condition can not be retained after exposure to service or preheating temperatures in excess of 250°C (480°F). HARDOX 450 is not intended for further heat treatment.

For information concerning welding and fabrication, see our brochures on [www.hardox.com](http://www.hardox.com) or consult our Technical Customer Service.

Appropriate health and safety precautions must be taken when welding, cutting, grinding or otherwise working on the product. Grinding, especially of primer coated plates, may produce dust with high particle concentration. Our Technical Customer Service Department will provide further information on request.