

Raex 450

General Product Description

— Any time, any wear

Raex® offers a complete range of abrasion-resistant steels through SSAB's Certified Partner network. With its dependable quality and reliable performance, it delivers great value for all your typical wear applications.

High availability

Raex plate and strip are quickly available from our global Raex distribution network, enabling fast, effective production and less tied-up capital. For custom specialized grades, Raex mill lead times are short and delivery is reliable for easy inventory planning and replenishment.

Complete product range

Available in thicknesses of 2-80 mm at 400-500 HB, Raex has got your every wear need covered. You can depend on Raex to help extend service life, increase payload, optimize production and save costs. And Raex strip, made using modern technology and extensive quenched manufacturing processes, offers you more options and design possibilities.

Quality and performance you can rely on

Leaner production begins with reliable performance. Raex is made from carefully chosen raw materials in a tightly controlled, integrated steel mill process. The result: reliable quality and performance hardness, bendability, surface quality and flatness – thus high performance for all your typical wear applications.

Dimension Range

Raex 450 sheet is available in thicknesses of 2.5 to 8 mm and Raex 450 plate in thicknesses of 6 to 80 mm. Maximum width is depending on thickness. More detailed information on dimensions is provided at www.ssab.com.

Mechanical Properties

Product	Thickness (mm)	Width (mm)	Length (mm)	Hardness (HBW)	Typical yield strength R _{p0.2} (MPa)	Typical tensile strength R _m (MPa)	Typical elongation A (%)
Sheet	2.50- 8.00	1000- 1700	2000- 12000	420- 500	1250	1450	9
Plate	6.00- 40.00	1800- 3200	2000- 12000	420- 500	1200	1450	9
Plate	40.01- 60.00	2000- 2500	4000- 9500	420- 500	1200	1450	9
Plate	60.01- 80.00	2000- 2500	4000- 6900	420- 500	1200	1450	9

Brinell Hardness is measured, according to EN ISO 6506-1 on milled surface 0.3-3.0mm below surface. Hardness value is being announced in the material certificate. Mechanical properties are tested in transverse direction and tabulated for information only and values are not shown in material certificate.

Impact Properties

Product	Typical impact energy, longitudinal test, Charpy V 10x10 mm test specimen ¹⁾
Raex 450	30 J/-40 °C

¹⁾ Impact testing according to EN ISO 148-1 is performed on thickness ≥6mm. The specific value corresponds to a full-size specimen. Impact values are tabulated for information only and value are not shown in material certificate.

Chemical Composition (ladle analysis)

Product	C (max %)	Si (max %)	Mn (max %)	P (max %)	S (max %)	Cr (max %)	Ni (max %)	Mo (max %)	B (max %)
Plate	0.26	0.80	1.70	0.025	0.015	1.50	1.00	0.50	0.005
Sheet	0.23	0.50	1.60	0.025	0.010	1.20	1.00	0.25	0.005

The steel is grain refined.

Carbon Equivalent CET(CEV)

Thickness (mm)	Sheet 2.50 - 8.00	Plate 6.00 - 20.00	Plate 20.01 - 32.00	Plate 32.01 - 52.00	Plate 52.01 - 80.00
Typ CET(CEV) ^{1) 2)}	0.35 (0.52)	0.35 (0.48)	0.38 (0.57)	0.40 (0.61)	0.40 (0.63)

¹⁾ The CET values are tabulated for information only.

²⁾ The CEV value is being announced in the inspection certificate.

$$CET = C + \frac{Mn + Mo}{10} + \frac{Cr + Cu}{20} + \frac{Ni}{40} \qquad CEV = C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Cu + Ni}{15}$$

Tolerances

Thickness

For plate tolerances according to EN 10 029 Class A, tighter tolerances upon agreement. For sheet tolerances according to EN 10 051 Category A.

Length and Width

For plate tolerances according to EN 10 029, tighter tolerances upon agreement. For sheet tolerances according to EN 10 051.

Shape

For plate tolerances according to EN 10 029. For sheet tolerances according to EN 10 051.

Flatness

For plate and sheet the flatness deviation is max 6 mm/m.

Surface Properties

According to EN 10 163-2 Class A, Subclass 3.

Bending

Minimum inner bending radii for a 90° bend are:

Sheets, 3 x t (transverse) and 4 x t (longitudinal).

Plates t ≤ 20 mm, 4 x t (transverse) and 5 x t (longitudinal).

Delivery Conditions

The delivery condition is quenched. Sheets are available in as rolled surface condition with mill edge. Plates are available in as-rolled or shop-primed surface condition. Delivery requirements can be found in SSAB's brochure at www.ssab.com.

Fabrication and Other Recommendations

Welding, bending and machining recommendations can be found in brochures at www.ssab.com or consult Tech Support, techsupport@ssab.com.

Raex 450 is not intended for further heat treatment. Mechanical properties are achieved by quenching. The properties of the delivery condition cannot be retained after exposure to temperatures in excess of 250°C.

Appropriate health and safety precautions must be taken when welding, cutting, grinding or otherwise working on this product. Grinding, especially of primer coated plates, may produce dust with a high particle concentration.