

Hardox 400/ND 400

The data about chemical composition of Hardox 400 and Nicrodur 400 are presented.

The data about **Hardox 400** are taken from SSAB web side and are given in the following table :

Chemical Composition (ladle analysis)	Plate thickness mm	C max %	Si max %	Mn max %	P max %	S max %	Cr max %	Ni max %	Mo max %	B max %	CEV typv.
	3*) -10	0,14	0,70	1,60	0,025	0,010	0,30	0,25	0,25	0,004	0,33
	(10)- 20	0,14	0,70	1,60	0,025	0,010	0,50	0,25	0,25	0,004	0,37
	(20)- 32	0,18	0,70	1,60	0,025	0,010	1,00	0,25	0,25	0,004	0,48
	(32)- 45	0,22	0,70	1,60	0,025	0,010	1,40	0,50	0,60	0,004	0,57
	(45)- 51	0,22	0,70	1,60	0,025	0,010	1,40	0,50	0,60	0,004	0,57
	(51)- 80	0,27	0,70	1,60	0,025	0,010	1,40	1,00	0,60	0,004	0,65
	(80)- 130	0,32	0,70	1,60	0,025	0,010	1,40	1,50	0,60	0,004	0,73

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

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

Hardness	HBW 370-430

Mechanical Properties Typical values for 20 mm plate thickness	Yield strength R _e MPa	Tensile strength R _m MPa	Elongation A ₅ %
	1000	1250	10

Impact Properties Typical value for 20 mm plate thickness	Test temperature °C	Impact energy Charpy-V, longitudinal J
	-40 (-40 F)	45

Delivery Conditions	Q.

In the following table there are the data about **ND 400**, which is the product of Acroni company:

Nicrodur 400

1. *Orientational chemical composition*

	C	Si	Mn	S	P	Cr	Ni	Cu	Al	Mo	Ti	Nb	B	Ek_C
ICRODUR 400 up to 25 mm	0.160	0.25	1.300	0.0010	0.010	0.750			0.040		0.015	0.010	0.004	0,60-0,65
NICRODUR 400 25-40 mm	0.180	0.450	1.500	0.0030	0.012	0.900	0.500		0.040	0.250	0.015	0.010	0.004	

2. *Orientational* I mechanical properties

	Rp02 (N/mm ²)	Rm (N/mm ²)	A50 (%)
AVG	1000	1350	14.0

3. *Orientational* toughness at – 20 st

AVG	31
MIN	20
MAX	49

Hardness

Prescription: 360-440 HB

Average value: for all thicknesses : 410 HB

Delivery condition: Quenched