



NICRODUR

Wear resistant heavy plate

ACRONI

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NICRODUR is a wear resistant heavy plate with hardness from 360 to 540 HBW. The unique combination of high hardness, high strength and good toughness makes the material well suited for a wide variety of applications in which it is exposed to heavy wear by hard minerals and other abrasive materials. NICRODUR is characterized by its very good weldability, formability and machining properties. The members of NICRODUR product family are NICRODUR 400, NICRODUR 450 and NICRODUR 500.

WNr	Stahl eisen liste	Acroni
1.8715	17MnCr 5 – 3	NICRODUR 400
1.8720	18MnCr5-3	NICRODUR 450
1.8721	26MnCr6-3	NICRODUR 500

Applications

Bulldozers, dumptrucks, industrial trucks, lorries, machine parts and tools for mineral extraction (mining), metal working tools – cutting edges, knives, gears, bearings, loaders, buckets, slurry pipe systems, etc.

Chemical Composition

Ladle analysis										
Plate Thickness [mm]	C max	Si max	Mn max	S max	P max	Cr max	Ni max	Mo max	B max	CEV max
NICRODUR 400										
8 - 20	0,16	1,0	1,5	0,002	0,012	0,8	0,5	0,5	0,004	0,45
(20) - 40	0,18	1,0	1,5	0,002	0,012	0,9	0,5	0,5	0,004	0,56
(40) - 80	0,23	1,0	1,5	0,002	0,012	1,1	0,5	0,5	0,004	0,65
NICRODUR 450										
8 - 20	0,18	1,0	1,5	0,002	0,012	0,8	0,5	0,5	0,004	0,47
(20) - 40	0,19	1,0	1,5	0,002	0,012	0,9	0,5	0,5	0,004	0,56
(40) - 60	0,23	1,0	1,5	0,002	0,012	1,1	0,5	0,5	0,004	0,65
(60) - 80	0,25	1,0	1,5	0,002	0,012	1,1	0,5	0,5	0,004	0,71
NICRODUR 500										
8 - 25	0,28	1,0	1,5	0,002	0,012	1,0	0,5	0,5	0,005	0,61
(20) - 40	0,32	1,0	1,5	0,002	0,012	1,1	0,5	0,5	0,005	0,71
(40) - 60	0,34	1,0	1,5	0,002	0,012	1,2	0,7	0,5	0,005	0,76
(60) - 80	0,40	1,0	1,5	0,002	0,012	1,5	1,0	0,5	0,005	0,81
Grain refined steel All values are in % $CE = C + \frac{Mn}{6} + \frac{Ni+Cu}{15} + \frac{Cr+Mo+V}{5}$										

Hardness HBW

Hardness [HBW]		
NICRODUR 400	NICRODUR 450	NICRODUR 500
360 - 440	420 - 477	460 - 540

Mechanical Properties

	Yield strength(minimal), R_e [MPa]	Tensile strength, R_m [MPa]	Elongation (minimal), A₅ [%]
NICRODUR 400	1200	1380	9
NICRODUR 450	1280	1450	9
NICRODUR 500	1500	1800	9
Typical values for 15 mm plate thickness			

Impact Properties

Test temperature [°C]	Impact energy Charpy – V, transverse [J]
-40	30
Typical values for 15 mm plate thickness	

Testing

Brinell hardness HBW according to EN ISO 6506 – 1 or EN 10003 – 1. Tests are made on each plate

Delivery conditions

Q + T (when subsequent tempering is needed)

Dimensions

Nicrodur is supplied in plate thickness of 8 – 80 mm.

Tolerances

Thickness tolerances according to EN 10 029 Class A

- According to EN 10 029:
- Shape, length and width tolerances.
- tolerances on flatness according to Class N (normal tolerances)

Surface Properties

According to EN 10 163/B-3

Bending

Bending						
	Thickness	Transverse	Longitudinal	Transverse	Longitudinal	Springback
NICRODUR 400	8 ≥ t < 20 t ≥ 20	3,0 4,5	4,0 5,0	10,0 12,0	10,0 12,0	9 - 13
NICRODUR 450	8 ≥ t < 20 t ≥ 20	4,0 5,0	5,0 6,0	10,0 12,0	12,0 14,0	11 - 18
NICRODUR 500	8 ≥ t < 20 t ≥ 20	5,0 7,0	6,0 8,0	12,0 16,0	14,0 18,0	12 - 20

Minimum recommended punch radius (R) and die opening width (W) for plate thickness (t) when the plate is being bent to 90° along the direction of rolling and at right angles to the direction of rolling – and also the corresponding springback.

Maximum recommended preheat temperature

Maximum recommended preheat temperature [°C]																
	8	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
NICRODUR 400	room				75				100	175						
NICRODUR 450	room				125				150							
NICRODUR 500	room	175				200										
* for thicknesses up to 13mm Data from the table is applicable to single plate thickness when welding with a heat input of 1.7kJ/mm. The consumables determine the preheating temperature if its carbon equivalent is higher than of the plate Room temperature is approx 20°C																

Maximum recommended interpass temperature

Maximum recommended interpass temperature [°C]	
NICRODUR 400	225
NICRODUR 450	225
NICRODUR 500	225



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