ABRASERVICE
UK

ROC 500

WATER QUENCHED
ABRASION RESISTANT STEEL PLATE

Chemical composition

	C	Si	Mn	P	S	Mo	Ni	Cr	B	CEV|*|
Ladle analysis (max)	≤ 0.30	≤ 0.50	≤ 1.80	≤ 0.025	≤ 0.025	1.00	0.80	0.50	0.005	
10 - 25	0.25	0.30	1.25	0.015	0.005	0.22			0.0017	0.51
25 - 60	0.25	0.30	1.45	0.015	0.005	0.70	0.17	0.12	0.0017	0.63
60 - 100	0.25	0.30	1.55	0.015	0.005	0.90	0.22	0.23	0.0017	0.75

* CEV = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

— **Hardness:**
450 - 550 HB, 500 HB on average.

Mechanical properties in delivery condition (indicative values)

Thickness (mm)	Ys (MPa)	UTS (MPa)	E (%)	Impact ISO V-notch (J) -20°C
20	1300	1650	8	20

— **Size range:** 6-50 mm thickness. Ex-stock.

Processing information

— **Flame cutting:**
All conventional oxy-gas, plasma and laser methods can be used. Pre-heat plate > 15 mm to 100 - 150 °C.

— **Shearing and punching:**
Not recommended, due to the grade's very high strength.

— **Drilling:**
Difficult because of the grade's very high hardness. Specials drills with replaceable carbide insert are recommended and drilling will require a very rigid set-up with an abundant flow of cutting fluid.
The following rotations per minute are appropriated:

Ø 20 mm	Ø 25 mm	Ø 30 mm	Ø 35 mm	Ø 40 mm
720 rpm	575 rpm	475 rpm	410 rpm	360 rpm

— **Cold bending:**

Is advisable to use as generous a radius as possible and ensure the plate temperature is above 10 °C. Power requirements are linked to mechanical properties and springback should be allowed for. To avoid crack, the heat affected zone must be clean by grinding. Edges in the bending area must be round top & bottom:

	Internal minimum radius	Die opening minimum
Transversal	7 x th	14 x th
Longitudinal	9 x th	16 x th

— **Welding (In accordance with NF: EN 1011):**

Weldable using SMAW, GMAW and saw processes.
Good joint fit-up and edge preparation are required;
edges grind in order to clean heat affected zone,
cut defect old trace of paint & moistures.

— For SMAW welding use low hydrogen basic coated electrodes. If these have not been correctly stored to prevent moisture absorption, thoroughly re-dry according to manufacturer's recommendations.

— Pre-heating is required in all cases. The following table gives minimum pre-heating temperatures in °C, relative to plate thickness and joint type.

Thickness (mm)	8	10	15	20	25	30	40	50	60
Butt weld	150	160	200	225	225	225	225	225	225
Overlap weld	200	225	225	225	225	225	225	225	225

Recommended heat inpout 1.2 - 2.5 kJ/mm,
interpass temperature 150 °C max.

— For classical welded assembly, it's suitable to play with E7018

— **Stud welding:**

Possible without pre-heat, as an alternative to fix liner plates by drilling and bolting.

Contact

A. Arley Road, Saltley, Birmingham B8 1BB, United Kingdom
T. +44 121 326 3100
F. +44 121 326 3105
E. a.uk@abraservice.com
W. www.abraservice.com/uk/