ABRASERVICE
UK

ROC / ABRO 400

WATER QUENCHED
ABRASION RESISTANT PLATE

Chemical composition

Thickness	C	Si	Mn	P	S	Cr	Ni	Mo	B	Nb
> 6 mm	≤ 0.24	≤ 0.70	≤ 1.80	≤ 0.030	≤ 0.015	≤ 1.50	≤ 0.80	≤ 0.50	≤ 0.005	≤ 0.05

— Hardness as supplied 370 - 440 HB, 400 HB on average.

Mechanical properties in delivery condition (indicative values)

Thickness (mm)	Ys (MPa (ksi))	UTS (MPa(ksi))	E (%)	Toughness (J) at -40 °C
15	1000 (145)	1300 (190)	12	30

Processing information

— **Flame cutting:**

All conventional oxy-gas, plasma and laser methods can be used. Preheating temepratures linked to thickness:

- 30 - 50 mm: 75 °C;
- > 50 mm: 100 °C.

— **Drilling:**

8 % cobalt high speed steel drills (grade M42) which have a slow helix, a short flute length, a thick webb and a point thinned angle of 130° are recommended. A very rigid set-up is essential with an abundant flow of cutting fluid. The work-piece should preferably be securely clamped to a mild steel backing plate and positioned close to the drill post.
The following rotations per minute / feeds are appropriated:

Ø 5 mm		Ø 10 mm		Ø 15 mm		Ø 20 mm		Ø 30 mm	
rpm	feed mm / rev	rpm	feed mm / rev	rpm	feed mm / rev	rpm	feed mm / rev	rpm	feed mm / rev
570	0.05	290	0.10	190	0.16	150	0.20	90	0.30

— **Cold bending:**

Cold bending should be carried out at a minimum temperature above 10 °C. The bending radius should be as large as possible considering the minimum stated parameters. It is advisable to use as generous radius as possible and ensure plates are above 10 °C. Power requirements are extremely high and springback must be allowed for. To avoid cracking, flame cut plate edges have to be ground in order to clean haz and round on top and bottom edges along bending area. Bending angles 90°.

	Internal minimum radius	Die opening minimum
Transversal	4 x th	12 x th
Longitudinal	5 x th	14 x th

— **Hot forming:**

This grade is not suitable for hot forming. Heating above 200 °C reduces the mechanical properties.

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

Readily weldable under normal conditions using SMAW, GMAW and SAW without pre-heat, up to combined thickness of 60 mm, provided low hydrogen controlled electrodes are used. All welding consumables should be dried. Welding can be successfully carried out using heat inputs in the range of 1.5 - 3 kJ/mm. The interpass temperature should not exceed 150 °C. the following minimum preheat temperature should be observed 75 °C for plate thicknesses from 30 up to 50 - 100 °C.

General note

— If further informations are required, please request a copy of our technical guide.

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