AR400

Wear Resistant Steel

TECHNICAL SHEET

1 Chemical Composition

Plate Thickness	C	Si	Mn	P	S	Cr	Ni	Mo	B	Supply Hardness(HB)	Supply Condition
3mm - 60mm	.16-0.17	0.60	1.40-1.60	0.025	0.010	1.15-1.30	0.10-0.50	0.25-0.50	0.005	400BHN	Q & T

2 Other mechanical properties (typical values)

Charpy-V notch impact test (Longitudinal at -40°C)	Yield Strength (MPa)	Tensile Strength Transverse (MPa)	Elongation A5 (%)
40 J	1160	1300	10

3 Main Characteristics and Applications

AR 400 is a martensitic steel renowned for its exceptional abrasion resistance. With an average hardness of 400 HBW, it delivers outstanding performance in demanding applications. Its versatility, characterized by high toughness, excellent cold formability and superior weldability, ensures both exceptional workshop efficiency and long-lasting wear resistance.

Applications:

- Mining and Earthmoving Machinery
- Crushing and Pulverizing Equipment
- Buckets, Knives, Crushers and Feeders
- Presses and Skips
- Excavators
- Slurry Pipe Systems
- Screw Conveyors

4 Heat Treatment

AR400 acquires its properties through quenching and when necessary subsequent tempering. However, these properties cannot be maintained if exposed to service or preheating temperatures exceeding 250 °C. AR 400 is not designed for any additional heat treatment.

5 General Processing Recommendations

To achieve the highest level of efficiency in machining AR400, it is crucial to follow the specific guidelines and utilize the appropriate equipment outlined below.

Thermal Cutting

Plasma and flame cutting can be carried out without preheating on thicknesses up to 40 mm, as long as the ambient temperature is above 0 °C. After cutting, allow the cut pieces to cool gradually to room temperature. A slow cooling process helps minimize the risk of cut edge cracking (do not speed up the cooling of the parts).

Cold Forming

AR400 is highly adaptable to cold forming processes. The minimum recommended bend radius-to-thickness (R/t) ratio for bending AR400 is provided in the following table:

Thickness (mm)	Transverse to rolling (R/t)	Longitudinal to rolling (R/t)	Trans. Width (W/t)	Long. Width (W/t)
t <8.0	2.5	3.0	8	10
8 ≤ t < 20	3.0	4.0	10	10
t ≥ 20.0	4.5	5.0	12	12

R = Recommended punch radius (mm), t = Plate thickness (mm), W = Die opening width (mm) (bending angle ≤ 90°)

AR400's consistent properties and precise thickness control minimize springback during forming. To further reduce the risk of bending-related cracking, it is advisable to grind flame-cut or sheared edges in the bending area.

Welding

AR400 exhibits excellent weldability due to its low carbon equivalent. It is compatible with all standard welding techniques, both manual and automated. Welding should be conducted at ambient temperatures of at least 5°C, followed by a controlled cooling process to room temperature. Rapid cooling can lead to cracking.

For single plates up to 20 mm thick, preheating is unnecessary when using a heat input of 1.7 kJ/mm. The interpass temperature should not surpass 225°C.

Employing soft weld consumables with low hydrogen content (≤ 5 ml/100g) is recommended. The consumable strength should be as low as the design and wear conditions permit.

Adhering to the welding guidelines outlined in EN-1011 is essential for optimal results when working with AR400.

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STEEL SOLUTIONS

AR400

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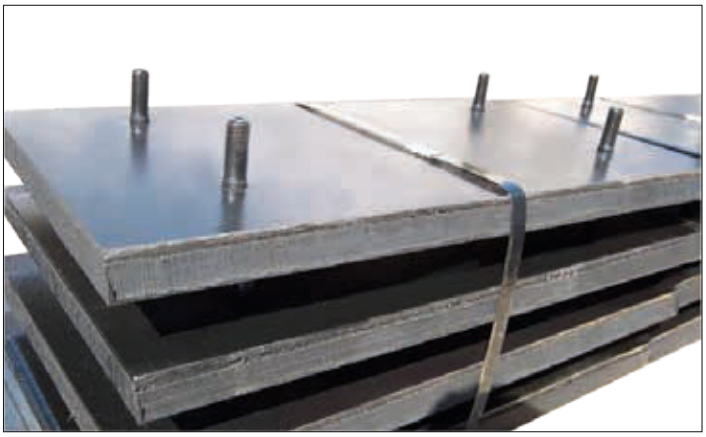
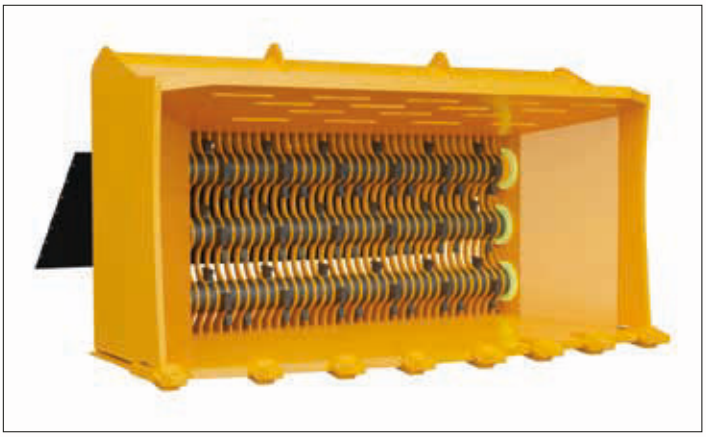
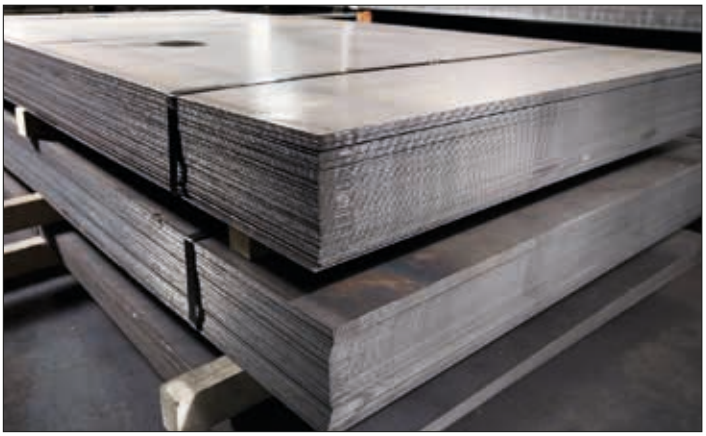
Machining

AR400 is readily machinable using HSS and HSS-Co alloyed drills. However, the feed rate and cutting speed must be adjusted to accommodate its high hardness.

For operations like face milling, counterboring, and countersinking, tools equipped with replaceable cemented carbide inserts are the preferred choice.







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