

## TECHNICAL SHEET

### 1 Chemical Composition

| Plate Thickness | C         | Si   | Mn   | P     | S     | Cr   | Ni   | Mo   | B     | Supply Hardness(HB) | Supply Condition |
|-----------------|-----------|------|------|-------|-------|------|------|------|-------|---------------------|------------------|
| 3mm - 60mm      | 0.28-0.30 | 0.80 | 1.60 | 0.025 | 0.010 | 1.00 | 1.00 | 0.50 | 0.005 | 450BHN              | 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 (%) |
|--|----------------------|-----------------------------------|-------------------|
| 30 J   | 1500                 | 1700                              | 8                 |

### 3 Main Characteristics and Applications

AR500 is a martensitic steel known for its exceptional abrasion resistance. Its average hardness of 500 HBW ensures exceptional durability against wear and tear, making it an ideal choice for applications requiring long service life. Its robust combination of hardness and strength makes AR500 a premier material for the demanding environments of the recycling and mining industries.

#### Applications:

- Screeners
- Crushing and Pulverizing Equipment
- Conveyors Belts
- Grapples
- Scrap Presses

### 4 Heat Treatment

AR500 is a martensitic steel that achieves its properties through quenching and, if necessary, tempering. Its delivered condition cannot be maintained after exposure to service or preheating temperatures above 250°C. AR500 is not intended for any additional heat treatment.

### 5 General Processing Recommendations

To maximize productivity when working with AR500, it's crucial to follow the specific procedures and use the recommended tools outlined below.

#### Thermal Cutting

Plasma and flame cutting can be performed on AR500 steel up to 20 mm thick without preheating, provided the ambient temperature is above 0°C. After cutting, allow the parts to cool gradually to room temperature. This slow cooling process helps prevent cut edge cracking. Avoid accelerating the cooling of the cut parts.

#### Cold Forming

AR500 is highly suitable for cold forming operations. The minimum recommended radius-to-thickness ratio (R/t) for bending AR500 is provided in the table below.

| Thickness (mm) | Transverse to rolling (R/t) | Longitudinal to rolling (R/t) | Trans. Width (W/t) | Long. Width (W/t) |
|----------------|-----------------------------|-------------------------------|--------------------|-------------------|
| t < 8.0        | 3.5                         | 4.5                           | 10                 | 12                |
| 8 ≤ t < 20     | 4.5                         | 5                             | 12                 | 14                |
| t ≥ 20.0       | 6                           | 7                             | 16                 | 18                |

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

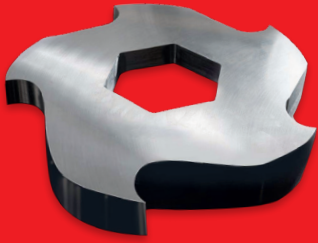
AR500's uniform properties and precise thickness control minimize springback during bending. To further reduce the risk of cracking, grinding the flame-cut or sheared edges in the bending area is recommended.

#### Welding

AR500 is highly weldable due to its optimal carbon equivalent. It can be welded using various manual or automatic methods. Welding should be performed at ambient temperatures above +5°C, followed by slow cooling to room temperature. For single-plate thicknesses up to 12 mm and a heat input of 1.7 kJ/mm, preheating is unnecessary. Interpass temperatures should not exceed 225°C.

Use soft weld consumables with low hydrogen content (≤ 5 ml/100g). The consumable's strength should match the design and wear requirements. Welding AR500 should generally follow EN-1011 guidelines





# AR500

## Wear Resistant Steel

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#### Machining

AR500 is machinable using HSS and HSS-Co alloyed drills, though adjustments in feed rate and cutting speed are necessary due to its high hardness. For operations like face milling, counterboring, and countersinking, tools with replaceable cemented carbide inserts are recommended.

