

## CRUSHER WEAR PARTS

# Manganese Steel Blow Bars

Austenitic Hadfield steel bars that work-harden in service. The tough choice for shock loading and tramp metal.



## OVERVIEW

Austenitic manganese steel, known as Hadfield steel, leaves the foundry relatively soft at around 220 BHN and hardens to over 500 BHN at the working surface as it is struck. The core stays tough and ductile, which is why a manganese bar bends and deforms where a high chrome bar would crack.

Melco casts manganese blow bars to ASTM A128 in Grades A, B-3, C and E-2. All castings are solution annealed and water quenched, the treatment that puts the carbides into solution and gives the steel its characteristic toughness.

These bars suit primary impact crushing, demolition waste, reinforced concrete and any feed where uncrushable material arrives without warning. In clean, highly abrasive rock they will wear faster than high chrome, so the choice is driven by impact rather than abrasion.

## APPLICATIONS

- Primary impact crushing of hard and mixed feed
- Recycled concrete and demolition waste with rebar
- Construction and demolition (C&D) recycling plants
- Feeds carrying tramp metal or uncrushable material
- Mobile crushing spreads working unscreened material

## KEY FEATURES

- Work-hardens in service - The struck face climbs past 500 BHN while the body stays tough, so the bar resists cracking rather than resisting only wear.
- Solution annealed and water quenched - The full ASTM A128 treatment, run in-house, so carbides are dissolved and the austenite is stable.
- Handles tramp metal - Rebar and uncrushables deform the bar rather than fracturing it, protecting the rotor and

reducing catastrophic failures.

- Grade selected to section - Heavier sections move to Grade B-3 or the molybdenum-bearing E-2 so properties hold through the thickness.

## MANUFACTURING SPECIFICATION

| Parameter           | Specification                                      |
|---------------------|----------------------------------------------------|
| Moulding            | No-bake resin sand and green sand                  |
| Melting             | Induction furnace, spectrometer-controlled         |
| Piece weight        | 5 kg - 2,000 kg                                    |
| Heat treatment      | In-house, computer-controlled cycles               |
| Dimensional control | Template and CMM check against drawing             |
| Documentation       | Chemical, hardness and dimensional report per heat |

## MATERIAL GRADES

| Grade               | Typical composition                         | Hardness                                       | Suited to                              |
|---------------------|---------------------------------------------|------------------------------------------------|----------------------------------------|
| ASTM A128 Grade A   | 1.05-1.35% C, 11.0-14.0% Mn                 | 200-229 BHN as-cast,<br>500+ BHN work-hardened | Standard high-impact duty              |
| ASTM A128 Grade B-3 | 0.9-1.05% C, 11.5-14.0% Mn                  | 200-229 BHN as-cast,<br>500+ BHN work-hardened | Heavier sections, improved toughness   |
| ASTM A128 Grade C   | 1.05-1.35% C, 11.5-14.0% Mn,<br>1.5-2.5% Cr | 220-250 BHN as-cast                            | Where extra initial hardness is needed |
| ASTM A128 Grade E-2 | 0.7-1.3% C, 11.5-14.0% Mn, 1.8-2.1% Mo      | 200-229 BHN as-cast                            | Heavy sections, faster work-hardening  |

## ENQUIRIES

Send a drawing, a sample or the machine model and we will confirm the fitment, recommend a grade and quote a firm price and delivery date.

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