GNEE Chromium Carbide Wear Plate

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Introduction

Bimetallic Wear Plates are composite materials engineered through advanced metallurgical bonding techniques to combine the high wear resistance of a hardened alloy layer with the structural toughness of a ductile base layer. These plates are specifically designed to withstand extreme abrasion, impact, and corrosion in industries such as mining, construction, and heavy machinery.

Material Composition

Top Layer (Cladding):

Alloy Type: High-chromium (Cr15%–30%), molybdenum (Mo2%–5%), and carbide-forming elements (e.g., vanadium, tungsten).

Hardness: 550–700 HBW (Brinell Hardness) to resist gouging, grinding, and sliding wear.

Microstructure: Hyper-eutectic chromium carbides distributed in a martensitic matrix.

Base Layer (Substrate):

Material: Low-carbon steel (e.g., ASTM A36, S355JR) or high-strength steel (e.g., Hardox 400).

Thickness: 6–100 mm (customizable based on load requirements).

Function: Absorbs impact energy and provides structural support.





Key Features

High Wear Resistance: Advanced bimetallic composition ensures prolonged service life under extreme abrasion.

Superior Impact Strength: Designed to withstand heavy impacts without cracking or deformation.

Customizable Dimensions: Available in various thicknesses and sizes to meet specific application needs.

Easy Installation: Can be cut, welded, or bolted for seamless integration into existing systems.

Cost-Effective: Reduces maintenance costs and downtime with long-lasting performance.

Manufacturing Process

Bimetallic wear plates are produced through a specialized manufacturing process that combines a tough base material with a hard, wear-resistant overlay. This process ensures exceptional durability and performance in high-wear environments. Below is an overview of the key steps involved in creating our high-quality bimetallic wear plates.

Bonding Technology

Explosive Cladding

High-pressure explosion welds the clad layer to the substrate, ensuring 100% metallurgical bonding without porosity.

Casting Overlay

Molten wear-resistant alloy is poured onto the preheated base plate, followed by controlled cooling to prevent cracking.

Post-Processing

Stress-relief annealing to eliminate residual stresses.

Surface grinding for dimensional accuracy (±0.5 mm tolerance).







Quality Assurance

Non-Destructive Testing (NDT):

Ultrasonic testing (UT) to detect bonding defects.

Dye penetrant inspection (DPI) for surface cracks.

Applications

Bimetallic wear plates offer an effective solution for industries facing challenging wear conditions. By combining the hardness of white iron with the toughness of steel, these plates enhance equipment longevity and performance. When selecting a supplier, consider factors such as product quality, customization capabilities, and industry experience to ensure optimal results for your specific applications.

Bimetallic wear plates are widely used in:

Mining

Protecting components like excavator bucket liners and hopper liners subjected to high-impact and abrasive environments.

Cement Industry

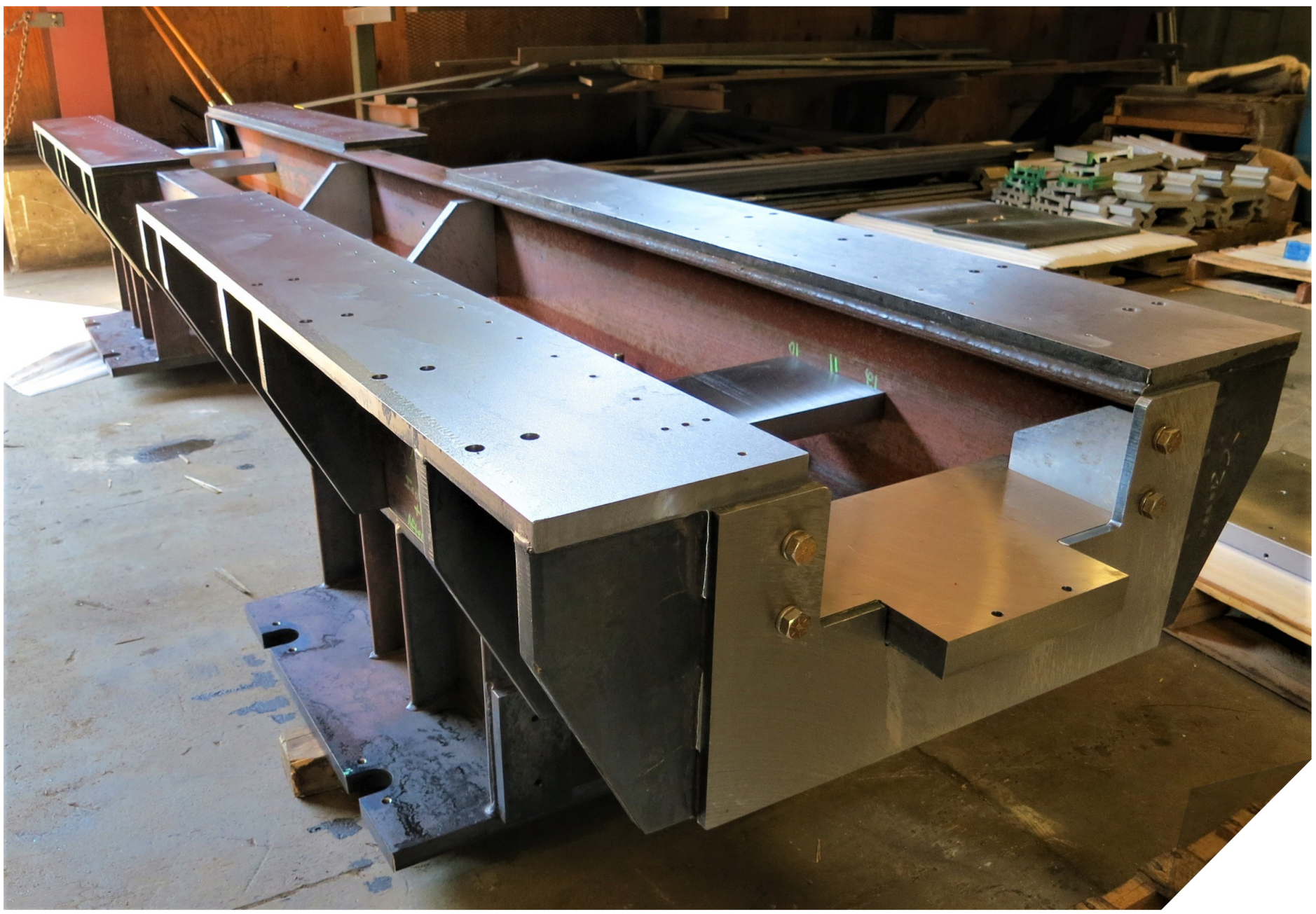
Lining raw mill sections, clinker chutes, and dust discharge pipes to withstand abrasive wear.

Power Generation

Shielding coal hoppers, ash pipelines, and fan blades from erosive wear.

Steel Manufacturing

Protecting bins, vibrating feeders, and slag sluice linings in steel plants.



Customization & Services

Tailored Solutions

Surface Patterns

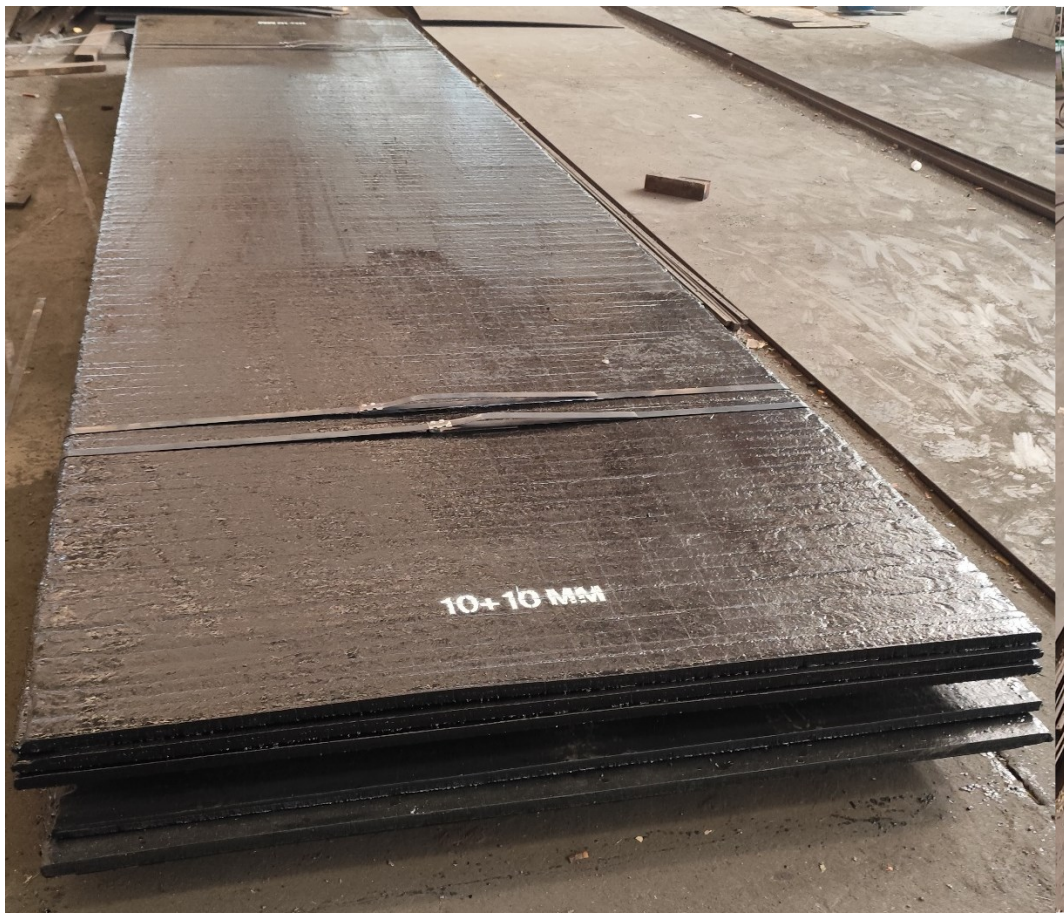
Diamond, waffle, or herringbone textures for anti-slip and material flow control.

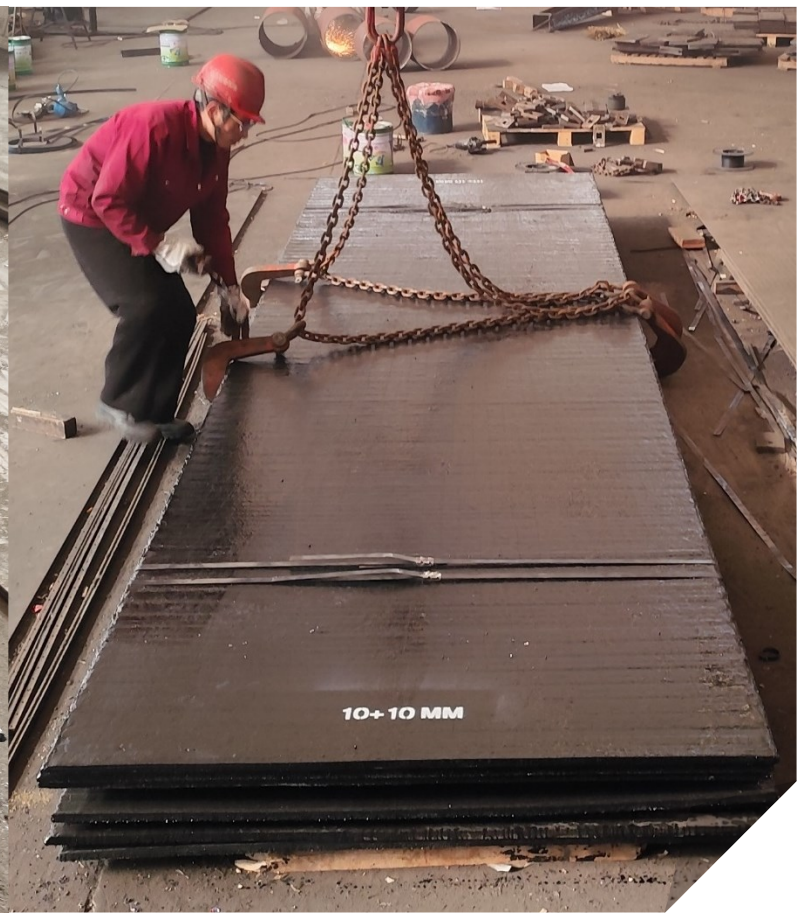
Edge Preparation

Beveled edges (30°–45°) for seamless welding.

Coating Options

HVOF-sprayed tungsten carbide for extreme corrosion environments.





Logistics & Support

Lead Time: 2–4 weeks (standard sizes), 6–8 weeks (custom orders).

Packaging: Waterproof wrapping with steel strapping for ocean freight.



