

# BTMCr15

BTMCr15 is a premium high-chromium abrasion-resistant white cast iron formulated in accordance with the Chinese standard GB/T 8263-2010, widely recognized as a reliable wear-resistant alloy for harsh industrial service conditions. Its chemical composition is dominated by carbon (2.0 – 3.6 wt%) and chromium (14.0 – 18.0 wt%), with moderate additions of molybdenum, nickel, copper and other alloying elements; trace microalloying elements like vanadium, titanium and rare earth elements can also be incorporated to optimize comprehensive performance.

## Chemical Composition

C	Si	Mn	P	S	Cr	Ni	Cu	Mo
2.0 – 3.6	≤1.2	≤2.0	≤0.06	≤0.06	14.0 – 18.0	≤2.5	≤1.2	≤3.0

*Note: Trace elements such as V, Ti, Nb, B and RE are permitted to be added appropriately.*

In its microstructure, massive hard  $\text{Cr}_7\text{C}_3$  carbides are uniformly distributed within the metallic matrix, which endows the material with extremely high hardness and outstanding abrasion resistance, while alloying elements effectively refine grains and balance hardness with proper toughness to resist moderate impact and vibration loads. This material delivers excellent structural stability at continuous operating temperatures up to  $750\text{ }^\circ\text{C}$ , along with prominent resistance against acid, alkali and high-temperature oxidation corrosion.

Available in as-cast, heat-treated hardened and soft-annealed states with diversified hardness grades, BTMCr15 supports customized casting and machining. It is extensively applied to wear-prone components in mining, cement, thermal power, metallurgy, chemical and port industries, effectively extending the service life of equipment exposed to particle scouring, abrasive wear and complex corrosive environments.



## Mechanical and Physical Properties

ITEM	INDEX
Density	7.2 – 7.4 g/cm <sup>3</sup>
Hardness (As-cast / Stress-relieved)	HBW ≥ 450 (HRC ≥ 46)
Hardness (Hardened / Hardened stress-relieved)	HBW ≥ 650 (HRC ≥ 58)
Hardness (Soft annealing state)	HBW ≤ 400 (HRC ≤ 41)
Compression strength	≥ 1200 MPa
Bending Strength	≥ 380 MPa
Impact Strength	≥ 8.5 J/cm <sup>2</sup>
Abrasive Resistance	Excellent anti-abrasion performance against particle erosion
Operating temperature	≤ 750 °C (Long-term service)
Modulus of Elasticity (Room Temperature)	1.52 × 10 <sup>5</sup> MPa
Linear Expansion Coefficient (RT to 600 °C)	9.15 × 10 <sup>-6</sup> / °C

## Corrosion Resistance (Weight Loss Rate, Retained Rate ≥)

Medium	Retention Rate
95% – 98% H <sub>2</sub> SO <sub>4</sub>	≥ 97%
20% H <sub>2</sub> SO <sub>4</sub>	≥ 93%
20% NaOH	≥ 97%
High-temperature flue gas & oxidation environment	Excellent anti-oxidation performance



## Advantages

BTMCr15 is a typical high chromium white cast iron with dense  $Cr_7C_3$  hard carbides inside the microstructure, delivering outstanding wear resistance and greatly extending the service life of industrial equipment and components.

It features good high-temperature stability and thermal fatigue resistance, suitable for continuous operation under medium and high temperature working conditions.

The material combines high hardness and moderate toughness, effectively resisting impact load, material scouring and abrasive wear in harsh working environments.

It possesses good acid and alkali corrosion resistance, adaptable to complex corrosive working media.

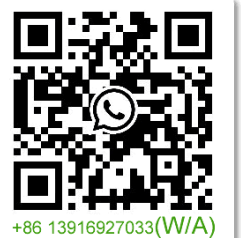
Custom casting, heat treatment and precision machining services are available to produce finished parts according to customer drawings and actual working conditions.

## Application Scenarios

BTMCr15 is widely adopted across multiple industrial sectors, especially for parts subjected to abrasive wear, scouring, moderate impact and high-temperature corrosion. The detailed application fields and typical components are as follows:

### Mining Industry

It is ideal for chute liners, hopper wear plates, crusher liners and hammer heads. The material resists continuous scouring and abrasion from ores, rocks and bulk materials, ensuring stable operation of mining conveying and crushing equipment under medium and low stress wear conditions.



## Cement & Building Materials Industry

Commonly used for vertical mill roller sleeves, mill disc liners, silo wear liners and impact crusher blow bars. It maintains excellent dimensional stability during long-term grinding of cement raw materials and clinker, effectively lowering equipment maintenance frequency.

## Power Generation Industry

Applied to coal powder conveying pipelines, burner nozzles, ash remover blades and coal mill accessories. It can withstand long-term erosion of coal ash, flue gas and high temperature, and performs well in anti-wear and anti-high-temperature corrosion for thermal power equipment.

## Metallurgical Industry

Suitable for steel rolling guide guards, blast furnace bell components and furnace bottom roller sleeves. Its superior high-temperature resistance and wear resistance make it a preferred material for high-temperature wearing parts in metallurgical production lines, with a service life more than twice that of ordinary alloy materials.

## Water Conservancy & Chemical Industry

Used for flow passage components of slurry pumps, pump shells and rotors. Relying on good acid-base corrosion resistance and anti-scouring capability, it adapts to working conditions of conveying slurry and corrosive mediums.

## Port & Transportation Machinery

Deployed on wear-resistant plates for port handling machinery and bulk material transportation equipment, resisting abrasion caused by frequent loading and unloading of grains, minerals and other bulk cargoes.

