

CONE CRUSHER WEAR PARTS



We have developed an extensive range of parts to suit all leading cone crusher models including:

Metso Minerals/Nordberg

HP series

HP100, HP200, HP300, HP400, HP500, HP700, HP800

GP series

GP100, GP11F, GP11M, GP300, GP500

Sandvik

H series

H2800, H3800, H4800, H6800, H8800

S series

S2800, S3800, S4800, S6800, S8800

Other parts No.s and sizes can also be customized upon request

We supply castings in several grades of manganese and alloys. Our extensive quality control program assures proper fit and wear, we guarantee that all alloys will meet or exceed industry standards for chemical composition and physical properties.

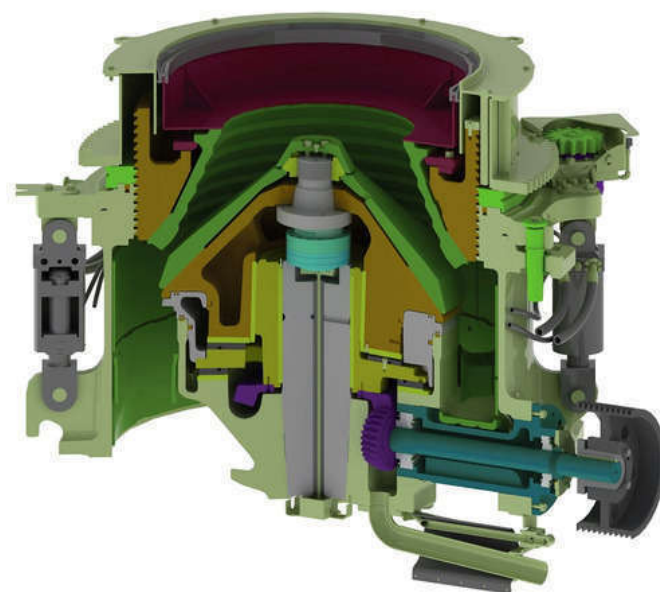
Manganese material grades we currently doing:

13% Manganese Steel - Standard Hadfield Manganese for general crushing conditions where high abrasion wear resistance is not of primary concern. Suitable for cone and jaw crushers.

18% Manganese Steel - Increased Manganese and Carbon content for extended wear life. Suitable for all cone and jaw crushers.

22% Manganese Steel - Optimum Manganese and Carbon combination for good wear-resistance and toughness. Extended wear life in high impact. High abrasive wear conditions. Suitable for most cone liners as well as all sizes of jaw crusher liners.

13%, 18%, 22% high Manganese can also made with extra Chrome content of 1.0%-2.5% to increase the wear property of Manganese steel



- Every parts are well casted according to our extensive quality control program



- Chemical composition of our high Manganese casting

13% Manganese: 11-14% Mn, 0.9-1.3% Carbon, with chrome or without chrome

18% Manganese: 17-19% Mn, 1.0-1.4% Carbon, with chrome or without chrome

22% Manganese: 21-23% Mn, 1.0-1.45% Carbon, with chrome or without chrome

- Instructions when choosing the right Manganese material according to rock types

Manganese content	Rock Types					
	Hard & Abrasive Rock	Hard & Non-Abrasive	Medium & Abrasive Rock	Medium & Non-Abrasive	Soft & Abrasive Rock	Soft & Non-Abrasive
13%				✓		✓
18%		✓	✓	✓	✓	✓
22%	✓	✓	✓			

JAW CRUSHER WEAR PARTS



CS Wear is a leading manufacturer and supplier of jaw plates to suit all leading models. We offer ISO 9000 certified, fully guaranteed and warranted parts coupled with OEM reliability and cost effective prices. CS Wear has developed a range of parts to support models by leading manufacturers including Mesto, Sandvik and other leading brands.

Metso Minerals / Nordberg:

C63, C80, C100, C10, C125, C140, C160, C200

Sandvik:

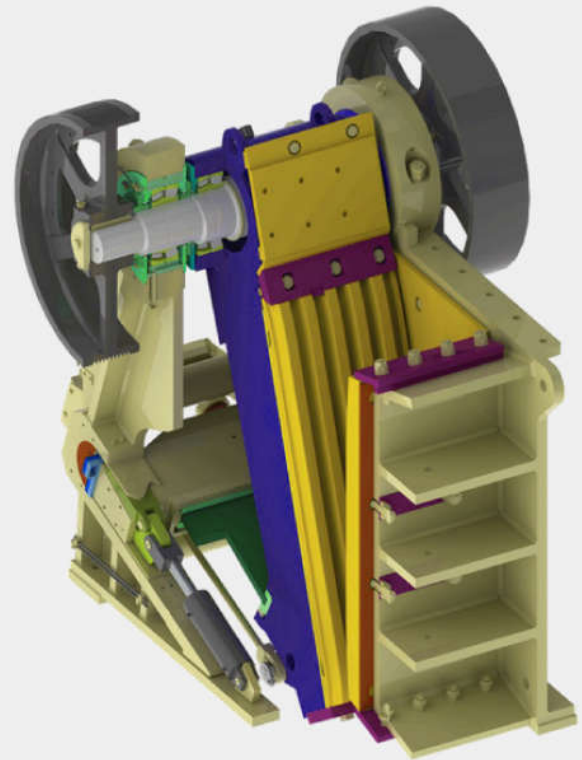
JM907, JM1108, JM1208, JM1211, JM1312, JM1511

We also supply various jaw wear parts of leading brands according to parts numbers or technical drawings.

Wear materials used for manufacturing the jaw plate is manganese steel as it has very high resistance to impacts received by the crusher when large stones enter the machine.

- 13% Manganese: 11-14% Mn, 0.9-1.3% Carbon, with chrome or with our chrome
- 18% Manganese: 17-19% Mn, 1.0-1.4% Carbon, with chrome or with our chrome
- 22% Manganese: 21-23% Mn, 1.0-1.45% Carbon, with chrome or with our chrome

We also supply jaw plates with TiC (Titanium Carbide) inserts to combat extremely hard and abrasive material, this method has significantly increase the wear life and durability. lifespan has improved up to 7.5x when working with super hard and abrasive crushing materials.



JAW LINER SELECTION

There are a few key points that you need to consider when selecting the correct liners for an application:

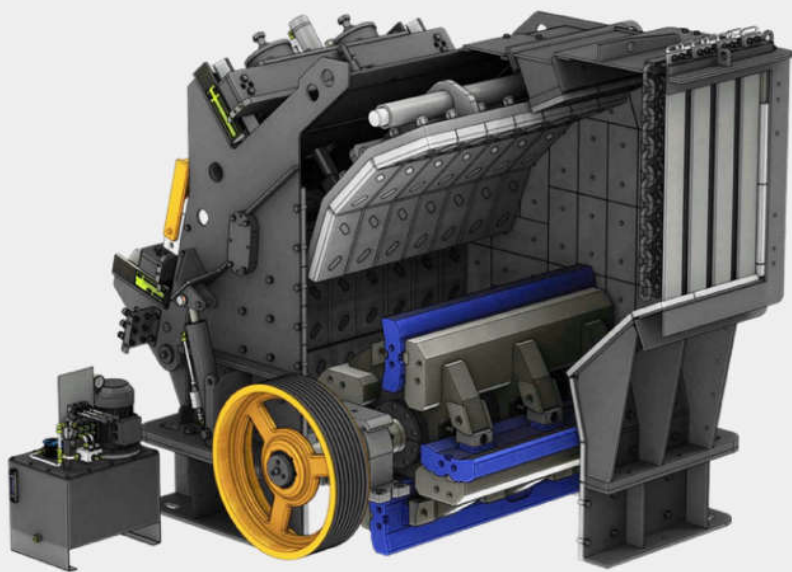
- Feed Material Type
- Feed Material Hardness / Abrasiveness
- Feed Size, maximum feed size should be no greater than 80% of the gap
- Required output
- Potential of uncrushable material in the chamber
- Required throughput

The profile of the jaw plate differs depending on the hardness of the aggregates that the crusher processes, the desired size of the rocks at the exit of the crusher etc

Applications					
Jaw Plate Profile	Recycling	Soft-Med Rock	Hard Rock	River Gravel	Asphalt
Super Tooth		✓	✓	✓	✓
Quarry Tooth		✓	✓		✓
Standard Tooth	✓	✓		✓	
Multi Tooth	✓				
Heavy Duty			✓	✓	



IMPACT CRUSHER WEAR PARTS



CS Wear specializes in designing, producing, and supplying quality high manganese wear parts and high chrome wear parts for impact crushers. We build in quality from the start of our processes, which leads to longer wear time parts at the end. Our quality team monitors the production process from start to finish- from initial raw material, pattern-making, cast pouring, heat treatment, machining, and inspection control. The manganese and chrome content is critical to the wear life of impact crusher parts and it varies based on difference application, main material we are using for impact blow bars:

- High manganese steel, manganese-chrome alloy: Mn13, Mn13Cr2, Mn18, Mn18Cr2, Mn22, Mn22Cr2
- High chromium: Cr23, Cr26 with hardness of 55-60HRC
- TiC rods combined with high Manganese or Ceramic Metal composite material are available for significantly increasing of wear life

Metallurgy Options of Blow Bars

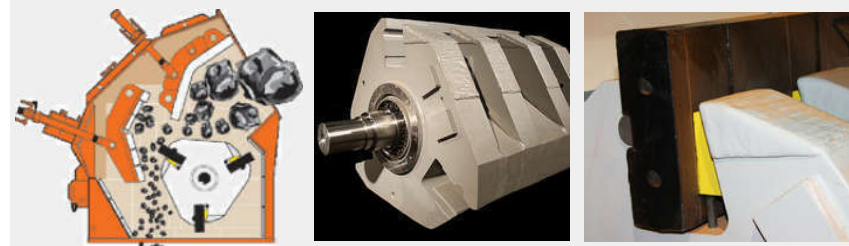
How to chose the right wear material based on different application? Here are some suggestions:

- High manganese steel: high impact resistance, used in primary and recycling applications, can handle larger feed size
- High chromium: high wear resistance, but less impact resistance, feed size needs to controlled or will have a risk of breakages, Used in secondary , tertiary & asphalt applications
- TiC rods combined with high Manganese: high impact resistance and good wear resistant, can handle large feed size
- Ceramic Metal composite material: super high wear resistant and good impact resistance, but feed size needs to controlled

Influencing Factors on Blow Bar Wear

Feed material is the most important factor for selecting the correct blow bar, To increase the life of blow bars the following guidelines should be adhered to:

- Maintain and clean chamber daily
- Inspect blow bars for premature wear or damage
- Select correct blow bars depending on application
- Adjust machine parameters



WEAR SOLUTIONS WITH CERAMIC METAL COMPOSITE & TIC INSERTS

Ceramic Metal Composite

Metal Matrix Composites (MMC), a newest and superior materials offering for wear parts. The composites are combining tough metallic matrix and hard ceramic together. Wear resistance of material is combined with both optimum material strength (hardness) and toughness properties. The composites with ceramics will achieve a service life up to 2 to 5 times of the conventional material, we currently supply two group of Metal Matrix Composite wear parts with excellent wear properties, one is Martensitic steel + Ceramic inserts, another one is High chrome white iron+ Ceramic Inserts.

- Martensitic steel + Ceramic: Martensitic steel that got a ceramic matrix running through it's body for extra wear life, combination of high toughness and high hardness, maintains impact resistance of martensitic steel and wear resistance of ceramic inserts, which has effectively solved the contradiction of high hardness and toughness
- High chrome white iron+ Ceramic: High Chrome material that got a ceramic matrix running through it's body for extra wear life, which is a combination of wear property of both high chrome white iron and ceramic, performs excellent wear resistance, suitable for application which needs extra wear property

Advantages of Ceramic Reinforced Alloy/Ceramic Reinforced High chrome white iron

- Manufactured with special casting process and heat treatment process.
- Alloy Matrix (MMC) bonds the ceramic properties for the best of both worlds. It combines ceramic hardness and alloy ductility/toughness.
- Hardness of ceramic particle up to HV2000 (HRC83), it has high wear resistance, corrosion resistance and heat resistance properties, wear life up to 2-5 times of common alloys
- Customized MMC wear zone intensively deployed in high wear working area
- Less downtime and reduced maintenance cost.

Titanium Carbide Wear Solutions

CS Wear supply wear parts with Titanium Carbide (TiC) inserts, which deliver outstanding durability. Currently Impactors/Blow Bars, Jaw Crusher Plates, Hammers, Cone liners and Breaker Blocks can offered with TiC solutions.

TiC inserts performs great wear and impact resistance only when it combined with high manganese steel, here is how it works: the wear resistance of high manganese steel is mainly manifested in its work hardening ability, adding TiC-based cemented carbide, reducing the stability of Austenite, forming a large number of tiny second phase particles on the substrate, preventing dislocation movement, thus strengthen the matrix, so that it has high toughness, high strength and good wear resistance.

Advantages of TiC inserts solutions

- TiC hammer and blow bar design features a strengthened high-wear zone for maximum usable wear life and reduced breakage.
- Hammer body is cast in durable manganese steel that gets harder the longer you work it.
- More consistent wear profile for uniform product output and increased efficiency.
- TiC inserts currently available are 20mm, 40mm, 60mm, and 80mm depths.
- Greater durability and longer wear life means fewer change outs, more up-time, and lower maintenance costs.

The technical parameters of TiC inserts as below:

- Hardness (ISO 3878): 82.5 ± 0.5 HRA
- Density : 6.2 ± 0.2 g/cm³
- Transverse Rupture Strength (ISO 3327): 1800-2000 N/mm²
- Average Grain Size: 2.0 ± 0.5 μ m
- Porosities: A02B00C00
- Chemical Composition: TiC(47%), Fe(37%), Ni (2.0%), Mn(10.0%), Other(4.0%)

