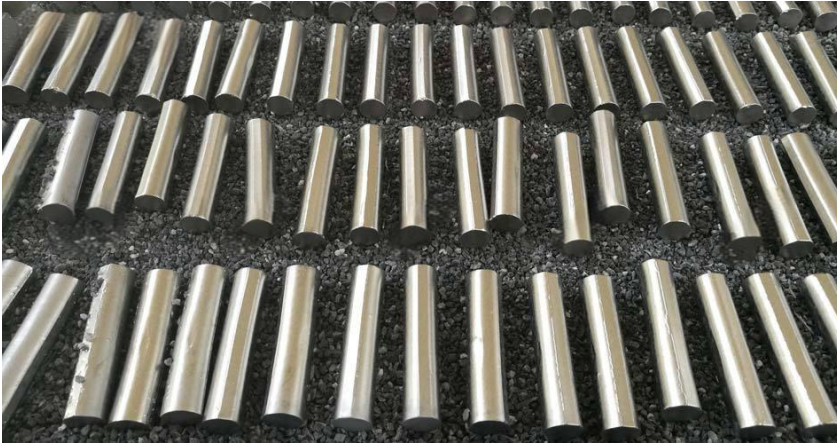


Crusher Wear Parts Revolution Has Begun With Titanium Carbide

Why titanium Carbide?



Working Principle

Titanium carbide rods inlaid with a high manganese steel matrix is a composite structure that combines the hardness of titanium carbide with the toughness of high manganese steel, resulting in a significant increase in service life in a wide range of applications. Its working principle can be explained in the following ways:

- **Hardness & Wear Resistance:** Titanium Carbide (TiC) has an extremely high hardness (9-10 on the Mohs scale), which makes it very wear resistant. When subjected to friction and impact, Titanium Carbide rods resist material abrasion, maintaining surface integrity and dimensional stability.
- **Toughness Support:** The high manganese steel matrix provides excellent toughness and impact absorption. When impacted, the high manganese steel absorbs energy and prevents cracks from developing and expanding, thus protecting the titanium carbide rods from damage.
- **Composite material synergies:** Titanium carbide rods are embedded in a high manganese steel matrix, creating a composite structure. This structure combines the hardness and wear resistance of titanium carbide with the toughness of high manganese steel to resist wear and impact.
- **Impact resistance:** High manganese steel undergoes work hardening upon impact, further enhancing its surface hardness and resistance to abrasion. This property allows the composite to perform well under impact loads.
- **Reduced stress concentration:** The combination of titanium carbide rods and high manganese steel matrix effectively disperses stresses and reduces stress concentration phenomena, thus delaying fatigue failure of the material.
- **Corrosion resistance:** Titanium carbide has good corrosion resistance to a wide range of corrosive media, which allows the composite to maintain a long service life even in corrosive environments.
- **High temperature resistance:** Titanium carbide also has excellent high temperature resistance, maintaining its hardness and stability in high temperature environments. This allows the composite to maintain excellent performance in high temperature wear environments.

What are titanium carbide rods?

Titanium carbide-based cermet is a kind of hard alloy material produced by powder metallurgy with titanium carbide (TiC) as the hard phase, high manganese steel and other metal powders as the binder phase, and then appropriately matched with the corresponding alloying elements.

TIC Rods Common Size(diameter*length):

- 12x50mm
- 14x60mm
- 14x40mm
- 14x50mm
- 16x80mm
- 18x80mm
- 20x90mm

TIC Rods' Mechanical properties:

- Densities: 6.0-6.1 g/cm³
- Hardness : 60-62 HRC
- Bending strength: ≥1800 Mpa
- Impact properties: ≥6.0J/cm²

TIC Inserts Jaw Plates

Qiming Casting uses titanium carbide rods to insert into crusher jaw plates' tooth area. With this design, our TIC inserts jaw plates have a better working life in crushing hard stone.

Qiming Casting engineers analyze the jaw plates used by customers to determine the areas that are prone to wear and the areas that are not prone to wear. TIC rods are distributed according to the wear conditions. More TIC rods are distributed in areas with severe wear, and fewer or no TIC rods are distributed in areas with no wear. This design can not only improve the service life, but also reduce the production cost. However, not all jaw plates can be used with the TIC Rods inlay design.

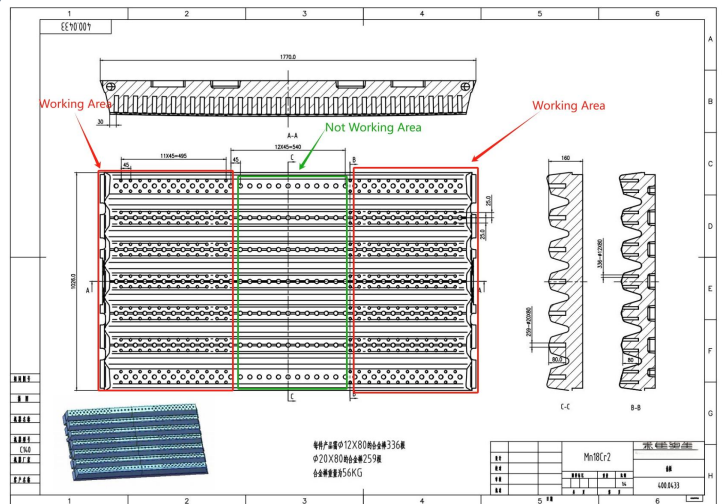
TIC Inserts Jaw Plates Design

Metso Jaw Plates Tooth Types

Standard tooth	Quarrying tooth	Wavy-like tooth	MX tooth	Super Grip Tooth
can use	Very suitable	can use	Suitable	can not

Sandvik Jaw Plates Tooth Types

Coarse Corrugated	Heavy Duty Tooth	Sharp Tooth	Wide Tooth
can use	very suitable	can not	can use



Case Study

Philippines customer, Nordberg C125 jaw crusher

Before: Normally, the Mn18Cr2 crusher jaw plates work 160 hours

After Switching to Qiming Casting TiC: Our TIC inerts jaw plates span a life of 412 hours. 2.575 times than normal manganese jaw plates!

TiC Inserts Cone Liners

Qiming Casting uses titanium carbide rods to insert into cone crusher liners' working area. With this design, our TiC inserts cone liners have a better span life in crushing hard stone.

Qiming Casting's engineers design new cone liners according to the customer's working conditions and wear-resistant conditions to improve the product's service life.

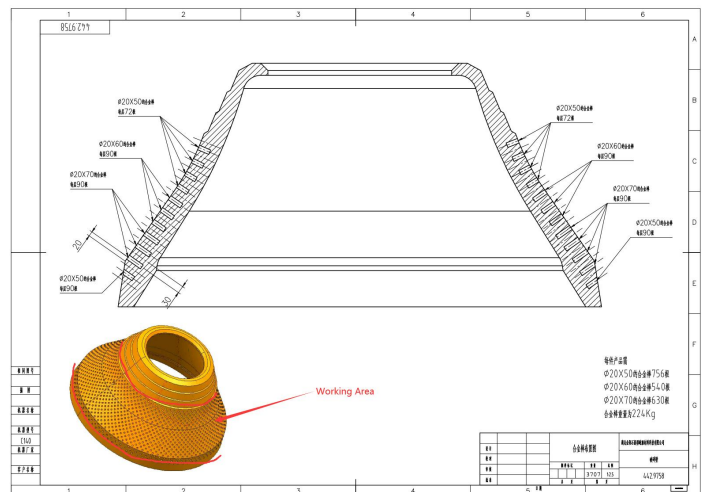
By analyzing the wear and tear of used cones, it is possible to determine which areas are prone to wear and which areas are not. Inlay more TiC Rods in the areas that are prone to wear, and do not inlay TiC Rods in the areas that are not prone to wear.

The wall thickness of the cone is analyzed to determine which size TiC Rods to use. Because not all cones can be used with this new design.

For example, small cone liners up to Sandvik H4800 are not suitable for this new design.

On the other hand, TiC inserts cone liners are more effective in crushing very hard stone than soft stone.

TiC Inserts Cone Liners Design



Cast Study

Australia customer, MVP450 cone crusher

Before: Competitor's manganese cone liners work 7 days

After Switching to Qiming Casting TiC: Our TiC inserts MVP450 mantle and concave work 20 days. Around 3 times span life !





TIC Inserts Hammers

Qiming Casting uses titanium carbide rods to insert into crusher hammers' working area. With this design, our TIC inserts hammers have a better span life in crushing hard stone.

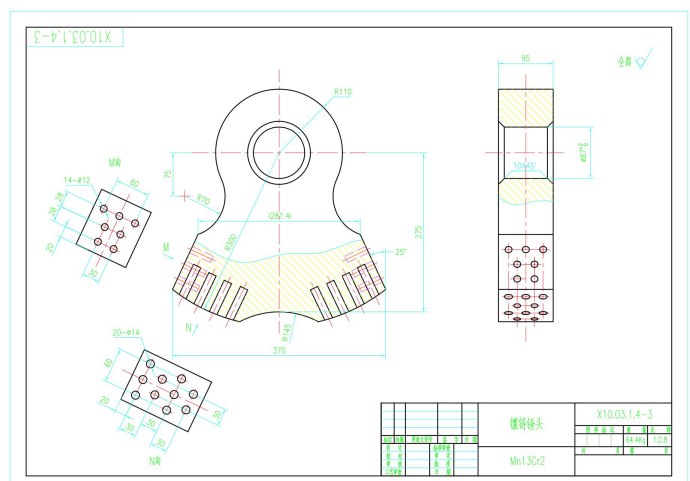
TIC inserts hammers, which we are called TIH series hammers.

The TIH hammers are a wear-resistant accessory specially designed for hammer crushers, mainly used for crushing hard materials such as limestone with high silica (SiO₂) content.

It has the following characteristics and advantages:

- Ultra-high wear resistance: The TIH hammer is made of high manganese/tungsten-titanium alloy composite material, and its wear resistance is far more than ordinary high manganese steel hammer heads, and the service life can be increased by 50-100%.
- New technology: It takes the lead in domestic use of ladle refining and overall pressure casting technology, which makes the molten steel purer and the matrix more dense, thus improving the service life and safety of the hammer head.
- Adapted to severe wear conditions: It is especially suitable for working under severe abrasive wear conditions and can effectively crush hard, high SiO₂, and strongly abrasive limestone.
- Reduce production costs: Due to the long service life of the hammer head, the downtime and frequency of replacement parts have been reduced, thus reducing operating and maintenance costs.

TIC Inserts Hammers



Cast Study

Pakistan customer, Bestway Cement Industry

Before: Competitor's manganese cone liners work 35 days

After Switching to Qiming Casting TiC: Our TIC inserts hammers work 60 days. Around 2 times span life !





TIC Inserts Blow Bars

Qiming Casting uses titanium carbide rods to insert into cone crusher liners' working area. With this design, our TIC inserts cone liners have a better span life in crushing hard stone.

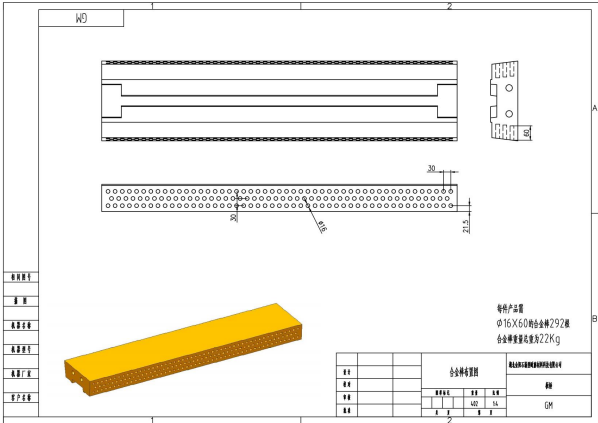
TIC inserts blow bars, Manganese+Tic carbide blow bars are made of manganese steel with Tic carbide inserts, widely used on primary impact crushers crushing the limestones in cement plants or quarry plants.

Manganese blow bars are characterised by their high resistance to impact forces. The original resilient surface is further strengthened by the forces occurring during breaking; increasing the hardness of the blow bar and its resistance to wear, whilst the durable core material ensures flexibility in the blow bar.

Manganese blow bars are mainly used in primary crushing, where feed material is typically large in size and, to a lesser degree, in secondary crushing.

The use of manganese blow bars with an innovative insert has been proven to increase service life by up to 100%.

TIC Inserts Blow Bars



Cast Study

Serbia Customer, General 800 Mobile Crusher

Crushed material: Limestone
 Input size: ≥800 mm
 Used blow bars: Mn18Cr2 blow bars

Before: Whether it is the blow bars produced in Türkiye or Serbia, the span life is not good, just around 15 days per side. The service life is short, the replacement cycle is fast, which affects production capacity, and the replacement cost is high.

Customer Feedback & Results: 60 days later, the Customer gave us feedback: "TIC blow bars for GM met expectations, two months one side, that's about 70-80% more than previously used."



TIC Inserts Gyrotory Mantles

Qiming Casting uses titanium carbide rods to insert into gyratory crusher mantles' working area. With this design, our TIC inserts mantles have a better span life in crushing hard stone.

TIC inserts gyratory mantle, which is the same as TIC inserts cone liners working solution.

Titanium carbide Inlay rods are one of the most favored crush liners by our clients around the world as it enhances manganese hardness making it an ideal material combination to be used in extreme and harsh environments.

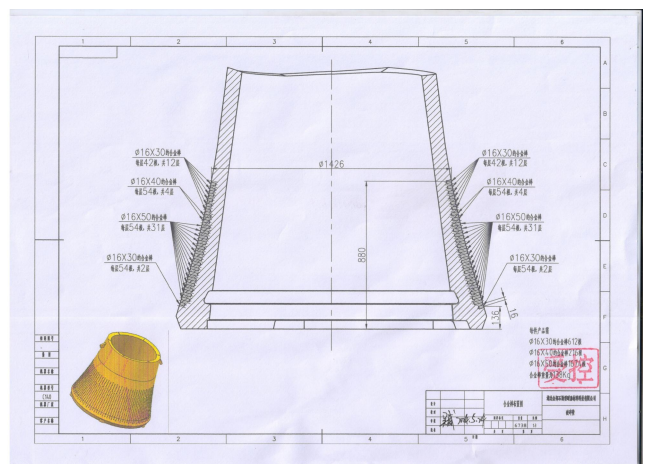
The way we incorporate titanium inlays is much different than other traditional suppliers.

After examining and matching with machinery specifics, we create hard inlays to fully augment and assist machinery operations. Once our team has performed an in-depth investigation of your machinery and operation personnel, they will determine where to apply the titanium carbide rod inlays based on the liner's maximum wear zone.

The Benefits of Using Titanium Carbide as Crusher Liners;

- Versatile and can easily be customized for machinery locality and work conditions
- Offers maximum wear time and durability around manganese steel
- Best Material to be used with Manganese steel to withstand extreme conditions

TIC Inserts Gyrotory Mantles



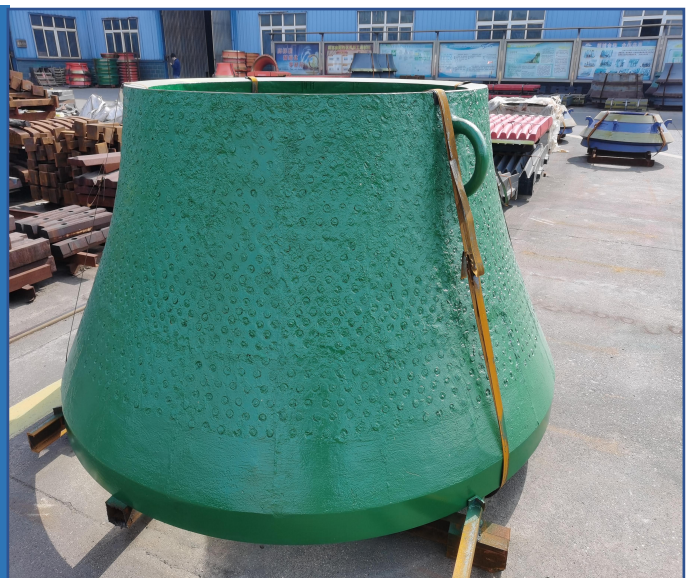
Cast Study

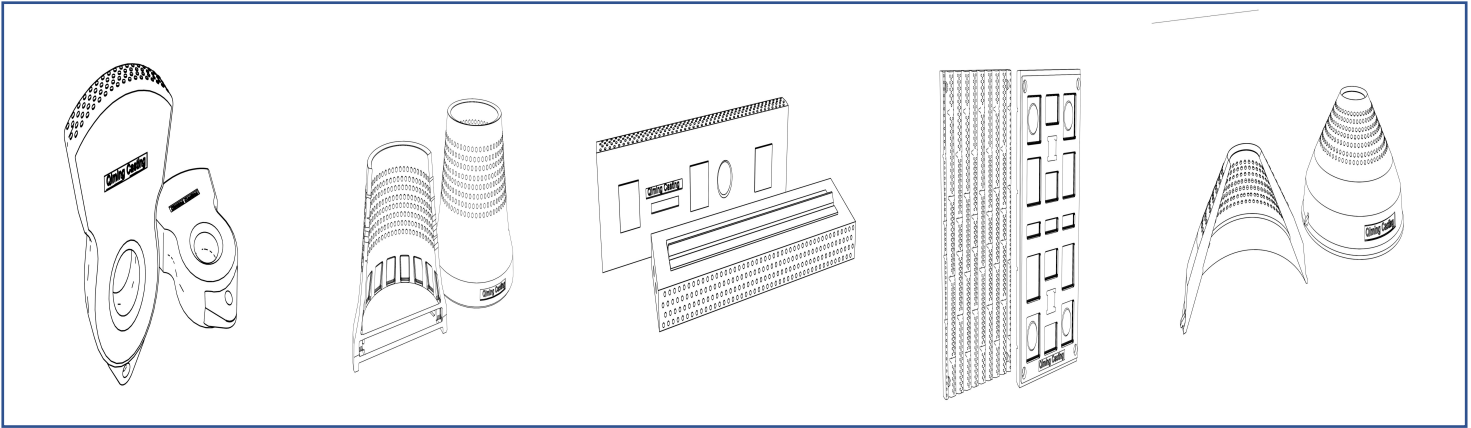
Russia Customer, SG60110 Gyrotory Crusher

Crushed material: Limestone
Input size: ≥ 1000 mm
Used mantles: Mn18Cr2 mantle

Before: A set of manganese gyratory mantle can crush 2 millions tons of limestone

After Switching to Qiming Casting TiC: Our new design TIC inserts hammers had crushed 3.5 millions tons.





The Revolution has begun with TIC Inserts

Qiming Casting is the first factory in China to mass produce titanium carbide rods inserts crusher wear parts. With advanced manufacturing techniques and state-of-the-art facilities, Qiming Casting has established itself as a leading supplier of high-quality crusher wear parts.

Their product line includes a wide range of titanium carbide rods inserts hammers, blow bars, cone liners, gyrotory mantle, and other critical components designed to enhance the performance and durability of crushing equipment.

By incorporating titanium carbide rods inserts into their wear parts, Qiming Casting has significantly improved the resistance to abrasion and impact, resulting in longer service life and reduced maintenance costs for their customers.

[More wearable, More profit](#)

Compare with the traditional materials, Qiming Casting's TIC inserts wear parts can get more working life.

- **For TIC inserts jaw plates, increase 150%-200% working life;**
- **For TIC inserts cone liners, increase 100%-150% working life;**
- **For TIC inserts gyrotory mantle, increase 50%-100% working life;**
- **For TIC inserts hammers, increase 100%-150% working life;**
- **For TIC inserts blow bars, increase 100%-200% working life.**

For more information or a tailored quote,
please contact our sales team on:

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Which need you to supply?

Before test our TIC inserts wear parts, there are some information need supply:

1. Which material you crush?
2. The used wear parts' pictures which can show where are worn.
3. Raw material input sizes.