



Where is zircon used in today's foundries?

Zircon is widely used in the foundry industry, mostly in the form of sand and flour. It is mainly used in refractory coatings applied onto moulds and cores to manufacture high quality metal castings for many industries.



Automotive



Aerospace



Construction

Zircon's role in the foundry industry

The zircon-based coatings market continues to grow as foundries seek higher casting quality and improved operational efficiency.

~33%

of globally produced zircon in 2025 was used in the foundry industry, mostly as sands and coatings.

Source: ZIA



US\$225 billion

is the expected value of the global foundries market by 2030.

Source: Foundries Market Research Report 2026

Why is Zircon essential in foundry processes?

Properties of zircon

Low-wettability

Consistent grain size distribution and ability to form fine grains

High thermal stability

Low thermal conductivity

High melting point
(ca 2,500°C)

Higher dimensional accuracy and better surface finish

Compatible with all organic and inorganic sand binders

Low wettability by molten metal

Chemically stable

Chemical inertness at high temperatures

Compatibility and versatility

Supporting foundry needs

Prevents mould/material sticking and mould penetration.

Enables the creation of high precision castings with a good surface finish.

Helps prevent cracking and warping under fluctuating thermal conditions, providing a better surface finish to castings.

Allows controlled slower cooling, reduces thermal shock and cracking and improves surface finish in many castings.

Supports wide-ranging casting operations, and maintains dimensional accuracy - imperative for precision casting, investment casting and steel casting.

Essential for producing accurate and precise castings with the desired geometry. Also minimises post-casting operations such as machining and cleaning of the cast part.

Help to hold the mould or core material together and improve its resistance to the thermal stresses during casting.

Increases spent sand recovery and recyclability.

Ensures consistent results particularly when recycled sand is used.

Prevents contamination of the liquid metal during the casting process, ensuring the final product meets quality standards.

For use with a variety of metals and alloys, including steel, aluminium, superalloys and other non-ferrous metals commonly used in casting applications.

Various foundry applications use zircon

Casting involves pouring molten metal into moulds to create intricate parts from aerospace precision components to industrial components. Key techniques include:

Investment casting

Investment casting, also known as lost-wax casting, is a precision manufacturing process used to create intricate metal parts by pouring molten metal into a single-use ceramic mould.

Zircon is used in investment casting for precise ceramic shell moulds, especially in prime coat slurry and stuccoing material.

Die casting

Die casting is a high-speed manufacturing process that forces molten non-ferrous metal alloys under high pressure into reusable steel moulds (dies) to produce precise, complex, and durable metal parts.

Zircon is used in die casting as a high-performance refractory coating or wash that helps maintain the life of the steel mould.

Sand casting

Sand casting is a metal casting process that creates metal parts by pouring molten metal into a sand mould to make small and large, complex components.

Zircon sand is primarily used in sand casting as a high-performance moulding material.

Centrifugal casting

Centrifugal casting is a metal casting technique that pours molten metal into a rapidly spinning mould, using centrifugal force (up to 100 times gravity) to distribute metal against the mould walls.

Zircon is widely used in centrifugal casting as a high-temperature refractory coating and facing sand.

