

Inside WAYSCAN's Investment Casting Technology and Precision Engineering

A Closer Look at Investment Casting Processes for Complex Metal Components

CALIFORNIA, CA, UNITED STATES, September 14, 2026 / EINPresswire.com/ -- China, September 14, 2026—WAYSCAN METAL PRODUCTS CO., LTD. ("WAYSCAN"), a manufacturer specializing in [investment casting](#) and machined cast components, operates an integrated manufacturing process covering casting, heat treatment, machining and inspection. The company is located in Ninghai, Ningbo, China, and reports that exports account for approximately 70 percent of its total sales, with major markets including China, Japan and the United States.

WAYSCAN supplies industrial castings in carbon steel, alloy steel, stainless steel and ductile iron, and describes its typical output as complex-shaped, high-precision, small-to-medium-sized castings. Its product range includes precision castings, investment castings, stainless steel castings, carbon steel castings, alloy steel castings and machined cast components.

This article reviews WAYSCAN's production routes, published technical parameters and the key factors buyers can evaluate when sourcing custom investment castings.



Logo for WAYSCAN METAL

Industry Context: Why Process Choice Matters

Investment casting, also known as lost-wax casting, is a manufacturing route used when components require more complex geometries, tighter dimensional control or a finer surface finish than typical sand casting can provide. According to Fortune Business Insights, the global

investment casting market is projected to reach approximately USD 20.52 billion in 2026. Process selection is an important consideration when evaluating investment casting suppliers. Research published by Dataintelo indicates that the silica-sol (colloidal silica) process accounted for the largest share of the investment casting market at 54.3 percent in 2025, followed by the water-glass process at 32.1 percent. Automotive applications account for an estimated 29 percent of investment casting demand globally, according to Business Research Insights. For buyers, the key consideration is how a foundry's process technology affects achievable dimensional tolerances, surface finish, production efficiency and environmental performance.

Company Background and Manufacturing Scope

Established in 1991, WAYSCAN operates a manufacturing facility covering 46,000 square meters and reports a workforce of more than 500 people, including more than 20 senior engineering and technical personnel. The company states that its annual production capacity is 20,000 tons. The company describes itself as an investment casting manufacturer offering integrated casting, heat treatment, machining and inspection capabilities. Its published product range includes precision castings, investment castings, stainless steel castings, carbon steel castings, alloy steel castings and machined cast components.

WAYSCAN was recognized among the top 50 industrial enterprises in Ninghai County in multiple years between 2012 and 2024, and received recognition from the China Foundry Association in 2014, 2018 and 2022. In 2023, the company was recognized as a waste-free factory, a four-star green factory and a water-saving factory.

WAYSCAN's Investment Casting Process

WAYSCAN produces investment castings through a lost-wax casting route. Although specific tooling design and production planning vary by project, the company's published process covers wax pattern assembly, ceramic shell building, shell drying, dewaxing, pouring, finishing and inspection. WAYSCAN's shell-making operations include both manual and automated stages, while factory documentation shows the use of robotic shell-building equipment.

The process begins with wax patterns, with 3D-printed patterns used when rapid sample development is required. The patterns are assembled into clusters and then coated with ceramic materials to build the shell. After drying, the wax is removed in a dewaxing step, and the resulting ceramic shell is fired to create a cavity ready for pouring. Molten metal is poured into the preheated shell and allowed to solidify, after which the ceramic shell is removed to release the casting.

Rapid sample development is also part of WAYSCAN's production approach. The company states that it supports rapid sample development with 3D-printed patterns, helping shorten development cycles and allowing buyers to validate designs and materials before committing to mass-production tooling.

Process Technology: Silica-Sol, Composite and Water-Glass

WAYSCAN's investment casting capabilities cover three process types: water-glass, silica-sol and composite investment casting. The company identifies silica-sol and composite investment casting as its core production processes.

In 2020, WAYSCAN invested in composite-process precision casting to replace its previous water-glass precision casting process. The company states that this change was intended to improve production efficiency and reduce environmental impact.

For procurement teams, the choice among these process routes matters because it can affect surface quality, dimensional consistency and the amount of finishing required. Silica-sol-based processes are commonly associated with finer surface finishes and more consistent dimensional control, while composite processes can provide a balance between cost, quality and production efficiency. Water-glass investment casting generally has lower process costs, but may result in comparatively rougher surfaces and less consistent dimensional control.

WAYSCAN's move toward silica-sol and composite processes reflects its stated focus on improving production efficiency and reducing environmental impact while maintaining casting quality.

Materials and Alloy Options

WAYSCAN produces investment castings in carbon steel, alloy steel, stainless steel and ductile iron. The company does not publish a fixed list of material grades in its public catalogue; instead, specific grades are confirmed based on customer drawings and engineering specifications.

These material options support a range of industrial applications:

- Carbon steel castings are commonly selected for structural components where strength and machinability are the main considerations.
- Alloy steel castings are used when wear resistance, toughness or higher mechanical properties are required.
- Stainless steel castings are specified where corrosion resistance, hygiene or high-temperature service conditions matter.
- Ductile iron castings offer good castability and impact resistance for certain mechanical components.

The company does not publish a fixed list of standard grades; specific material selection is determined according to the buyer's drawing, operating environment and applicable standards. Buyers should specify the required material grade and any applicable certification requirements at the inquiry stage.

Tolerance, Surface Finish and Machining Accuracy

WAYSSCAN's published technical parameters provide buyers with a reference for the capabilities of its investment casting and machining processes:

- Dimensional tolerance for silica-sol investment casting: CT6
- Dimensional tolerance for silica-sol composite investment casting: CT8
- CNC machining accuracy: 0.01 mm
- Surface roughness for as-cast and post-treated surfaces: Ra 6.4–12.5 μm

These figures represent process-level capability statements rather than guarantees for every feature of every part. The actual tolerance achievable depends on factors such as part geometry, wall thickness, material grade and the location of the dimension relative to the parting line and gating system. Similarly, surface roughness depends on the casting process and post-treatment route, as reflected in the company's published parameters.

WAYSSCAN combines casting with CNC machining, enabling critical features to be machined to higher levels of accuracy where design requirements exceed the capabilities of as-cast tolerances.

Heat Treatment and CNC Machining

WAYSSCAN states that it provides an integrated production route covering casting, heat treatment, machining and assembly. For buyers, this integrated scope can reduce the need to coordinate casting and machining across separate suppliers, while simplifying production coordination, logistics and quality management.

The company's facility includes dedicated machining workshops equipped with more than a dozen machining centers, including three-axis vertical, four-axis vertical and horizontal machining centers, as well as more than 30 CNC lathes. These machining resources support secondary processing of cast components where tighter dimensional control, sealing surfaces, threads, locating features or other precision-machined interfaces are required. Its product catalogue also includes machined cast components, indicating that WAYSSCAN's manufacturing scope extends beyond as-cast parts to subsequent precision machining operations.

Because WAYSSCAN lists machining accuracy separately from as-cast dimensional tolerance, buyers should distinguish between casting-only requirements and machined-casting requirements. Casting-only projects are evaluated against the applicable as-cast CT class, while critical dimensions on machined components can be produced through CNC operations, with the company publishing a machining accuracy of 0.01 mm.

Quality Control, Inspection and Testing Capability

WAYSSCAN states that its quality-control and inspection system supports dimensional verification,

chemical composition analysis, mechanical-property testing, metallographic examination and non-destructive testing. Its published inspection equipment includes four spectrometers, coordinate measuring machines (CMM), 3D scanning equipment, X-ray inspection systems, ultrasonic testing equipment, magnetic-particle testing equipment, metallographic inspection instruments, Brinell and Rockwell hardness testers, tensile testing machines, low-temperature impact testing equipment, salt-spray testing equipment and pressure-testing equipment. Together, these inspection resources allow WAYSCAN to evaluate material composition, dimensional and geometrical accuracy, metallurgical structure, mechanical properties, corrosion-related performance and internal or surface casting defects according to the technical requirements of individual components.

For components manufactured from customer drawings or samples, inspection requirements can be incorporated into the production specification. WAYSCAN accepts customized production based on customer drawings and sample development, while buyers can specify requirements such as material grades, certifications and surface treatments in advance. These requirements help define the applicable inspection scope and the documentation to be provided with the finished components.

In investment casting, quality consistency is influenced by factors such as wax pattern quality, ceramic shell preparation, pouring conditions and cooling behavior. A combination of process control and inspection therefore helps identify dimensional deviations, material inconsistencies and internal casting defects during production and before final delivery. For buyers, the availability of in-house inspection equipment provides an important basis for verifying whether castings and machined components conform to the agreed technical specifications.

Typical Applications and Product Types

WAYSCAN's investment casting products serve a range of industrial applications. According to the company's published application information, its typical production covers automotive, forklift, mining, agricultural machinery, construction machinery, valve and general machinery applications.

Examples of components within WAYSCAN's product scope include:

- Pipe elbows
- Clevis brackets
- Yokes
- Gearbox housings
- Transmission housings
- Mounting brackets
- Link arms

These components can broadly be grouped into structural parts, such as brackets, yokes and link arms, and housing-type parts, such as gearbox and transmission housings. Investment casting

can be suitable for components with contoured surfaces, complex transitions or other geometrical features that require a combination of casting and subsequent machining. WAYSCAN states that its investment casting process is suitable for complex-shaped, high-precision small-to-medium-sized castings. The company also supports both sample development and production supply based on customer drawings and project requirements.

Buyer Selection Notes: Casting and Machined Components

For engineers and procurement teams evaluating WAYSCAN or other investment casting suppliers, the assessment can be organized around six key checkpoints.

1. Select the appropriate casting process.

When a drawing requires tighter dimensional control and a finer surface finish, silica-sol investment casting may be appropriate. For less demanding applications, silica-sol composite or water-glass investment casting may provide a different balance of quality, process requirements and cost. The appropriate route should be determined according to the part geometry, material, tolerance and surface-finish requirements.

2. Confirm the material grade and applicable standard.

WAYSCAN works with carbon steel, alloy steel, stainless steel and ductile iron, while specific grades are determined according to customer drawings and technical specifications. Buyers should provide the required material grade, applicable standards and mechanical-property requirements at the quotation or engineering stage.

3. Differentiate as-cast tolerance from machining accuracy.

WAYSCAN publishes CT6 for silica-sol investment casting, CT8 for silica-sol composite investment casting and 0.01 mm for CNC machining accuracy. Buyers should identify which dimensions will remain as-cast and which will be produced by machining. This helps align the manufacturing process with the functional requirements of each feature.

4. Define surface-finish requirements clearly.

WAYSCAN publishes a surface roughness range of Ra 6.4–12.5 μm for as-cast and post-treated surfaces. Buyers should clarify whether the specified Ra value applies to the as-cast condition or after processes such as blasting, grinding or machining.

5. Plan sample development before volume production.

WAYSCAN supports sample development using rapid pattern-making methods, including 3D-printed patterns. For customized components, sample production can be used to verify the design, material and manufacturing approach before moving to volume production.

6. Establish inspection and documentation requirements early.

WAYSCAN asks customers to specify requirements such as certifications, material grades and

surface treatments in advance. Buyers should therefore define the inspection scope, acceptance criteria and required quality documentation before production begins. This helps ensure that the final inspection process corresponds to the agreed technical requirements.

Summary

WAYSCAN METAL PRODUCTS CO., LTD. is an investment casting manufacturer with an integrated production scope covering casting, heat treatment, CNC machining and inspection. Its published capabilities include silica-sol and composite investment casting, with material options covering stainless steel, carbon steel, alloy steel and ductile iron.

For buyers evaluating its technical capabilities, WAYSCAN publishes CT6 dimensional tolerance for silica-sol investment casting, CT8 for silica-sol composite investment casting, 0.01 mm CNC machining accuracy and a surface roughness range of Ra 6.4–12.5 µm. Its listed component examples, including pipe elbows, clevis brackets, yokes, gearbox housings, transmission housings, mounting brackets and link arms, represent typical small-to-medium industrial casting applications.

WAYSCAN operates a 46,000-square-meter manufacturing facility in Ninghai, Ningbo, with more than 500 employees and a stated annual production capacity of 20,000 tons. The company reports that exports account for approximately 70 percent of total sales, with markets including China, Japan and the United States.

More technical and product information is available on the company's official website:

www.wayscan.com.

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