

# The Journey of an Investment Cast Component

## From 3D Design to Fully Machined Casting at Austin Alloy Cast Pvt. Ltd.

Every casting has a story a journey of design, precision, and engineering excellence.

At **Austin Alloy Cast Pvt. Ltd.**, we don't just manufacture components; we create **engineered solutions** that meet the world's most demanding standards.

With over **25 years of expertise**, our process blends innovation, technology, and craftsmanship turning every concept into a high-performance casting built for precision and reliability.

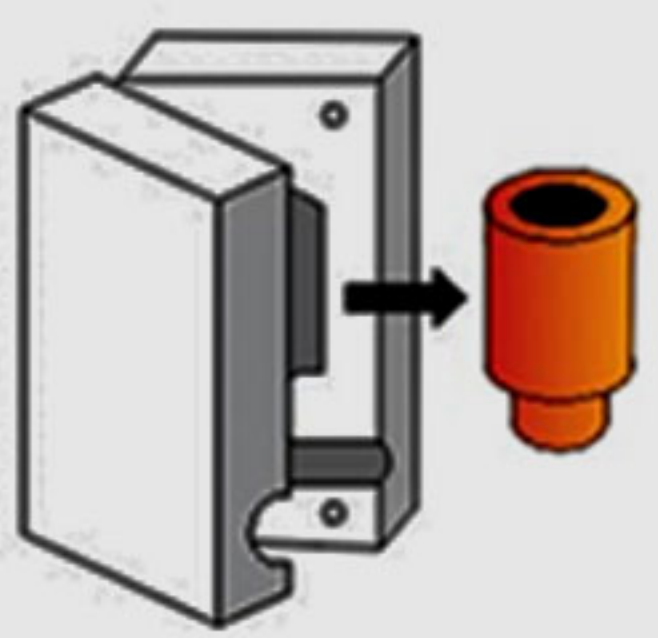


### 1. Understanding the Requirement

Every project begins with a deep understanding of customer needs. Each casting has unique dimensional tolerances, mechanical requirements, and operational challenges. Our team works closely with clients to analyze the application, environment, and performance goals. Together, we define parameters like alloy selection, tolerance limits, and strength expectations laying the foundation for quality and consistency across the process.

### 2. Concept and 3D Design

Using advanced 3D simulation and CAD software, our engineers create a digital model of the component. This stage verifies metal flow, shrinkage, and stress distribution, optimizing the gating system for accuracy and material efficiency. Virtual simulation minimizes physical trials, saving both time and cost while ensuring design perfection before tooling begins.

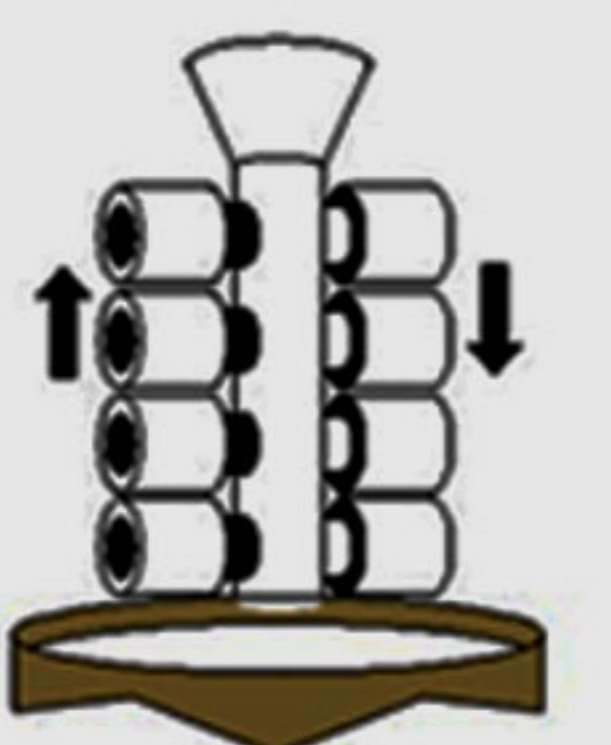


### 3. Tooling and Wax Pattern Creation

Tooling transforms design into reality. Based on production volume and complexity, we develop manual or automatic tooling using precision CNC machining. Wax is injected into the die to form patterns that replicate the final part's geometry. These patterns are assembled onto a central sprue, forming a casting "tree" ready for coating.

### 4. Shell Building, Melting, and Pouring

Each wax assembly is coated with ceramic slurry and fine refractory material to create a durable shell. Once cured, the shell is dewaxed and fired at about 1,000°C, forming a hollow cavity for casting. Selected alloys stainless steel, carbon steel, or specialized grades — are melted under controlled conditions. The molten metal, heated up to 1,650°C, is poured into the preheated shell, filling every intricate detail with precision. All melt data is recorded for traceability and process control.



### 5. Cooling, Knockout, and Finishing

After solidification, the ceramic shell is removed to reveal the raw casting. Excess metal and gates are trimmed, and the surface is finished through fettling, grinding, and blasting. For specific alloys, heat treatment is performed to enhance mechanical strength, ductility, and toughness. Automated blasting ensures smooth and uniform surfaces.

### 6. Non-Destructive Testing and Machining

Quality at Austin Alloy Cast is developed, not inspected. Each component undergoes Non-Destructive Testing (NDT) including radiography, ultrasonic, magnetic particle, and dye-penetrant methods to ensure structural integrity. Machining is performed using precision CNC systems, achieving exact tolerances and perfect surface finishes, ready for final use.



### 7. Final Inspection and Packaging

Before dispatch, each casting is visually and dimensionally inspected using CMMs and calibrated instruments. Measurements are verified against approved drawings, and results are documented in a Final Inspection Report. Castings are securely packaged to prevent corrosion or damage during transport, with complete inspection and test certificates accompanying every shipment.

## A Legacy of Precision and Reliability

At **Austin Alloy Cast**, every component embodies our dedication to quality, technology, and customer satisfaction.

From concept to finished casting, our process is driven by one philosophy **to deliver performance that speaks precision.**

With advanced facilities, expert teams, and unwavering integrity, Austin Alloy Cast continues to redefine what's possible in investment casting — one perfect component at a time.