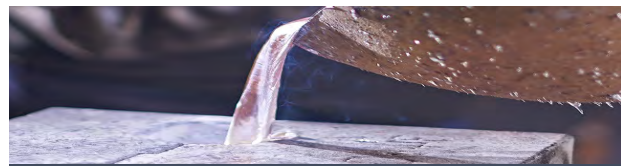


# Casting Process: Gravity Die Casting

NovaCast specialises in producing high quality gravity die castings at its Melksham foundry. Our non-ferrous foundry is ideally suited to producing medium-run components from aluminium and other non-ferrous alloys for applications across a wide range of industries. Gravity die casting is a permanent mould casting process that produces very high quality surface finishes with thin walls and cast-in inserts, so intricate shapes can be cast rapidly and little subsequent machining is required.

This process data sheet describes the basic steps involved in the gravity die casting process as well as the benefits and limitations of the process:

- 1 A metal die is manufactured, usually in 2 parts, which includes the gates and risers, to form a mould. The die should have enough mass to act as a heat sink that dissipates heat between castings.
- 2 The mould is heated and a lubricant is sprayed into it to assist in controlling temperature and in removal of the casting.
- 3 Molten metal is heated in a holding furnace near the die. The alloy is gently poured into the mould to avoid turbulence and air entrapment, filling it from the bottom up until the molten alloy appears in the risers.
- 4 Due to the heat sink properties of the die, the alloy solidifies relatively quickly. Once solid, the die is opened and the casting removed either by hand or with the use of pins in automated processes.
- 5 Excess material including the gate, runners, sprues and flash can be removed using a trim die in a power press or by hand. The as-cast surface finish is relatively good but further finishing or treatments may be required to achieve aesthetic and mechanical requirements. Any scrap metal can then be re-used in the production cycle by re-melting.



## Gravity Die Casting

### Why use NovaCast Gravity Die Casting?

Gravity die casting delivers many benefits including:

- Excellent dimensional accuracy.
- Smooth cast surfaces.
- Thinner walls can be cast allowing intricate shapes.
- Inserts, such as threads, heating elements and high-strength surfaces can be cast-in.
- Secondary machining is reduced or eliminated.
- Production rates can be rapid making longer production runs possible.
- Tensile strength is higher than with sand casting.

### Limitations of the process

There are some limitations with this process including:

- Relatively slow casting rate.
- Wall thicknesses need to be a minimum of about 4mm and linear tolerance can be relatively poor.
- The surface finish can be fairly coarse so some finishing is usually required.
- The initial tooling cost will be higher than for sand casting.

### About NovaCast

NovaCast has over 40 years of ferrous and non-ferrous metal casting experience extending into markets as diverse as transport, utilities, offshore and general engineering. The company's non-ferrous foundry, based in Melksham, England, is supported by a fully risk-managed supply chain that extends out to the Far East allowing NovaCast to provide a single source solution for precision cast and machined components. Metals cast include alloys of Carbon and Stainless Steel, Copper, Aluminium and many others with a full range of testing, machining, surface treatment and finishing options.

To find out more, get a quote or just to discuss your project, give us a call on +44 (0)1225 707466 or email [sales@novacast.co.uk](mailto:sales@novacast.co.uk)