

STANDARD SPECIFICATIONS DYNACAST FRANCE

PREAMBLE:

It has been agreed between the Client and Dynacast France that the choice of technology (i.e. the manufacture of pressure-moulded parts) and of materials (i.e. zamak) is made by the Client, as a result of which Dynacast France cannot be held liable for these technological decisions. In this instance, the Client is solely responsible for determining whether the manufacturing process used to produce the parts in question is suited to their intended use (or that of the end-customer) and to any mechanical constraints (mechanical, thermal or other) arising therefrom.

In the absence of any specific requests formulated by the Client, the standard Quality Level employed by Dynacast France, and approved by Dynacast (salt spray resistance, resistance to physical, chemical, thermal, mechanical, and other stresses), is defined below for validation of the Initial Samples (IS) and the release of production batches.

Only those elements made available at the time the order is placed will be taken into consideration during development.

All contractual requirements, specifications, or other requirements, ongoing and/or stated, during development of the project or after acceptance of the Initial Samples, will be examined by Dynacast and, if necessary, a new quotation will be issued and the contract amended accordingly.

In the absence of any particular specifications submitted by the Client, the product shall be considered by Dynacast as a standard cast product, in other words with no specific requirements (bulk packaging, standard quality control, no critical characteristics, no special finishing required) and Dynacast's specifications alone shall be applicable.

Thanks to its experience, its know-how and its professionalism, Dynacast ensures that the Client will receive a product suited to its needs with excellent levels of quality and service upon which Dynacast constantly strives to improve.

RAW MATERIALS:

The mechanical and physical properties indicated in our various documents, taken from the general published literature, are widely accepted in the field and refer to virgin materials (Zamak, Beric, Kayem and ACuZinc). These technical characteristics (hardness, mechanical and thermal resistance, etc.) cannot be equated with those of the finished parts, which, as a result of the transformation associated with our manufacturing or design processes for the part in question, may have different technical characteristics. It is the responsibility of the Client to ensure that the final technical characteristics are compliant with their own requirements during the design, qualification and validation phases for the Initial Samples.

% CHEMICAL COMPOSITION of Zinc alloys

Complies with current standard NF EN 1774 "Zinc and zinc alloys – Alloys for foundry purposes"

% CHEMICAL COMPOSITION of Beric

Al: 3-4 / Cu: 3-4 / Mg: 0.02-0.06 / Be: 0.02-0.06 / Ti: 0.04-0.15 / Pb: 0.003 Max./ Cd: 0.003 Max./ Sn: 0.001 Max. / Fe: 0.02 Max./ Ni: 0.001 Max./ Si: 0.02 Max./ Zn Remainder

% CHEMICAL COMPOSITION of Kayem 1

Al: 3.9-4.3 / Cu: 2.75-3.25 / Mg: 0.03-0.06 / Fe*: 0.05 Max. / Pb: 0.005 Max. / Cd: 0.005 Max. / Sn: 0.002 Max. / Zn Remainder

*Fe: for guidance only. This value is not mandatory.

Materials certificates are routinely supplied with each IS together with a certificate of compliance of surface treatment for any coated parts.

If the Client so wishes, a material certificate will also be provided with the delivery of each series throughout production.

The certificate of compliance of surface treatment, or of thickness of coating, may be supplied to the Client upon request.

GENERAL TOLERANCE:

If no size tolerances are specified, ISO 286-2, general tolerance JS13, shall apply.

PRODUCTION QUALITY LEVEL:

If no production quality level is specified, the AQL used by DYNACAST will be:

- Size: AQL = 0.65
- Visual inspection of parts, unfinished, plated with zinc or chrome: AQL = 1.5
- Visual inspection of parts with other finishes: AQL = 4

If other dimensions are required by the Client at each delivery, these will be invoiced at a fixed charge of €60 for each delivery.

**PRESENTATION OF
SAMPLES:**

An IS will be provided by Dynacast in all cases for:

- new moulds,
- renewed or adjusted moulds, or prototype moulds,
- modifications,
- major refit work on moulds such as “intervention on mould cavities or cores”.

For minor interventions such as “changing of standard spare parts, polishing, interventions not affecting the actual mould surface”, no IS will be provided.

For process changes, such as “change of sub-contracted supplier”, the Client may be informed if they so wish.

**VALIDATION OF
SAMPLES:**

In the absence of specific requests by the Client, the IS report will follow the standard Dynacast model.

- Size: for 1 item per mould cavity
 - * Uncoated parts: all measurable dimensions for the plane.
 - * Coated parts: second size validation for functional measurements only.
- Visual inspection of at least 100 parts: performed with naked eye and binocular microscope
 - * Uncoated parts: filling defects, burrs, tinning, bubbles, dents, etc.
 - * Coated parts: same criteria as for coated parts + bubble defects, staining or uneven colouring, etc.

In order to judge the visual appearance of parts immediately, a sample of parts that might give rise to disputes throughout the series production period for Dynacast will be included in the IS Client Validation dossier. A second sample will be kept by Dynacast as a standard sample and may be used for reference in the event of a dispute.

Validation of process capability consistent with the IS can also be carried out at the Client’s request. All requests for process capability testing not stipulated at the start of the project will be invoiced at €60 per capability test.

Process capability testing will be performed on 30 parts per mould using targets of $cp = 1.33$ and $cpk = 1.67$. N.B. certain characteristics will be deliberately distorted by Dynacast in order to mimic wear and tear on the mould, thereby extending the lifetime of the tooling.

In the absence of information from the Client, tooling will be invoiced 15 days after submission of IS.