Purchasing Considerations

While ordering heat, wear, abrasion, pressure and corrosion resistant castings or fully finished machined parts/components, the purchaser must bear in mind that these products are custom-made in closely controlled alloy compositions and are to be used for exacting service conditions. Therefore, timely deliveries of satisfactory castings/finished parts, often depends on the extent to which the buyer has supplied us with complete information at the outset.

Understanding the properties, feasibility, scope of the castings of the desired part is vital before going for production. Consultations with our engineers and metallurgists before us, "freezing" the casting design will help to prevent misunderstandings between AcmeCast/Acme Alloys and the buyer, which will benefit in minimizing delays in production.

The following guides are suggested to our customers for achieving, good to optimal results:

There is a slight difference between wrought (rolled type) alloys and cast alloys in terms of composition, characteristics, behavior, performance and service life

Cast alloy chemical composition ranges are **not** the same as the wrought alloy composition ranges. Buyers often use wrought alloy designations for castings and frequently use them while specifying materials for castings, as wrought alloys names are more popular than its cast or alloy standards counterparts, among people in industry.

Most of the wrought alloy compositions have equivalent and corresponding cast alloy composition, designations; used in alloy standards of different countries. Therefore, one must specify the desired alloy composition by casting type designation.

Should you encounter any difficulty, do let us know the wrought alloy name or the common commercial name of the alloy and leave the miniscule details to for us to handle. We will guide you through! Use of ACI/ ASTM, ISO, DIN, BS and the like, standard specifications that have been developed as a consensus amongst- consumers, producers and disinterested experts, and is often, an effective amicable way to ensure understanding of the requirements without loosing its significance.

Provide us with as much as possible about the service conditions, duty requirements and operating environment

It will enable us to recommend you the "right" alloy and an economical casting solution, meeting your requirement. In addition, we should be informed of fabrication, i.e., machining or welding, and specification or construction code requirements that might be applied later to the casting as a component of the purchaser's product. To combat your problem, we can not only design an alloy but also manufacture the part in that custom-made alloy to achieve superior performance in that particular application.

Give complete dimensions and detailed drawings with tolerances along with surface finish requirements

Designs based on forgings and welded assemblies frequently can be improved as castings with respect to strength-weight distribution or streamlining contours. In addition, design changes may be required to enhance the soundness of wall sections. The customers engineering part drawings are carefully examined to assess its metallurgical feasibility so that we can successfully manufacture good quality castings/cast components. Early consultation of the engineering department of the purchaser with our metallurgical and engineering team will be of benefit to both the parties.

We develop metallurgically 'fit' patterns, dies and core-boxes

Proper patterns are just important as proper part design in production of quality castings /cast components. Different metals and alloys have different inherent shrinkage behavior. Therefore, suitable shrinkage allowances along with other allowances, e.g., machining allowance, draft allowances, are to be incorporated in the part drawings to successfully cast the parts. Moreover, the pouring temperature of an alloy and the shape of the casting, greatly influences the magnitude and nature of the shrinkage. When the metals or alloys solidify and cool to form a casting, they undergo, three distinct stages of volume contraction, or shrinkage – liquid shrinkage, solidification shrinkage and solid shrinkage (pattern maker's shrinkage). The former two types of shrinkage's are accommodated in the riser and runner design of the casting while the latter is accommodated in the patterns/core boxes, if any. Proper casting design, pattern design and good patterns are vital for achieving quality cast products.

Note: Patterns, dies and core boxes are designed, developed and made by AcmeCast/Acme Alloys conforming to the customer's part drawings and requirements of final dimensions. In the beginning itself at the casting and gating design stage, we will take into consideration all necessary products specifications. The patterns, dies (and core/s boxes, if any), will be property of AcmeCast/Acme Alloys and the cost of the product development, development of patterns/dies, core-boxes will be amortized on the casting/fully finished component prices. Apart from casting, the pricing includes cost of - heat-treatment, cleaning, machining, finishing, testing and surface engineering.

Be realistic in delivery requirements

Unusual or unnecessary inspection and testing specifications delay deliveries and add to the cost of castings/machined components.