

| | Sand Casting | Pressure Die Casting | Investment Casting |
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| Materials Cast | <ul style="list-style-type: none"> • Almost any metal can be cast | <ul style="list-style-type: none"> • Only metals with a low melting point can be cast. | <ul style="list-style-type: none"> • Almost any metal can be cast |
| Size/Weight/Shape Capabilities | <ul style="list-style-type: none"> • Huge range in size of castings from tiny to very large. • Fairly complex shapes can be cast. • Fairly intricate internal shapes can be produced. • Not feasible to cast thin material section. | <ul style="list-style-type: none"> • Complex shapes can be cast. • Thin walls possible to achieve. • Casting size is limited by casting machine capacity. • Part geometry must allow for removal from die cavity. | <ul style="list-style-type: none"> • High reliability and consistency. • Complex, intricate shapes and thin walls possible. • High dimensional accuracy. • No draft requirements on casting geometry. • Weights greater than approximately 50kg may become uneconomical. |
| Mechanical Properties | <ul style="list-style-type: none"> • Fair to good | <ul style="list-style-type: none"> • Generally better than sand casting | <ul style="list-style-type: none"> • Fair |
| Surface Finish | <ul style="list-style-type: none"> • Inferior surface finish ('grainy') and dimensional accuracy in comparison to other casting techniques. • Surface defects possible. • Usually requires further machining. | <ul style="list-style-type: none"> • Very good surface finish. Smooth or textured finishes can be achieved. • High dimensional accuracy. • Minimal or no further machining required. | <ul style="list-style-type: none"> • Excellent surface finish. • Often requires no further machining. |
| Production Rate | <ul style="list-style-type: none"> • High speed, low volume | <ul style="list-style-type: none"> • High speed, high volume | <ul style="list-style-type: none"> • Relatively slow |
| Cost | <ul style="list-style-type: none"> • Low capital investment (low tooling cost). • Relatively low cost for one-off or small-scale production compared with other casting methods. Not economical for large scale production. • Relatively easy and cheap to modify pattern. • Sand can be recycled. • Further machining costs may be incurred. | <ul style="list-style-type: none"> • High capital investment required • (die-casting machine and tooling expensive). • Economical for high scale production. Not feasible for one-off or small scale production. • May reduce requirement for further machining | <ul style="list-style-type: none"> • Expensive tooling and labour costs. • May be uneconomical for large weight castings. • Potential to create savings for larger/repeat volume production. • Surface finish capabilities may negate requirement for further machining which is the main cost-saving feature of this casting technique. • Wax can be re-used. |

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| Typical Applications | <ul style="list-style-type: none">• Engine blocks, crank shafts, cylinder heads, equipment housing, propeller blades, gears. | <ul style="list-style-type: none">• Automotive parts, machine components, tooling, fittings and connectors, telecommunication components, sink faucets, pots and pans. | <ul style="list-style-type: none">• Aerospace parts, automotive parts, military equipment, high precision equipment and tooling, gears, golf clubs, metal furniture. |
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