

| PROCESS | DESCRIPTION | TYPICAL SIZE RANGE | TOLERANCES | SURFACE FINISH | MIN. DRAFT REQUIRED | MIN. SECTION THICKNESS | TYPICAL ORDER QUANTITIES | TYPICAL TOOLING COSTS | NOMINAL LEAD TIMES |
|-----------------------|--|--------------------|---|----------------|---------------------|------------------------|--------------------------|-----------------------|--|
| V-Process Castings | Extremely fine sand is “vacuum packed” around pattern halves. The pattern is removed and metal poured into the cavity. The vacuum is released and the casting removed | Ounces to 150 lbs. | +/- .010 for the first inch, then add +/- .002" per inch. Add +/- .010" across parting line | 125 RMS | None | .125" | Singles - 5,000 | \$4,000 - \$12,000 | Samples: 3 Weeks Production: 1.5-2 weeks after approval |
| Sand Casting | Treated (typically chemically) sand is molded around a pattern. The mold halves are opened and the pattern removed. Metal is poured into the cavity. The mold is broken and the casting removed. | Ounces to tons | +/- .030" to 6" then add +/- .003" per inch. Add +/- .020"- .090" across parting line | 250 - 500 RMS | 1° - 5° | .25" | Singles - 5,000+ | \$2,000 - \$12,000 | Samples: 2 - 6 weeks Production: 2 - 6 weeks after approval |
| Investment (Lost Wax) | A metal mold makes wax replicas. These are joined and surrounded by an investment material. Wax is melted out and metal is poured into the cavity. The molds are broken and the casting removed. | Ounces to 20 lbs. | +/- .003" to .125" +/- .004" to .500" +/- .005" to 3.0", then add +/- .003" per inch | 63 - 125 RMS | None | .060" | Under 1,000 | \$3,000 - \$20,000 | Samples: 8-10 weeks Production: 5-12 weeks after approval |

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| Permanent Mold | Molten metal is poured into a steel mold. The mold is opened and the casting ejected. | Ounces to 300 lbs | +/-0.015" to 1", then add +/-0.002" per inch. Add +/-0.010" - .030" across parting line | 250 - 400 RMS | 3° | .1875" | 1,000+ | \$8,000 - \$60,000 | Samples: 12 - 15 weeks Production: 6-8 weeks after approval |
| Plaster Mold | A plaster slurry is poured into the pattern halves. After setting, the mold is removed from the pattern, baked, assembled and metal poured into the cavity. The mold is broken and the casting removed. | Ounces to 50 lbs | +/-0.005" to 2", then add +/- .002" per inch. Add +/-0.010" across parting line | 63 - 125 RMS | .5° - 2° | .070" | Singles - 250 | \$3,000 - \$15,000 | Samples: 2 - 10 weeks Production: 4 - 8 weeks after approval |
| Die Casting | Aluminum is pressurized and sprayed into a steel die. The metal solidifies, the die is opened and the casting ejected. | Ounces to 15 lbs | +/-0.002" per inch. Add +/-0.015" across parting line | 32 - 63 RMS | 1° - 3° | .030" - .060" | 2,500+ | \$20,000 - \$100,000+ | Samples: 12 - 15 weeks Production: 6-8 weeks after approval |

TPI Arcade is the most advanced Aluminum V-Process casting facility in the US. V-Process castings are smoother, have thinner walls and twice as accurate as a typical sand casting. Unlimited pattern life, lower tooling costs and 0° draft are a few more advantages. TPI realizes today's speed to market challenges and is optimized to provide a cast sample in as little as 2 weeks and production parts a week after sample approval. TPI can provide anything from prototypes to low volume production to raw castings to turnkey programs for a single source solution.

Contact a TPI Arcade sales representative for more information: Sales@tpicast.com | (585) 492-0122 | <https://tpicast.com>