HELPFUL HINTS ON INVESTMENT CASTING: TROUBLESHOOTING CASTING PROBLEMS

DEFECT	CAUSE	SOLUTION
Cracking	Quenching too soon	Wait 15-20 minutes
Cracking	Metal cast too soon	Increase casting temperature
Cracking	Flask too cold	Increase flask temperature
Cracking	Incorrect sprueing	Modify sprueing
Cracking	Contamination of gold or alloy	Refine metal
Cracking	Oxide build up in metal, over-use	Refine metal
Cracking	Hydrochloric acid divesting	Use alternative divestor
Incomplete fill	Metal too cold	Increase casting temperature
Incomplete fill	Flask too cold	Increase flask temperature
Incomplete fill	Insufficient vacuum	Check vacuum for leaks and seal
Incomplete fill	Wrong speed on centrifugal caster	Adjust speed
Incomplete fill	Insufficient burn out	Modify sprue
Incomplete fill	Incomplete burn out	Use proper burn out schedule
Inclusions in castings	Sharp corners or bends in sprueing	Round out sharp corners and bends
Inclusions in castings	Crucible old and deteriorating	Replace crucible
Inclusions in castings	Oxide build up in crucible	Clean or replace crucible

Inclusions in castings	Foreign particles or oxides in metal	Refine metal
Inclusions in castings	Investment erosion or breakdown	Follow investment manufacturer's mixing instructions
Brittle prongs on castings	Improperly alloyed metal	Pre-allay gold and master alloy
Brittle prongs on castings	Flask temperature too cold	Increase flask temperature
Shrinkage prorsity	Incorrect sprueing	Sprue to heaviest area of casting
Shrinkage porosity	Inadequate sprueing	Use larger sprue or multiple sprues
Shrinkage porosity	Flask too hot	Use lower flask temperature
Shrinkage porosity	Castings too close to sprue button	Leave 1" space on tree above main sprue button
Gas porosity	Metal overheated	Reduce casting temperature
Gas porosity	Inadequate burn out	Increase top end burn out time
Gas porosity	Inadequate air supply during burn out	Assure oven has good air supply & exhaust
Gas porosity	Flask too hot	Reduce flask temperature
Gas porosity	Scrap reused too many times	Refine metal
Gas porosity	Too much oxygen on torch flame	Use reducing flame when melting
Gas porosity	Investment residue on remelted scrap	Remove investment residue before remelting scrap

Rough castings	Flasks not cured before burnout loading	Let flasks set 1-2 hrs. before burnout loading
Rough castings	Incorrect water-powder ratio in invest. mix	Follow investment manufacturer's instructions
Rough castings	Flasks heated too rapidly	Follow investment manufacturer's instructions
Bubbles/nodules on castings	Investment not mixed, vacuumed or vibrated sufficiently	Follow investment manufacturer's instructions
Bubbles/nodules on castings	Vacuum pump not working properly	Check vacuum pump oil level and
Bubbles/nodules on castings	Wax patterns not coated with wetting agent	Coat wax patterns with wetting agent