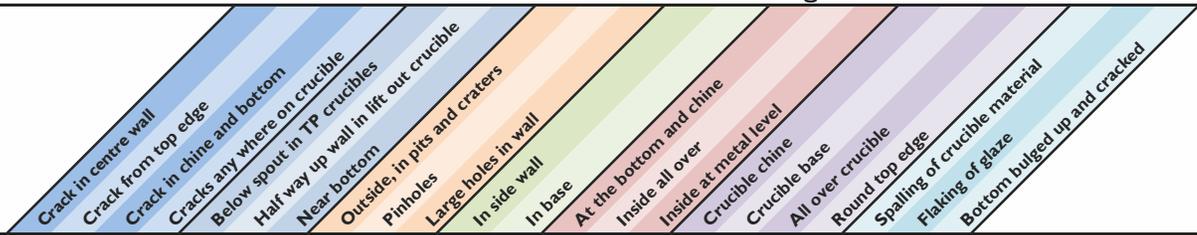


MOLTEN METAL SYSTEMS - Crucible Troubleshooting Guide



PROBABLE CAUSE	Vertical Cracks	Lateral Cracks	Holes	Star Cracks	Wear / Erosion	Oxidation	Miscellaneous	PROBABLE REMEDY
Crucible thin and worn causing loss of strength		■	■					Monitor crucible and replace when worn out.
Thermal shock due to too rapid heating	■ ■ ■	■					■ ■	Follow recommended start up routine
Thermal shock due to rapid cooling		■						Do not stand hot crucible on cold surface (Concrete)
Top ring too tight	■							Replace top ring with correct size or adjust properly
Dross build up on inside of crucible	■ ■ ■ ■							Clean crucible of dross after each use
Badly fitting tongs crushing crucible	■ ■ ■							Replace tongs with correct size
A bridged or wedged charge can expand crack the crucible	■			■				Ensure that the crucible charge is loaded correctly
Mechanical damage such as ingot dropped in		■	■					Place ingots carefully using tongs
Mechanical damage during handling			■			■ ■		Follow crucible care recommendations for handling
Crucible stuck to base and cracked when using tongs to free		■						Use graphite powder on base
Spout touching furnace lining when initially installed		■						Ensure that there is clearance around the spout
Leaks from a crack			■					Break up and look for crack then reassess
Flux attack			■ ■		■ ■ ■			Avoid premature and excessive flux additions
Damage due to excessive cleaning				■	■			Use correct cleaning tools/Clean when hot
Stand or base block too small	■						■	Ensure that the correct size stand is used
Crucible not placed centrally on stand (base block)		■					■	Ensure that the crucible is installed correctly
Standing hot crucible on uneven surface	■						■	Rest crucible in a sand bed
Badly adjusted burner					■	■ ■ ■		Reset burner
Stand too small/ crucible set too low causing flame impingement					■			Raise crucible to stop burner flame impingement
Thermal blanket incorrectly installed at top of crucible		■					■	Blanket should be placed on top of crucible not down sides
Badly adjusted burner with too much air						■ ■ ■		Reset burner to correct mixture
Furnace spill door open or not airtight		■				■ ■ ■		Close and seal spill door
Inadequate preheating during start-up to activate the glaze						■ ■		Follow pre-heat recommendations
Moisture in crucible not dried out properly							■ ■	Ensure that the crucible is stored in dry conditions
Thermal blanket used between stand and crucible		■				■		Only use graphite/cardboard between stand and crucible
Using a non-conductiverefractory/brick stand (base block)		■	■			■		Use the correct stand for the crucible material
Support blocks in tilting furnace too tight	■ ■							Ensure that the crucible is installed correctly