



Typical Applications for Starbar® and Moly-D® Heating Elements

A. *Metallurgical*

- General Heat Treatment (hardening, tempering, annealing, normalizing, carburizing, carbonitriding, nitriding, nitrocarburizing, boronizing)
- Brazing
- Forging
- Billet heating
- Decarburization and sintering of metal powders
- Sintering of PM components (conventional, additive, MIM)
- Melting, holding and filtering of non-ferrous metals (Al, Mg, Cu)
- Preheating primary metal production equipment and fixtures.
- Diecasting
- Continuous casting
- Low temp treatments of aluminum (precipitation hardening, ageing, annealing)
- Immersion heating of zinc and aluminum
- Bright annealing alloy wire
- Annealing stainless steel strip
- Blade hardening
- Stress relieving
- Carbon and sulfur determination in steels
- Steel tube ending (i.e. annealing)
- Exothermic powder testing
- Coke testing
- Assaying precious metals – gold, platinum, silver
- Heavy /precious metal reclamation

B. *Glass*

- Display Glass substrate and cover glass production
- Glass feeders in the production of glasses (forehearths, spouts, nozzles, down-draws, forebays (gathering bays), drains)
- Lead Crystal Glass melting, conditioning etc.
- Borosilicate glass forehearths
- Optical glass production (annealing and “preform consolidation”)
- Fusing in the manufacture of optical lenses
- P.H. glass production
- Melting experimental batches of soda-lime, borosilicate and special formulation glasses and glass ceramics.
- Glass Fiber manufacture (insulation, reflective signs)
- Float Glass production (tin bath)

C. *Ceramics/Refractories*

- Calcining ceramic powders (conventional, Li-ion battery materials, etc.)
- Production of spark plugs (annealing, sealing, sintering) and lambda sensors
- Sintering of titanates, etc., for ceramic capacitors
- Sintering of technical ceramics, substrates, packaging.
- Firing electrical porcelains for High Voltage Insulators, etc.
- Production of Piezo crystals
- Sintering of tin oxide electrodes for lead crystal glass melting
- Production of Silicon nitride components
- Vacuum and air firing of porcelain teeth
- Sintering of dental zirconia ceramics
- Pottery kilns
- Production of refractory items
- Production of Ceramic tiles
- High Temperature testing of refractory materials

D. *Electronics*

- Sintering of soft ferrites for aerials and transformer cores, etc.
- Magnet production (Hard Ferrites)
- Glass to metal sealing of Reed switches
- Rapid Thermal Processing of silicon wafers
- Semi-conductor material diffusion, oxidation, epitaxial growth, CVD, PVD
- Production of phosphorus powders and phosphates.
- Crystal growing (zone refining, Bridgeman furnaces, annealing)
- Diode sealing
- SOFC sintering

E. *Miscellaneous*

- Laboratory furnace/R&D
- Energy storage – thermal batteries
- Coating of tungsten carbide tool tips
- Crematorium (organic burning)
- Pyrolysis (hazardous waste destruction)
- Constructional supports (beams, frames, tiles, saggars, muffles, crucibles, containers. Reinforcing rods, hangers, protection tubes, Si₃N₄ bonded SiC tubes
- Gas injection tubes / atmosphere sampling tubes
- Level indicators
- Furnace cooling tubes
- Thermocouple protection tubes
- Molten metal transportation tubes
- Burner nozzles, tubes, injectors
- Solar Materials Processing
- Asphalt warming/holding
- Roasting of ores
- Drying/roasting/baking
- Production of plastic flexible hose