



Heating magnetic iron oxide in water for hyperthermia application

Objective Heating magnetic iron oxide (Fe_2O_3) in water for hyperthermia application to determine the curve of temperature vs. time during induction heating

Material Magnetic iron oxide in water (magnetic field is 50-200kHz, 30kA/m), glass vial

Temperature Varies

Frequency 344 kHz

Equipment

- Ambrell 2 kW induction heating system, equipped with a remote workhead containing two 0.33 μF capacitors for a total of 0.66 μF
- An induction heating coil designed and developed specifically for this application.

Process A two turn helical coil is used to heat the glass vial. The temperature vs. time results are:

- 66° - 107 °F (19° - 42 °C) in 10 seconds
- 66° - 145 °F (19° - 63 °C) in 20 seconds
- 66° - 170 °F (19° - 77 °C) in 30 seconds

Results/Benefits Induction heating provides:

- Rapid & localized heating
- Uniform controllable heat
- Small bench top footprint
- Even distribution of heating



Glass vial with magnetic iron oxide in coil heating