

Method for heat treatment of granular material in drum with self-oscillating internal chamber loading, which is rotated relative to a horizontal axis, comprises feeding material into drum chamber, heating it by means of external heat exchange and internal heat transfer, holding it at the calcination temperature, cooling it, and removing it from chamber, wherein granular charge is subjected to a pulsating motion with variable dilatancy across cross-section of chamber. Heating, holding, and cooling are performed while charge undergoes self-excited oscillations in a mild mode.