Initial susceptibility $ko$ versus temperature measurements on nine crushed natural magnetites (median sizes: 0.6-135 micrometers) reveal a progressive increase in the Hopkinson peak near the Curie point as grain size decreases. This trend has potential for granulometry in the 1-20 micrometer range where magnetite particle size is difficult to pinpoint using other magnetic parameters. Humps in heating curves around 250°C are due to annealing out internal strains, as is evident also in high-temperature measurements of coercive force $Hc$. When intrinsic susceptibility $ki$ is large, as in MD magnetite, $ko$ approaches $1/N$ ($N$ is demagnetizing factor). The $ko(T)$ curve is then flat and lacks a Hopkinson peak, despite possibly important increases in $ki$ at high $T$. The hidden details of $ki(T)$ were revealed by using the inverse relationship between $ki$ and $Hc$: $kiHc = 45$ kA/m. Synthesized $ko$ data were next compared to $ko(T)$ observations. Agreement was good for 14-135 micrometer magnetites, but below 6 micrometers observed Hopkinson peaks were smaller than predicted.

Two coarse-grained rocks, a gabbro and a diabase, exhibit both SD-like Hopkinson peaks and MD flat ramps in their $ko(T)$ data. A Hopkinson peak is prominent in separated plagioclase grains but muted in diabase whole-rock data. The gabbro has superimposed SD and MD $ko(T)$ functions in its whole-rock data, with a normalized Hopkinson peak of 1.35. If oceanic layer-3 gabbros have similar susceptibility enhancements, they may contribute more to magnetic anomalies over the oceans than room-temperature $ko$ measurements on dredged or fault-uplifted samples would suggest.