The kinetic coefficient of hard-sphere crystal-melt interfaces from molecular-dynamics simulations MAJEED AMINI, Department of Physics, University of Kansas, Lawrence, KS 66045 USA, BRIAN LAIRD, Department of Chemistry, University of Kansas, Lawrence, Kansas 66045 USA — The kinetic coefficient for a crystal melt interface, μ, is the ratio of the interface growth velocity to the undercooling (TM − T), where TM is the melting point. In this work we determine the kinetic coeffiecient for the hard-sphere system by analyzing capillary fluctuations in interface position using molecular dynamics (MD) simulation [Hoyt et al, Mat. Sci. Eng. R 41, 121-163 (2003)]. We report the kinetic coefficient for the three interfaces: (100), (110), and (111). Our results for μ100, μ110, and μ111 are 1.15(4) (kB/(mTM))1/2 , 0.85(6) (kB/(mTM))1/2 , and 0.57(8) (kB/(mTM))1/2 , respectively, which gives the relation μ100 > μ110 > μ111. This ordering is consistent with the recent results of MD simulations for a variety of metals. The anisotropy ratios μ100/μ110, and μ100/μ111 are 1.35(11), and 2.0(3), respectively. We compare our results to those of classical density functional theory (DFT) of [Mikheev and