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Int. J. Miner. Process. 69 (2003) 29–47

INTERNATIONAL JOURNAL OF  
**MINERAL  
PROCESSING**

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# The effect of slurry rheology on fine grinding in a laboratory ball mill

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Received 19 December 2001; received in revised form 6 May 2002; accepted 7 May 2002

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## Abstract

The kinetics of slowing down of breakage rates for fine wet grinding of  $20 \times 30$  mesh quartz fraction was investigated as a function of slurry concentration in a laboratory batch ball mill. It was discovered that the slowing-down effect occurred to all particle sizes in the charge and at any slurry concentrations even for very dilute conditions. The slowing-down factor was defined and showed good correlation with the relative apparent viscosity of the slurry. Three different grinding regimes in fine grinding region were identified with reference to their rheological behavior. Hypotheses for the mechanisms of slowing-down effect were also given.

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*Keywords:* fine wet grinding; ball mill; slurry rheology; breakage rates

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