

3.1.4 The Dependent Variable

The force required for drawing or extrusion can now be characterized. In Fig. <1> the drawing force F (or drawing stress $\sigma_{xf} = F_{\text{front}}/A_f$) is obviously a function of reduction (larger reduction requires higher force), of cone angle, and of friction, and similarly for the extrusion force F (or extrusion stress $\sigma_{xb} = F_{\text{back}}/A_o$). In short, the motivation force or stress causing the drawing or extrusion is a dependent variable which is a function of reduction, cone angle, and friction. Description of the drawing force, for example, as a function of these three independent variables may be undertaken by either an experimental approach or an analytical approach. Each approach can be aided by the other. Both approaches will be reported here and the results will be compared.

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