



# ENGINEERING CALCULATIONS

## Annular Shear Rates

$$\text{ASR} = (2.4 \cdot \text{AV}) \div (\text{I.D.} - \text{O.D.})$$

Where:

ASR	= annular shear rate (sec <sup>-1</sup> )
AV	= annular velocity (ft/min)
I.D.	= inside diameter of casing or open-hole (in.)
O.D.	= outside diameter of drillpipe, collars, etc. (in.)