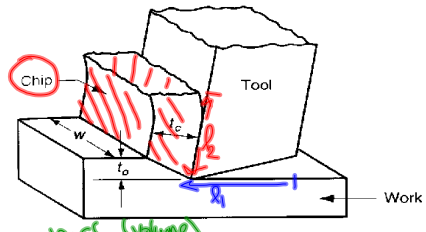


mass (volume) continuity

$\forall_{mat} = \forall_{chips}$

$= (c.s.A)_{length} = (c.s.A)_{chip} \cdot l_2$

$= (w t_o) \cdot l_1 = (w t_c) \cdot l_2$

This occurs in duration: t

$\frac{\forall_{mat}}{t} \rightarrow \frac{\forall_{ch}}{t}$

$\frac{w t_o \cdot l_1}{t} = \frac{w t_c \cdot l_2}{t}$

$w t_o V = w t_c V_c$

$w t_o V$: Material Removal Rate, MRR

$w t_c V_c$: "chip production rate"

$w t_o V = w t_c V_c$

$t_o V = t_c V_c$

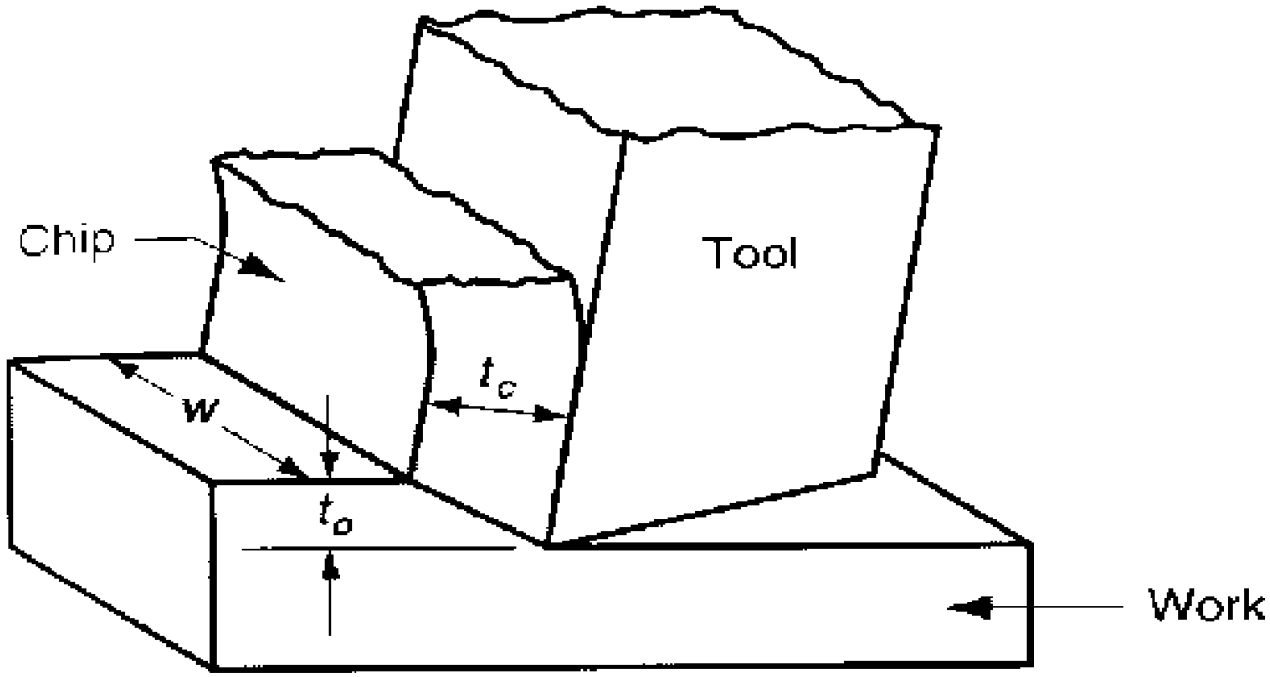
$$r = \frac{t_o}{t_c} = \frac{V_c}{V}$$

$= \frac{t_o}{t_c} = \frac{l_2 / t}{l_1 / t}$

$= \frac{l_2}{l_1}$ → l_2: chip length (l_c); l_1: mat length (l_o)

$$r = \frac{\sin\phi}{\cos(\phi - \alpha)} = \frac{t_o}{t_c} = \frac{l_c}{l_o} = \frac{V_c}{V}$$

angles lengths speeds


Chip
Tool
t_c
w
t_o
Work