Nomenclature

\( C_1 \)  
Constant for extended Taylor’s tool life equation

\( T_C \)  
Cryogenic temperature \( ^\circ C \)

\( C \)  
Cutting speed for one min tool life (m/min)

\( V \)  
Cutting speed (m/min)

\( D \)  
Diameter of work piece (mm)

\( P \)  
Percent Contribution

\( S' \)  
Pure sum of squares

\( S_t \)  
Sum of squares

\( T_L \)  
Tool life (min)

\( V \)  
Variance

\( F \)  
Variance Ratio

\( K_w \)  
Wear growth rate (mm/min)

\( t \)  
Cutting time (min)

\( d \)  
Depth of cut (mm)

\( f \)  
Degrees of freedom

\( f \)  
Feed rate (mm/rev)

\( w_{\text{cryo}} \)  
Flank wear of cryo treated tool (mm)

\( w_{\text{noncryo}} \)  
Flank wear of non cryo tool (mm)

\( w \)  
Flank wear of tool (mm)

\( w_o \)  
Initial flank wear of tool (mm)

\( r \)  
Number of repetitions

\( y_{\text{exp}} \)  
Overall mean response of the experimental runs

\( y_{\text{predicted}} \)  
Predicted response value

\( n \)  
Tool life cutting speed exponent

\( y \)  
Tool life depth of cut exponent

\( x \)  
Tool life feed exponent

\( n \)  
Total number of trials

\( w_{\text{imp}} \)  
Wear resistance improvement

\( \eta \)  
esta carbides