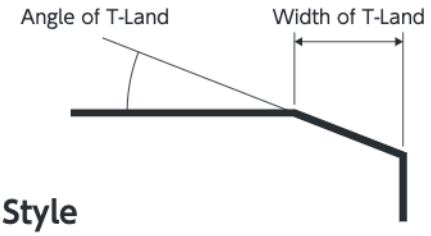
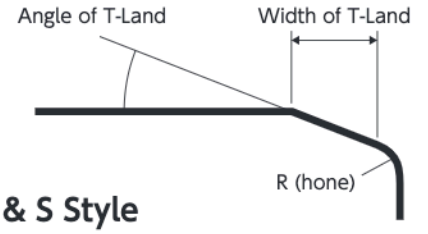
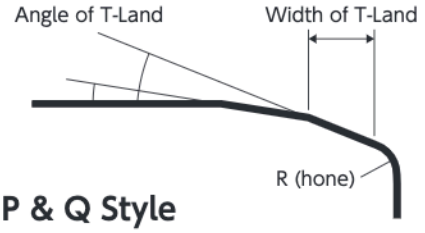
Edge Conditions are a Key to Success

An important factor for achieving success when machining with ceramic inserts is to use the correct edge preparation. Ceramic is a hard material therefore the insert needs some edge work in order to withstand cutting forces and optimize the cutting tool performance. The edge preparation must correspond to the ceramic grade selected, the type of HRSA material being machined and the machining operation being performed. The majority of ceramic applications can be handled with NTK' s standard edge preparations.
In unique circumstances that may arise, an edge preparation may need to be specialized to meet the conditions.
The chart below describes standard edge preps.

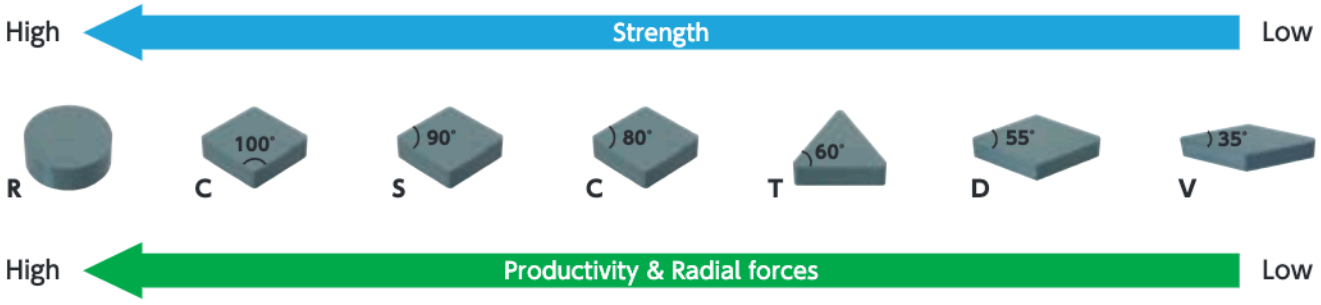
Description of Insert Edge Preparations

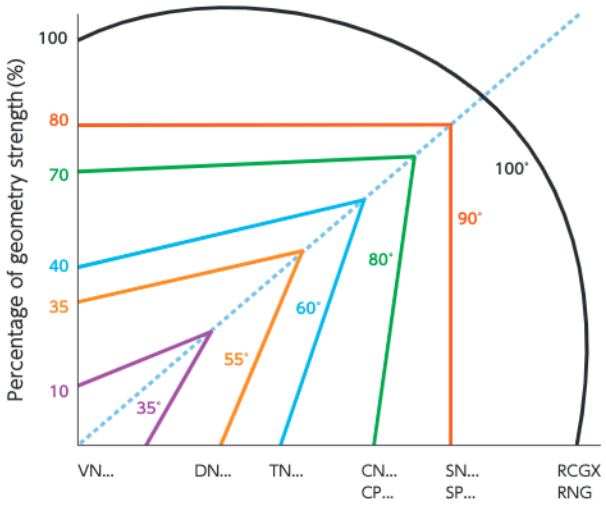
Edge Strength Increases ↓

 **FNX Style**	Up sharp edges are not recommended for ceramics.
 **E Style**	Hones help protect the edge of ceramics from chipping or fracturing. Feed rates must be greater than the hone size to prevent a rubbing rather than a cutting action. Excessive honing reduces tool life.
 **T Style**	This geometry is typically the most common ceramic edge preparation. The cutting forces are distributed over a concentrated area of the ceramic edge.
 **Z & S Style**	A hone added to a T-land provides a stronger edge to prevent chipping. Usually this type of geometry works best on interrupted cuts or turning hardened steels.
 **J, P & Q Style**	Double T-lands and hones are generally used in heavy roughing cuts or hardened materials. This edge is extremely shock resistant but also generates large cutting forces.

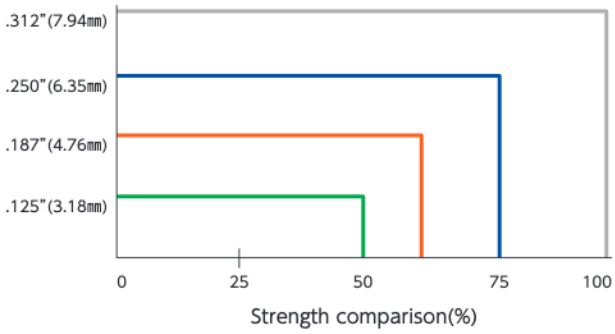
Guidelines for Machining HRSA Materials

Guidelines for Insert Selection

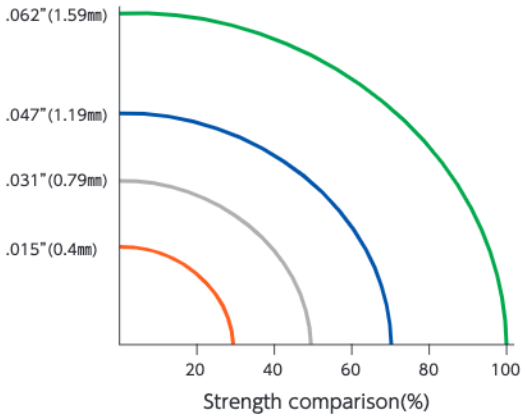




Insert Thickness



Insert Nose Radius Inches



For the best performance always use the strongest possible insert shape to maximize corner strength and productivity. If the operation allows, it is best to use round inserts or square inserts with a large nose radius and a small entering angle.
Use the largest nose radius possible for the operation, so you increase the strength of the insert which will result in better tool life but remember that this will result in increased tool pressure.
Larger insert thickness gives added strength and integrity during machining offering far better impact resistance, heat dispersion, and longer tool life. This results in higher productivity.