

# Guidelines for Machining HRSA Materials

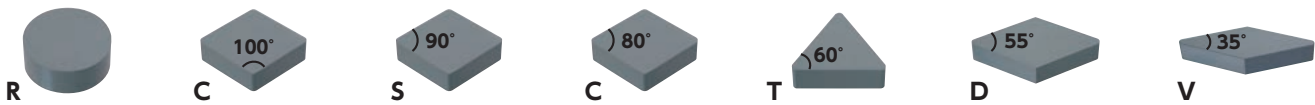
## Guidelines For Success

### Keys to successful machining of HRSA Materials

- NTK's BIDE MICS and ceramics deliver extremely high productivity to heat resistant alloy machining
- BIDE MICS offer excellent flank wear resistance and SiALON ceramics provide exceptional notch wear resistance
- BIDE MICS enable ultra high-speed finishing with outstanding leave out surface finishes
- Stable machining can be performed by optimizing cutting conditions and tooling

### Use strong insert shapes

Maximize geometry for strength productivity



Strength Increases

### Use largest nose radius

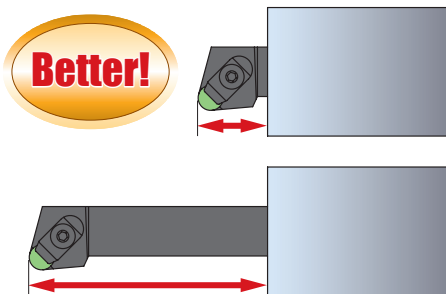
Maximize insert nose radius for strength and longer tool life

Take into account that the larger the nose radius the greater the tool pressure

Typical application machining heat resistant alloys use a RNG45 insert for roughing and CNGA43 style for finishing

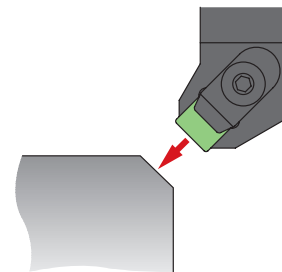
### Minimize overhang

Too much overhang may cause chatter or insert breakage



### Pre-chamfering

Pre-chamfering the part reduces the potential for insert chipping or breaking upon the entry or exit point of work material



### No dwelling

Inserts wear out when rubbing the part instead of cutting

### Coolant

When turning with JX1, SX7, SX9, SX5, WA1 a flood coolant condition should be used

In some cases where a high interruption is encountered it may be best to shut off the coolant

No coolant should be used while milling with SX7 & SX9

### Edge preparations

Typical cutting tool applications machining Heat resistant alloys require the insert cutting edge to be sharp. Using a slight T-land or honed edge is also effective to reduce notching, flaking and built up edge