Heat-resistant alloys processing

SiAlION Ceramic

KS6030
For Finishing-Medium

KS6040
For Roughing

Newly-developed SiAlION Ceramic for Heat-resistant Alloys Offers High Reliability and Stable Machining!
KS6030/KS6040

Newly-developed SiAlON Ceramic for Heat-resistant Alloys

KS6030

Features

- Superior wear resistance due to high chemical stability
- Most suitable for semi-finishing and profiling at medium to high cutting speeds
- Prevents burr formation and chipping due to its high resistance to boundary wear
- Can also be used for milling

Wear resistance comparison

Turning

Cutting Conditions
| Workpiece Material: Ni-based heat-resistant alloys
| Vc=300m/min f=0.2mm/rev ap=2.0mm
| Cutting time 2.5min Wet

KS6030 vs Competitor A (Whisker)

Cutting Conditions
| Workpiece Material: Ni-based heat-resistant alloys
| Vc=150m/min f=0.4mm/rev ap=2.0mm
| Cutting time 2.5min Wet

KS6030 vs Competitor A (Whisker)

The KS6030 provides superior tool life and efficiency from low to high-speed machining. It prevents burr formation and cracks due to its excellent anti-notching properties.

Milling

Cutting Conditions
| Workpiece Material: Ni-based heat-resistant alloys
| Tool: RNGN120400T01020
| Vc=1,000m/min f=0.1mm/t ap=1.0mm
| Dry

KS6030 vs Competitor B

Cutting Conditions
| Workpiece Material: Ni-based heat-resistant alloys
| Tool: RNGN120400T01020
| Vc=1,000m/min f=0.1mm/t ap=1.0mm
| Dry

KS6030 vs Competitor B
Case Study

**Ni-based heat-resistant alloys**

- **Seal**: Vc=170m/min, f=0.2mm/rev, ap=1.2mm (Roughing), ap=0.5mm (Finishing), WET
- **Tool**: RNGN120700E003 (KS6030)

**KS6030**

- Machining efficiency 2 pcs/edge

**Competitor C**

- Machining efficiency 1 pcs/edge

KS6030 doubled tool life under the same cutting conditions as Competitor C

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**KS6040**

**Features**

- Improved wear and fracture resistance due to the mixture of hard and acicular particles. Superior balance in heat-resistant alloy machining.
- Suitable for scaling and roughing.

**Fracture Resistance Comparison**

**Cutting Conditions**

- [Workpiece Material]: Ni-based heat-resistant alloys
- [Tool]: RNGN120400 T00520
- Vc=100, 300 m/min, ap=1mm, f=0.2 mm/rev, Wet

Compared to both Competitor F (Whisker) and Competitor D (Wear resistance-oriented SiAlON insert), the KS6040 provides superior fracture resistance. The KS6040’s superior fracture resistance is equivalent to that Competitor E’s fracture resistance-oriented SiAlON insert.

The KS6040 achieves improved wear and fracture resistance compared to conventional SiAlON inserts! Superior balance in heat-resistant alloy machining.

**Recommended cutting conditions**

**Turning**

- E903 Recommended edge preparation: R honing

<table>
<thead>
<tr>
<th>Grade</th>
<th>Roughing Efficiency</th>
<th>Turning Efficiency</th>
<th>Vc (m/min)</th>
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**Milling**

- T01020 Recommended edge preparation: Chamfering

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<th>fz (mm)</th>
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**KS6030**

- KS6030/KS6040

- Superior wear resistance due to high chemical stability
- Most suitable for semi-finishing and profiling at medium to high cutting speeds
- Prevents burr formation and chipping due to its high resistance to boundary wear
- Can also be used for milling

**Newly-developed SiAlON Ceramic for Heat-resistant Alloys**

- CF1
- Competitor’s Whisker
- New SiAlON
- New SiAlON
- KS6030

**Wear Resistance**

- Cutting speed: HighLow
- Competitor’s Fracture resistance-oriented SiAlON insert
- KS6040
- Low Fracture Resistance High

**Features**

- Improved wear and fracture resistance due to the mixture of hard and acicular particles.
- Superior balance in heat-resistant alloy machining.
- Suitable for scaling and roughing.

**Hard Particle (Wear resistance improvement)**

<table>
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**Acicular Particle (Fracture resistance improvement)**

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<th>Acicular Particle</th>
<th>(Fracture resistance improvement)</th>
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- KS6040
  - Compared to both Competitor F (Whisker) and Competitor D (Wear resistance-oriented SiAlON insert), the KS6040 provides superior fracture resistance.
  - The KS6040’s superior fracture resistance is equivalent to that Competitor E’s fracture resistance-oriented SiAlON insert.

**Review**

- The KS6040 achieves improved wear and fracture resistance compared to conventional SiAlON inserts! Superior balance in heat-resistant alloy machining.
### Stock Items

#### Edge Preparation

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#### Usage Classification

- `*`: Interruption / 1st Choice
- `†`: Interruption / 2nd Choice
- `‡`: Light Interruption / 1st Choice
- `∞`: Light Interruption / 2nd Choice

### Heat-resistant alloys

- `MTO`: Made to order
- `KS6030`: KS6030
- `KS6040`: KS6040

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