

THE NEW VALUE FRONTIER



Silicon nitride ceramic
for cast iron

KS6015 / KS6030
CS7050

KS6015 / KS6050 / CS7050



Efficient and reliable cast iron machining

Prevents chipping during scale removal and interrupted cuts
Excellent wear resistance with reduced grain boundary phase

KS6015: Wear resistant machining

KS6050: General purpose and interrupted machining

CS7050: High speed machining

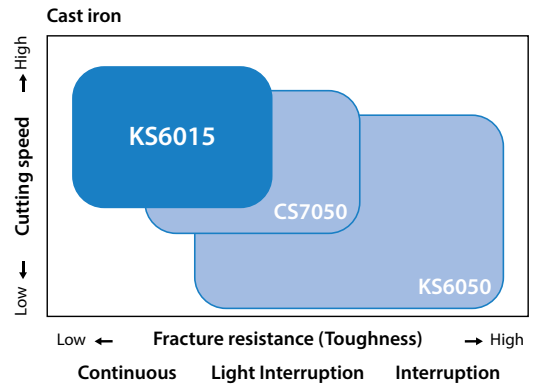


Excellent wear resistance

NEW

KS6015

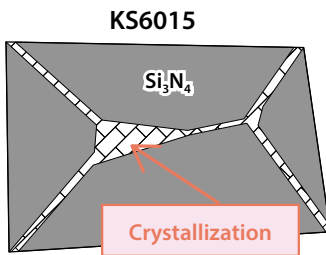
Improved thermal conductivity leads to reduced heat at the cutting edge



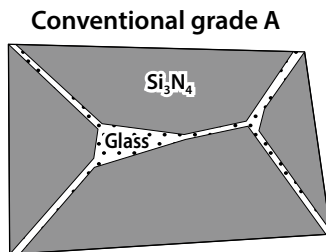
1 Excellent wear resistance

Crystallization of grain boundary phase provides better temperature strength and wear resistance

Grain boundary phase comparison

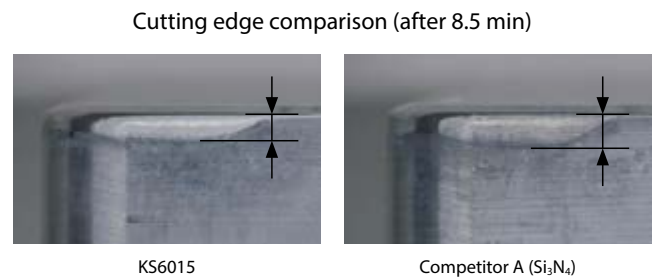
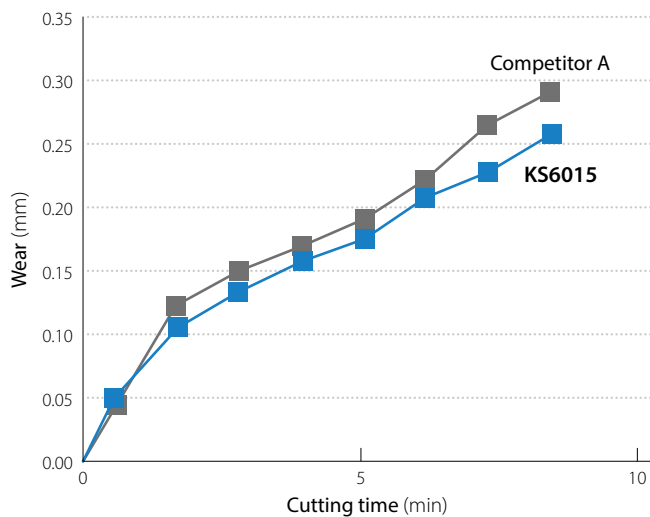


The grain boundary phase is crystallized
Increased temperature strength prevents deterioration
Improved thermal conductivity



The grain boundary phase is vitrified
Deteriorated by softening due to high temperature

Wear resistance comparison (Internal evaluation)



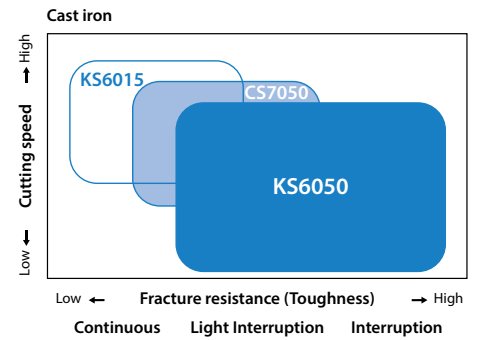
Less flank wear

Cutting conditions: $V_c = 600$ m/min, $a_p = 2.0$ mm, $f = 0.30$ mm/rev, dry, workpiece: GG25

1st recommendation for general purpose and interrupted machining

KS6050

High fracture resistance and wear resistance by reducing the grain boundary phase and high aspect ratio structure of Si_3N_4

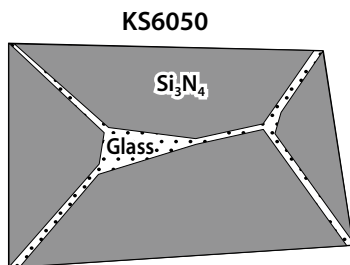


1 Stable machining of cast iron

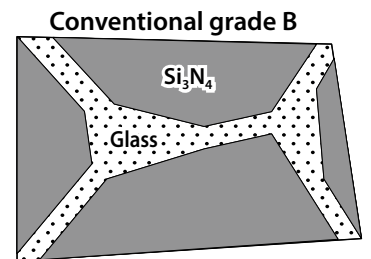
High fracture resistance and wear resistance by reducing the grain boundary phase and high aspect ratio structure of Si_3N_4

Grain boundary phase comparison

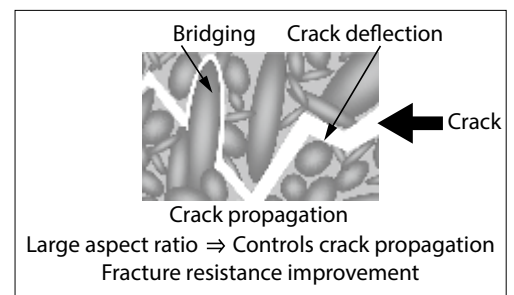
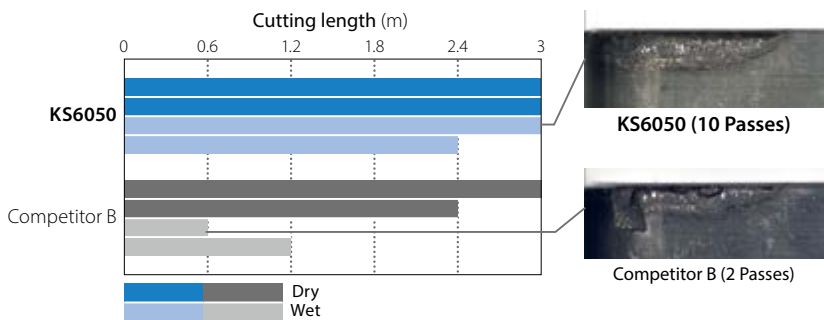
Mechanical and thermal property is improved by controlling grain boundary phase



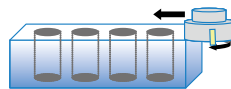
The grain boundary phase contained a high proportion of glass, therefore its toughness will be weakened by cutting heat



Fracture resistance comparison (Internal evaluation)



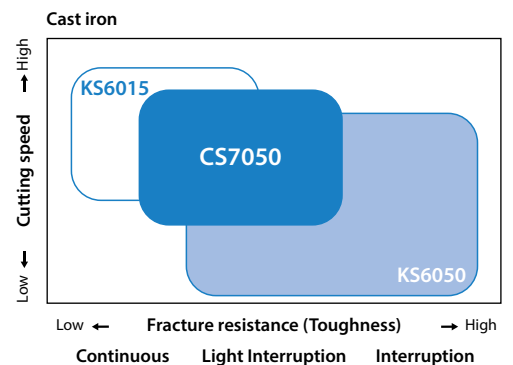
Cutting conditions: $V_c = 900 \text{ m/min}$, $f_z = 0.5 \text{ mm/t}$, $a_p = 2 \text{ mm}$
Workpiece: 450-10S (4-hole block)



High speed machining

CS7050

Improved coating adhesion provides better wear resistance



1 For high speed finishing of cast iron

Silicon nitride ceramic with CVD coating ensures a higher level of productivity

Inserts

| Shape | | Description | Edge preparation | Dimensions (mm) | | | | Silicon nitride ceramic | | CVD coated silicon nitride ceramic |
|-------|--|-------------------|------------------|-----------------|------|------|-----|-------------------------|--------|------------------------------------|
| | | | | IC | S | D1 | RE | NEW KS6015 | KS6050 | CS7050 |
| | | CNGA 120408T02025 | T02025 | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | ● |
| | | 120412T02025 | | | | | 1.2 | ● | ● | ● |
| | | CNGN 120408T02025 | T02025 | 12.70 | 4.76 | - | 0.8 | ● | ● | ● |
| | | 120412T02025 | | | | | 1.2 | ● | ● | ● |
| | | 120416T02025 | | | | | 1.6 | ● | ● | ● |
| | | RNGN 120400T02025 | T02025 | 12.70 | 4.76 | - | - | ● | ● | ● |
| | | RNGN 120700T02025 | T02025 | 12.70 | 7.94 | - | - | ● | ● | ● |
| | | SNGA 120408T02025 | T02025 | 12.70 | 4.76 | 5.16 | 0.8 | ● | ● | ● |
| | | 120412T02025 | | | | | 1.2 | ● | ● | ● |
| | | 120416T02025 | | | | | 1.6 | ● | ● | ● |
| | | SNGN 120408T02025 | T02025 | 12.70 | 4.76 | - | 0.8 | ● | ● | ● |
| | | 120412T02025 | | | | | 1.2 | ● | ● | ● |
| | | 120416T02025 | | | | | 1.6 | ● | ● | ● |
| | | 120420T02025 | | | | | 2.0 | ● | ● | ● |
| | | SNGN 120716T02025 | T02025 | 12.70 | 7.94 | - | 1.6 | ● | ● | ● |
| | | TNGA 160408T02025 | T02025 | 9.525 | 4.76 | 3.81 | 0.8 | ● | ● | ● |
| | | 160412T02025 | | | | | 1.2 | ● | ● | ● |
| | | TNGN 160408T02025 | T02025 | 9.525 | 4.76 | - | 0.8 | ● | ● | ● |
| | | 160412T02025 | | | | | 1.2 | ● | ● | ● |

●: Available