

# **VG Drill Series**

## VG Oil Hole Drill for 3D/5D

- *High performance Coolant Thru Solid Carbide Drill*
- *New Proprietary Back taper & flute geometry for superior chip evacuation*
- *Ground "K-land" on the cutting edge for optimum performance*
- *TiAlN + Al-Ti-Cr Dual layer coating provides 30% more tool life than regular TiAlN coated carbide drills.*

# VG Oil Hole Drills

## Coolant Thru Carbide Drills 3D & 5D



"S" shaped cutting edge

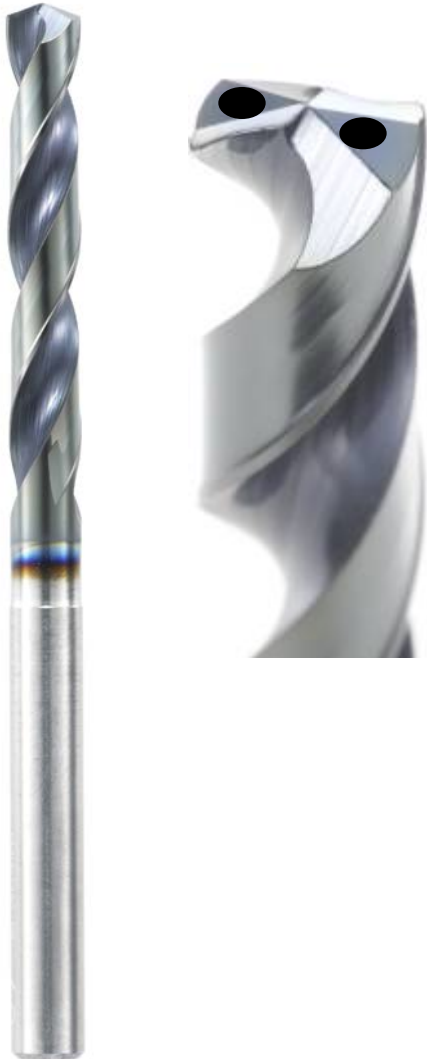
### Features:

- **Fine Micro Grain Carbide with Composite Multi-Layer GS Coating.**
- **Fine Micro Grain Carbide Gives the Drill Extra Toughness, Hardness, and Wear Resistance**
- **"S" Shaped Cutting Edge for Superior Chip Removal**
- **Utilizes High Accuracy Shape Relief (2 Rake + XW Thinning)**
- **Available in Metric and Fractional Sizes in 3D and 5D Lengths**

### Work Materials:

- **Alloy Steel, Carbon Steel, Cast Irons, Stainless Steel (300-400 series), 17-4 ph, Inconel, Hi-Temp Alloys, Al Castings, and Copper Alloys**

# Design of VG-Drill Oil Hole



## Negligible Burr Size by Low Resistance

- **25% Reduction of Torque & Thrust with New Geometry**
- **Great Performance in Insufficiently Rigid Conditions BT30 Machine or Thin Plate**
- **Furthermore, Low Thrust Minimizes the Burrs at the Hole Exit**

## Ultra Long Tool Life

- **New Advanced Al-Cr Based Coating Decreases Metal Deposition and Kinetic Friction Under High Temperature Resulting in Longer Tool Life**

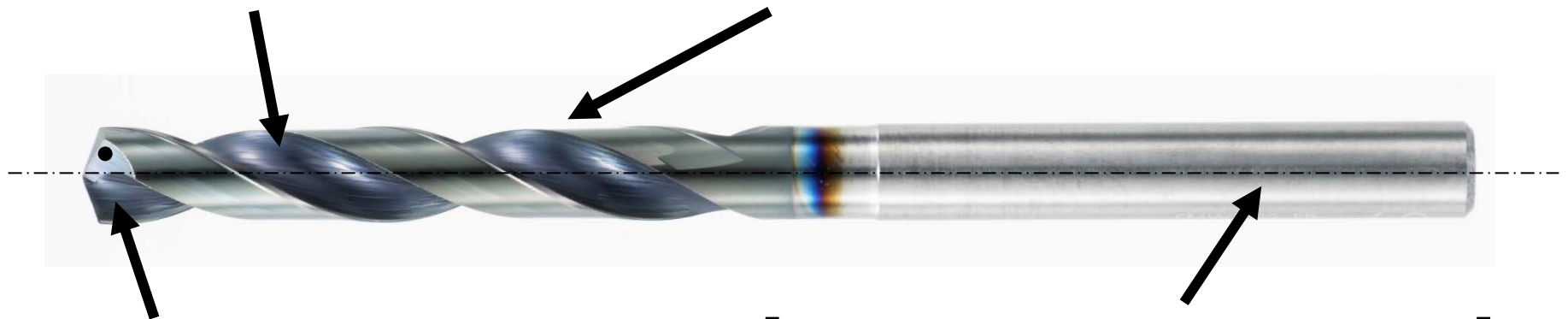
# Features of VG-Drill OH

## 【Coating】

New AlCr Based Coating  
Decreases Metal-Deposition  
and Kinetic Friction and  
Improves Wear Resistance

## 【Groove Geometry】

New Geometry with Small Web  
Breaks the Chip in Short Parts and  
Decreases Hardened Zone on the  
Work Pieces



## 【Thinning】

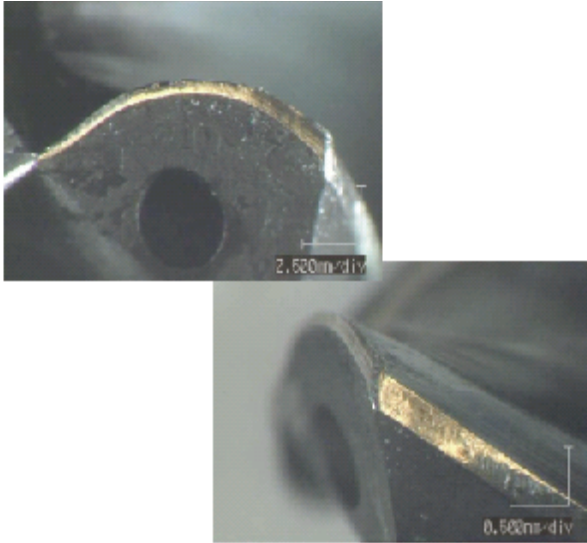
New Thinning Decreases  
Thrust and Torque, Which  
Enables Excellent Performance  
for Thin Plate

## 【Carbide Grade-K10UF or equivalent】

Resistance to Crater Wear on the  
Thinning Rake Face is Improved by  
Good Combination of the Grain Size  
Higher Reliability is Guaranteed

# VG-Oil Hole Drill Drilling in Inconel 718

## Wear After 70 Holes



## Conditions

**Drill: 4.2mm (3D Type)**

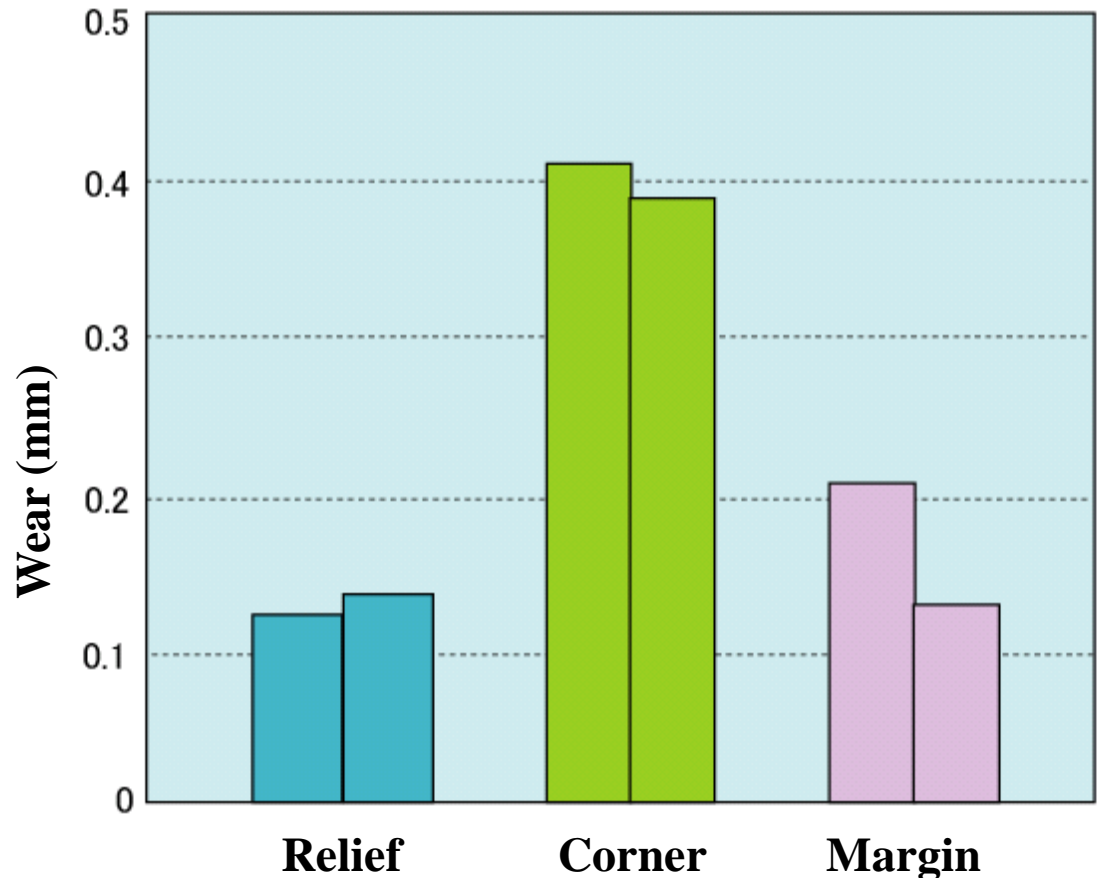
**Speed: 3100 RPM**

**Feed: 0.001 IPR**

**Hole Depth: 15mm Blind**

**Material: Inconel 718 (43HRc)**

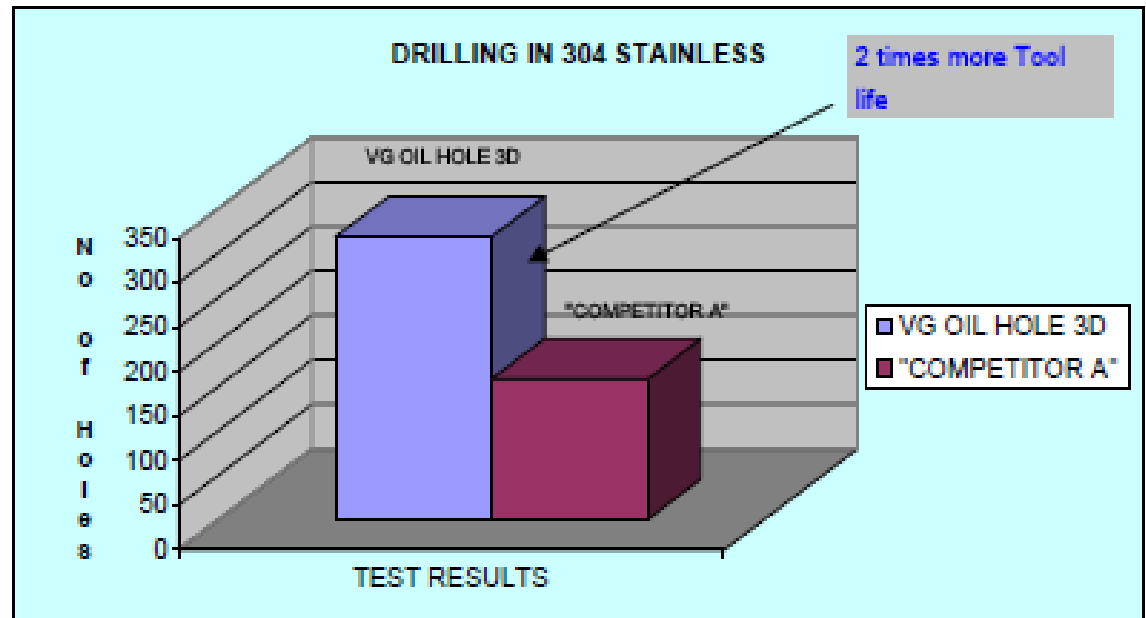
**Emulsion 5MPA**



## Performance:

### CUTTING CONDITIONS:

Drill: 8.0mm  
 Speed: 132 SFM, 40.2 m/min  
 RPM: 1600  
 Feed: 16 IPM (.010 IPR)  
 400 mm/min (0.01 mm/rev)  
 Depth of Hole: 23mm Blind  
 Work Material: 304 Stainless Steel  
 Coolant: Water Soluble



**Thank You**