

# VARIANTIC®

## Titanium aluminium carbonitride – The multifunctional multilayer coating

Excellent cutting, forming, stamping and precision cutting results. The temperature resistant TiAlN underlayer, in conjunction with the hard and low-friction TiCN top layer, delivers a combination which presents clear advantages in numerous applications. In the area of cold forming in particular, excellent results are achieved when Duplex VARIANTIC is used.

### APPLICATIONS

<b>Cutting</b>	Reaming and milling of steels
<b>Punching and forming</b>	General applications in the area of sheet steel and cold forging; Duplex VARIANTIC recommended for high compressive stress in the tool



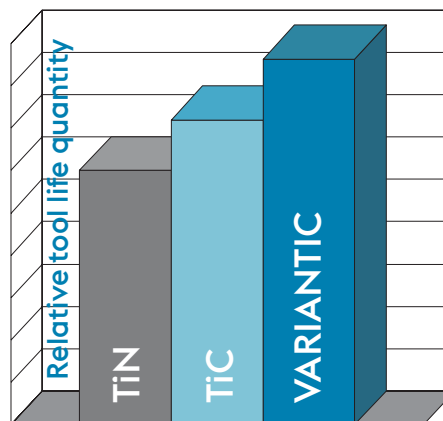
### COATING PROPERTIES

<b>Hardness</b>	3,500 ± 500 HV
<b>Max. application temperature</b>	800 °C / 1,470 °F
<b>Coefficient of friction against steel</b>	0.2
<b>Coating thicknesses</b>	2 - 4 µm
<b>Colour</b>	antique pink

### PRODUCT FEATURES

- » Can be deposited on HSS and hard metal
- » Substantial friction reduction
- » Multilayer structure
- » High wear resistance
- » Tough, hard, and temperature resistant up to 800 °C

### TOOL LIFE QUANTITIES COMPARISON



Forming of hot rolled strip DD-13



**Workpiece:**  
Hot rolled strip DD-13, 3 mm,  
280 -350 N/mm<sup>2</sup>

**Tool:**  
PM steel, 62-63 HRC,  
Ø 170 mm x 150 mm