

DUPLEX 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.

PRODUCT FEATURES

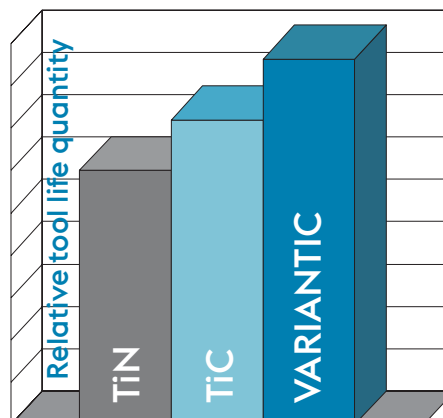
- » Can be deposited on HSS and hard metal
- » Substantial friction reduction
- » Multilayer structure
- » High wear resistance
- » Tough, hard, and temperature resistant up to 800 °C

APPLICATIONS

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



TOOL LIFE QUANTITIES COMPARISON



Forming of hot rolled strip DD-13

COATING PROPERTIES

Hardness	3,500 ± 500 HV
Max. application temperature	800 °C / 1,470 °F
Coefficient of friction against steel	0.2
Coating thicknesses	4 - 6 µm
Colour	antique pink



Workpiece:
Hot rolled strip DD-13, 3 mm,
280 -350 N/mm²

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