

# **BALINIT PERTURA**

## **At full power**

High-performance drilling



**Cutting Tools**



# BALINIT PERTURA

## You benefit from more performance and flexibility

BALINIT®PERTURA is a coating for all high-performance carbide drills. It is the result of the refinement process involving our BALINIT®FUTURA and HELICA coatings. Regardless of whether for machining operations in steel or cast iron, for new or recoating: With its unique nanolayer structure, BALINIT®PERTURA enhances the stability and process reliability of your tools even under difficult

machining conditions. This means reduced tool changing and increased machine service life. Moreover, machining times are shortened, which in turn allows for maximum machine capacity utilization as well as savings in production costs. There are numerous advantages offered only by Oerlikon Balzers, a global technology leader in hard coatings.

## Every coating property is a factor for success

### OPTIMIZED PERFORMANCE

Nanolayer structure and specific layer composition



**Consistent prevention of crack growth**  
**Versatile application in highend drilling**

Optimal balance between residual stress, hardness and fracture toughness



**Applications at moderate and high cutting speeds possible**

Enormous abrasion-resistance and high hot hardness



**High tool lifetimes**

Extremely smooth coating surface



**Trouble-free chip transport**  
**Reduction of cutting forces**

Outstanding oxidation resistance



**Very high tool stability, especially of the cutting edges**  
**Extremely high service life, even with deep-hole and dry drilling**

### BALINIT® PERTURA

**More productivity, process reliability and efficiency in carbide drilling**

## Rely on a broad application range – even under difficult conditions

#### Ideal for a diverse variety of carbide drills

- Deep-hole drills
- Step drills
- As well as all standard drills

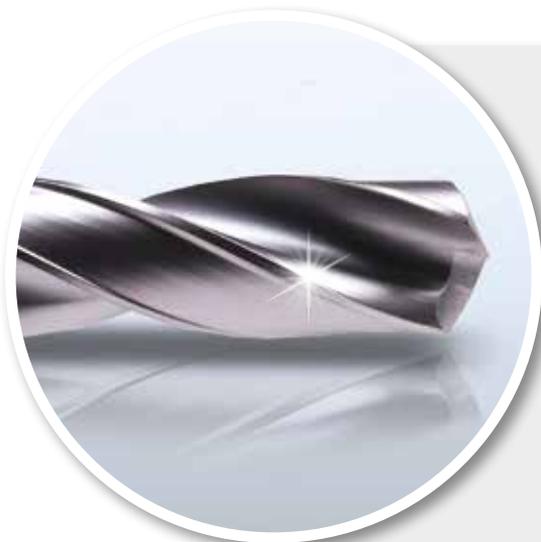
#### Ideal for challenging materials

- C70
- GGG60
- GJV
- Materials with high tensile strength
- Stainless steels

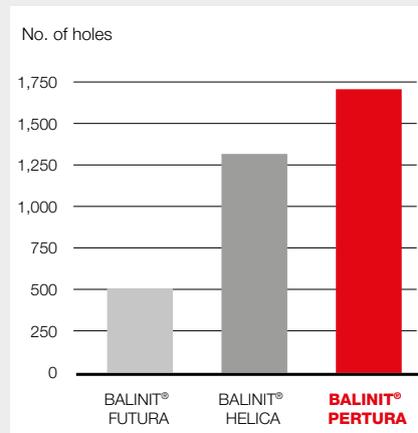
#### Ideal for all cooling variants

- Internal cooling
- External cooling
- MQL
- Dry machining

# Obtain top performance statistics in your machining



## Drilling in steel at moderate cutting speeds



### Tool

Carbide drill Ø 8.5 mm

### Workpiece

Steel 1.7225 (AISI 4140, SCM440)  
900 N/mm<sup>2</sup>

### Cutting data

$v_c = 80$  m/min  
 $f = 0.284$  mm/rev  
 $L_D = 5xD$  (through hole)  
Internal cooling with emulsion

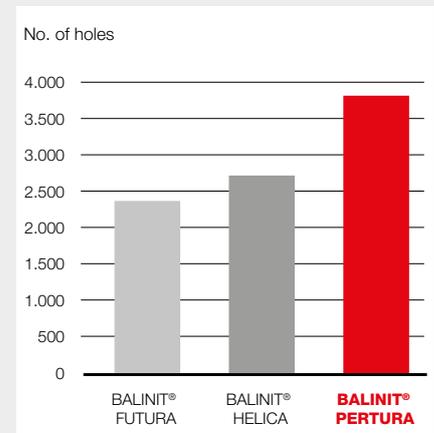
### Criterion for end of service life

VB = 0.3 mm

### Source

Oerlikon Balzers cutting laboratory

## Drilling in cast iron



Carbide drill Ø = 8.5 mm

Cast iron 0.7060  
(AISI 100-70-03, FCD600)

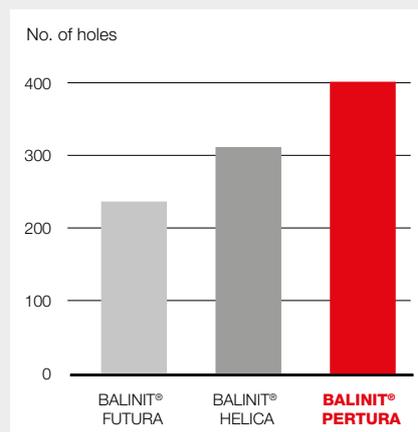
$v_c = 90$  m/min  
 $f = 0.220$  mm/rev  
 $L_D = 5xD$  (through hole)  
Internal cooling with emulsion

VB = 0.3 mm

Oerlikon Balzers cutting laboratory



## Drilling in hot-work steel



### Tool

Carbide drill Ø = 5.5 mm

### Workpiece

Steel 1.2714 (~AISI L6, ~SKT4)  
1200 N/mm<sup>2</sup>

### Cutting data

$v_c = 65$  m/min  
 $f = 0.10$  mm/rev  
 $L_D = 25$  mm  
MQL

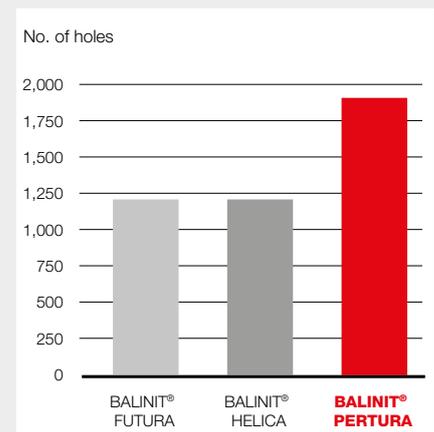
### Criterion for end of service life

VB = 0.3 mm

### Source

Oerlikon Balzers/University of Hamburg

## Drilling in stainless steel



Carbide drill Ø = 8.5 mm

Steel 1.4571  
(AISI 316Ti, SUS316Ti)

$v_c = 80$  m/min  
 $f = 0.1$  mm/rev  
 $L_D = 40$  mm  
Internal cooling with emulsion

VB = 0.3 mm

Oerlikon Balzers cutting laboratory

# Productivity with a big plus +85% for drilling in steel

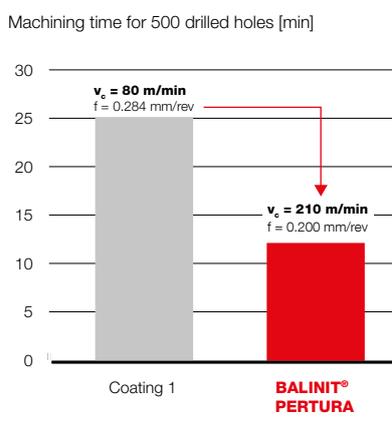
## Higher productivity with BALINIT® PERTURA

A general rule says that the costs for mechanical machining operations can only be reduced significantly through increased productivity of the tools employed. A simple calculation demonstrates this: An increase in tool lifetime of 50% results in cost savings amounting to only 1% per component. The

savings are about the same when tool costs are decreased by 30%. On the other hand, increasing the feed rate and cutting speed by 20% can reduce manufacturing costs by at least 15%. BALINIT® PERTURA allows significantly higher cutting speeds and feed rates than do conventional PVD coatings – especially under difficult application conditions.



## BALINIT® PERTURA for drilling in steel



<b>Tool</b>	Carbide drill Ø 8.5 mm
<b>Workpiece</b>	Steel 1.7225 (AISI 4140, SCM440) 900 N/mm <sup>2</sup>
<b>Cutting data</b>	LD = 5xD (through hole) Internal cooling with emulsion
<b>Criterion for end of service life</b>	VB = 0.3 mm
<b>Source</b>	Oerlikon Balzers cutting laboratory

## Benefit from the BALINIT PERTURA high-performance coating Contact us now!

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