

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

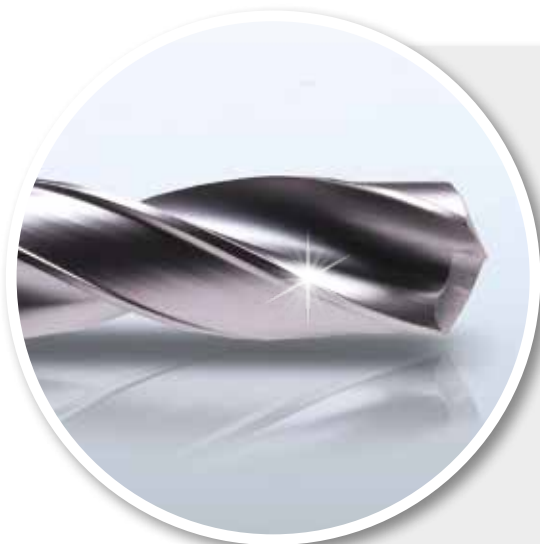
Ideal for challenging materials

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

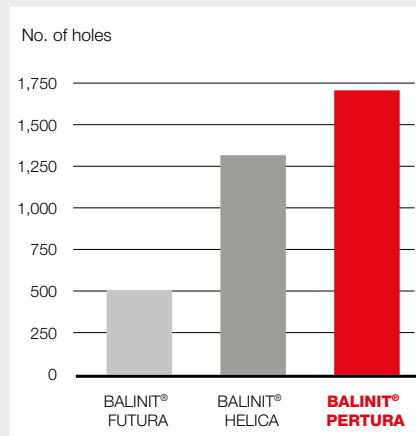
Ideal for all cooling variants

- 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/mm²

Cutting data

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

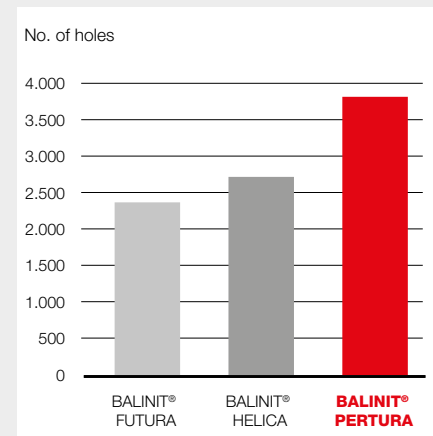
Criterion for end of service life

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)

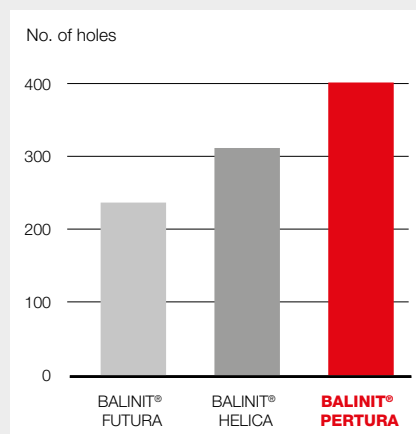
$v_c = 90$ m/min
 $f = 0.220$ mm/rev
 $L_D = 5xD$ (through hole)
Internal cooling with emulsion

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/mm²

Cutting data

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

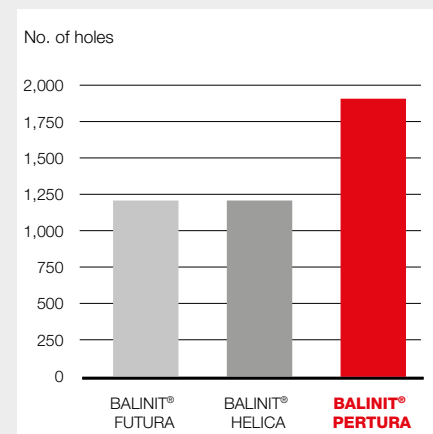
Criterion for end of service life

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

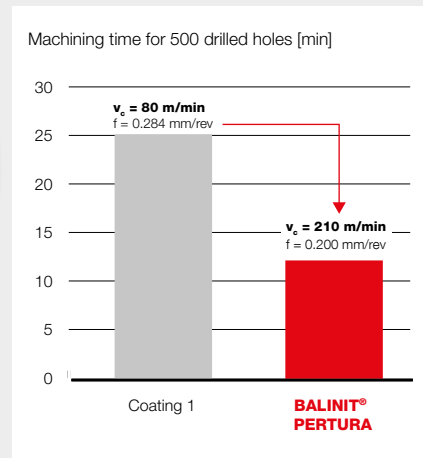
Higher productivity with BALINIT® PERTURA

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



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

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

Headquarters

Oerlikon Balzers Coating AG
Balzers Technology & Service Centre
Iramali 18
9496 Balzers
Liechtenstein
T +423 388 7500
F +423 388 5419
E info.balzers@oerlikon.com

Our worldwide coating centre
network addresses are listed at:
www.oerlikon.com/balzers