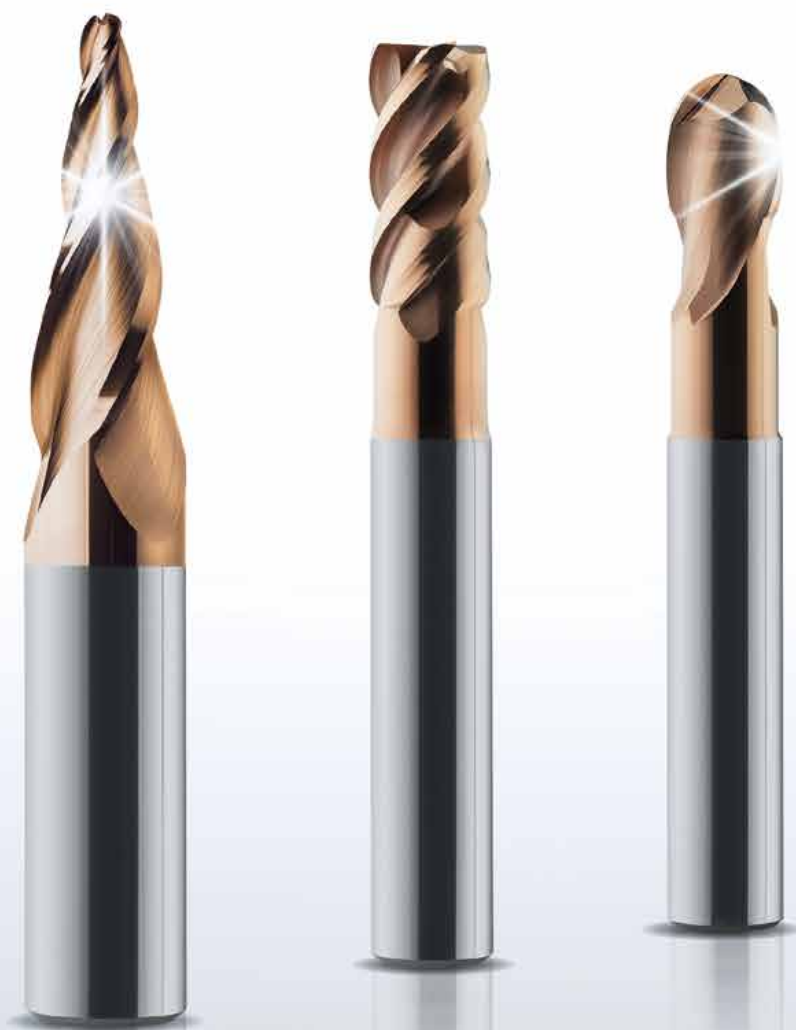


BALINIT TISAFLEX

Machining difficult-to-cut materials at the highest level

Tailored coating properties for demanding machining applications



Cutting Tools



BALINIT TISAFLEX: superior thermal stability and resistance to oxidation and wear

Machining difficult-to-cut materials such as titanium, nickel-based alloys and stainless and hardened steel, which are being used more and more in the aerospace, 3C (Computers, Communications and Consumer electronics) and mould-making industries, pushes

cutting tools to the limits of their performance. BALINIT® TISAFLEX from Oerlikon Balzers is a high-end coating solution that offers superior oxidation resistance, high thermal stability and exceptional wear resistance, making it perfect for machining these challenging materials.

Top coating properties lead to excellent results

OPTIMISED PERFORMANCE

Optimised layer structure with tailored mechanical properties of each layer



AlTiN based layer offers high degree of ductility
TiSiXN layer makes BALINIT® TISAFLEX hard and resistant to oxidation and wear

Defined stress profile



Reduced crack formation and improved resistance to chipping

Superior heat resistance of BALINIT® TISAFLEX



The coated tool can sustain high temperatures at the cutting edge

Tailored combination of the coating structure and properties



Significant reduction of adhesive wear resulting in extended tool life

BALINIT® TISAFLEX
Machining difficult-to-cut materials at the highest level

Application recommendations

■ Operations such as

- Finishing with end mills
- Roughing with end mills
- Finishing using inserts
- Drills

■ Materials

Materials leading to the formation of the built-up edge effect causing adhesive wear:

- Stainless steel
- Nickel-based alloys
- Titanium-based alloys
- Hardened steel

The superior properties of BALINIT® TISAFLEX make it the best coating solution for ambitious machining applications in:

Aerospace



3C Industry



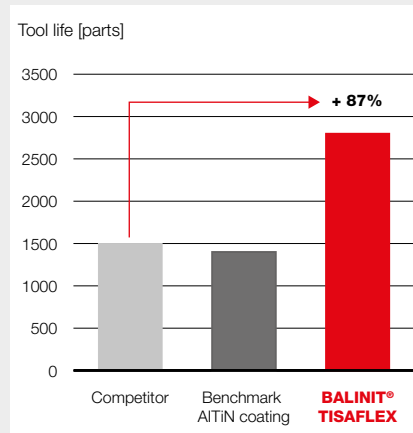
Mold making



BALINIT TISAFLEX: maximum performance for machining difficult-to-cut materials



Milling stainless steel



Tool

End mill Ø 4mm

Workpiece

Steel 1.4401, X2CrNiMo1712 (AISI 316L, SUS 316L)

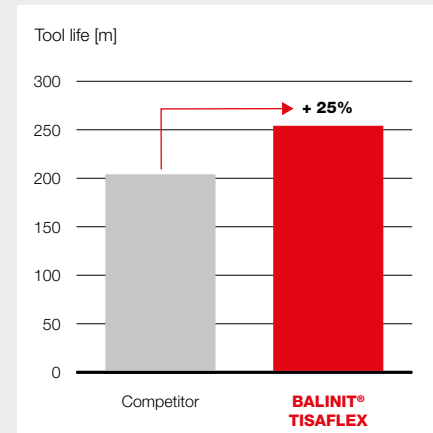
Cutting parameters

$v_c = 125$ m/min
 $f_t = 0.05$ mm
 $a_p = 0.15$ mm
 $a_e = 0.03$ mm
 Oil cooling

Source/ Customer

Tool manufacturer

Milling hardened steel



End mill Ø 10 mm

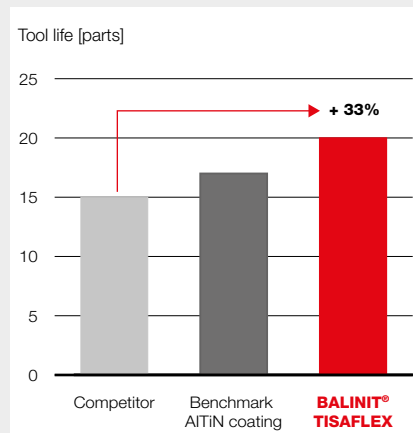
Steel 1.2344, X40CrMoV5-1 (AISI H13, JIS SKD61) 45 HRC

$v_c = 220$ m/min
 $f_t = 0.10$ mm/tooth
 $a_p = 10.0$ mm
 $a_e = 0.5$ mm
 Wet

Oerlikon Balzers cutting laboratory



Machining aerospace components



Tool

Chamfer cutter Ø 12 mm

Workpiece

Nickel alloy 2.4650, NiCo20Cr20MoT (UNS N07263, NIMONIC® C-263)

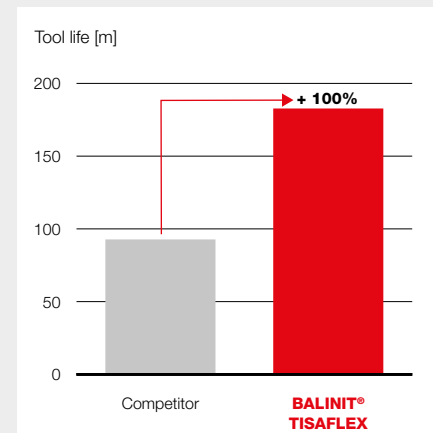
Cutting parameters

$v_c = 64$ m/min
 $f_t = 0.05$ mm/tooth

Source/ Customer

Manufacturer of aerospace components

Milling nickel-based alloy



End mill Ø 16 mm

Nickel alloy 2.4650, NiCo20Cr20MoT (UNS N07263, NIMONIC® C-263)

$v_c = 45$ m/min
 $f_t = 0.09$ mm/tooth
 $a_p = 0.50$ mm
 $a_e =$ variable

Tool manufacturer

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

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