

SPECIALTY COATINGS AND TREATMENTS

PERFORMANCE ENHANCERS

COATINGS FOR ALUMINUM APPLICATIONS

SURFACE FINISH UPGRADES



TiN – Titanium Nitride

Alteration Order Code: TIN • Add 3 days to Delivery

TiN is the least expensive and most commonly used PVD, wear resistant, coating.

Technical Information:

Thickness 2-4µ
Hardness 2300HV
Coefficient of Friction ~0.6
Max. Service Temp. 600°C/1112°F

- Improved wear resistance on cutting edges and wear surfaces
- Improved lubricity for a reduction of adhesive wear
- Suitable thermal stability for most cold work metalworking applications

Note: TiN should be reserved for light stamping operations with use of stamping lubricants, and is not compatible for use with stainless steel, nickel, or copper applications.

TiCN – Titanium CarboNitride

Alteration Order Code: TCN • Add 4 days to Delivery

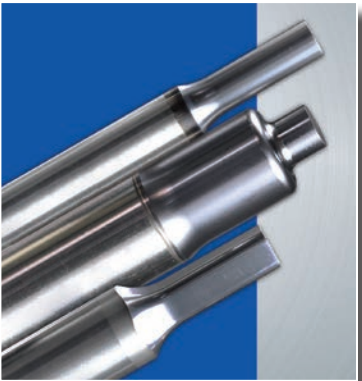
TiCN has a broad range of applications, including piercing and forming of carbon and stainless steels, nickel and copper.

Technical Information:

Thickness 2-4µ
Hardness 3000HV
Coefficient of Friction ~0.4
Max. Service Temp. 400°C/752°F

- High wear resistance on cutting edges and wear surfaces
- Excellent toughness for high pressure applications
- Provides improved lubricity over TiN
- High micro hardness of 3000HV

Note: TiCN is suitable for forming and piercing both ferritic and austenitic stainless steel, but will perform better when forming. TiCN is also suitable for nickel and copper applications.





TiAlN - Titanium Aluminum Nitride

Alteration Order Code: TAN • Add 3 days to Delivery

TiAlN provides excellent protection against wear on cutting edges in applications where surface heat is generated.

Technical Information:

Thickness 3-6µ
Hardness 3400HV
Coefficient of Friction 0.3-0.35
Max. Service Temp. 900°C/1652°F

- Excellent protection against abrasive wear
- Can be used with minimum lubrication
- Ideal for high heat applications, and highly stressed components
- Excellent for medium strength steels
- Allows increased press stroke speed

Alcrona EVO™ – Aluminum Chromium Nitride Titanium Based

Alteration Order Code: ACN • Add 5 days to Delivery

Oerlikon Balzers Alcrona EVO is the next evolution of their Alcrona series of PVD coatings, and is improved over the vastly popular Alcrona Pro. Alcrona EVO provides excellent all-around performance, thermal stability, and low coefficient of friction, for the most piercing and forming applications, including high-strength steels.

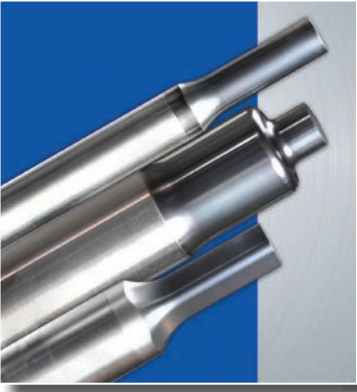
Technical Information:

Thickness 2-5µ
Hardness 3200HV
Coefficient of Friction ~0.35
Max. Service Temp. 1,100°C/2012°F

- Recommended for piercing and forming high-strength steels
- Excellent for hot stamping applications and applications which introduce thermal shock
- Exceptionally low coefficient of friction
- Extraordinarily high wear resistance and thermal stability
- Excellent for applications with high mechanical loads
- Allows increased press stroke speeds



Product availability may vary by region



Oerlikon Balzers Alcrona EVO Advanced

Alteration Code: ACA • Add 10 days to Delivery

Oerlikon Balzers Alcrona EVO Advanced combines the benefits of Alcrona EVO with "Advanced" thin-layer nitride technology to provide increased tool life over Alcrona EVO for tough piercing applications.

Technical Information:

Thickness 2-5µ
Nitride Case Depth Approx. 30µ
Hardness 3200HV
Coefficient of Friction ~0.35
Max. Service Temp. 1,100°C/2012°F

- Thin nitride layer provides excellent toughness for piercing application
- Exceptionally low coefficient of friction
- Extraordinarily high toughness, wear resistance, and thermal stability

Oerlikon Balzers Alcrona EVO Duplex

Alteration Code: ACD • Add 5 days to Delivery

Oerlikon Balzers Alcrona EVO Duplex combines the benefits of Alcrona EVO with "Duplex" deep-layer nitride technology to provide increased tool life over Alcrona EVO for tough forming applications.

Technical Information:

Thickness 2-5µ
Nitride Case Depth Approx. 200µ
Hardness 3200HV
Coefficient of Friction ~0.35
Max. Service Temp. 1,100°C/2012°F

- Deep nitride layer provides excellent toughness for forming application
- Exceptionally low coefficient of friction
- Extraordinarily high wear resistance and thermal stability





Oerlikon Balzers Alcronos (Aluminum Chromium Nitride based)

Alteration Code: ACO • Add 5 days to Delivery

Oerlikon Balzers Alcronos is the ultimate solution for stamping high performance alloys, such as stainless steel, titanium, Inconel, CuNiSi, and more. Alcronos offers exceptional resistance to abrasion, and the ability to maintain extremely tight tolerances, which equates to high productivity gains, and consistent part quality.

Technical Information:

Thickness 2-4µ
Hardness 3800HV
Coefficient of Friction ~0.35
Max. Service Temp. 1,100°C/2012°F

- Superbly smooth coating with outstanding adhesion
- High precision coating thickness with excellent cutting edge stability
- High coating hardness and wear resistance

CrN – Chromium Nitride

Alteration Code: CRN • Add 5 days to Delivery

Chromium Nitride is an excellent substitute for applications where hard chrome is preferred, but is significantly harder, has better coating adhesion. Chromium Nitride is foodstuff-neutral.

Technical Information:

Thickness 2-5µ
Hardness 2000HV
Coefficient of Friction ~0.5
Max. Service Temp. 700°C/1292°F

- Superior substitute to hard chrome
- Very high coating adhesion and hardness
- Excellent for forming low strength steels and copper
- Resistant to corrosion and aggressive chemicals



Product availability may vary by region

Oerlikon Balzers Mayura (ta-C based)

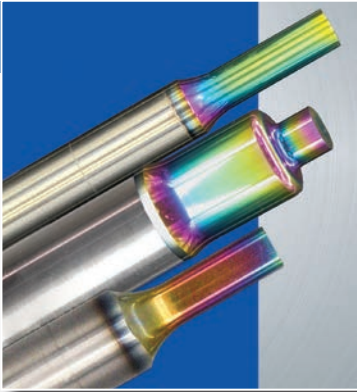
Alteration Code: MAY • Add 5 days to Delivery

Oerlikon Balzers Mayura's brilliant rainbow color reveals its true value in the demanding stamping of aluminum, and other non-ferrous materials, such as copper, plastics, etc. Mayura is harder and smoother than other DLC coatings, including Hard Carbon, which minimizes material adhesion, and it is extremely thin, which keeps cutting edges sharp.

Technical Information:

Thickness 0.3µ
Hardness >6600HV
Coefficient of Friction <0.10
Max. Service Temp. 500°C/932°F

- The ultimate solution for piercing and forming aluminum, and other non-ferrous materials
- Extreme protection against abrasive wear and galling
- Smooth coating surface provides a low coefficient of friction
- Retains sharp cutting edges
- High thermal stability



MOELLER EXCLUSIVE MULTI-PART SURFACE TREATMENTS

M-WEAR ULTRA

Alteration Code: MWU • Add 7 days to Delivery

Moeller exclusive tooling solution combines multi-part surface treatments and advanced coating technology to meet the demands of today's toughest piercing and forming applications.

- Tailored to both piercing and forming applications
- High wear resistance for increased tool life
- Resists fatigue due to increased toughness
- Superior finish reduces the coefficient of friction
- Proven to increase tool life up to five times in high strength and stainless applications

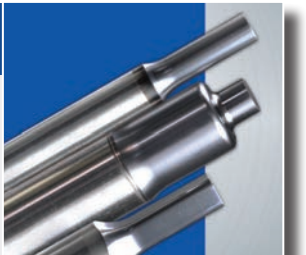


MSP – Moeller Special Process with TiCN

Alteration Code: MSP • Add 5 days to Delivery

Moeller Special Process (MSP) offers the ultimate in cutting edge longevity and resistance to galling, while providing the benefits of TiCN coating

- Superior Surface finish provides increased lubricity and resistance to galling
- Treatment to cutting edge increases cutting edge longevity





Product availability may vary by region

Enhanced Surface Finish

Alteration Code: ESF • Add 2 days to Delivery

Available as a stand alone alteration, or in combination with any of our performance enhancement coatings, Moeller's team of polishing experts will improve the working surfaces of punch points and extrusion buttons to 6 Ra or better, which reduces galling by improving the coefficient of friction.

M-Lap

Alteration Code: LAP • Add 1 day to Delivery

Moeller M-Lap uses a unique media that includes diamond particles to polish even the most irregular surfaces and hard to reach areas.

- Enhances durability of pierce and forming tools
- Uniform surface finishing without misshaping, or marring
- Provides improved finish and increased adhesion for PVD/CVD coatings
- Virtually no material is removed allowing tight tolerance to be held consistently

SUBSTRATE AND EDGE ENHANCEMENTS

MTN – M-Tride – Nitride

Alteration Code: MTN • Add 5 days to Delivery

M-Tride is a case hardening surface treatment that is applied to all outer surfaces of the tool.

- Provides a tough outer layer
- Increases surface hardness by approximately 10 points HRC
- Ideal for die buttons with internal features that are difficult to coat using the PVD line of sight process

Edge Break

Alteration Code: EDG • Add 1 day to Delivery

Adds a small edge break to the cutting edge of pierce tools to prevent premature breakdown

Cryogenic Deep Freeze

Alteration Code: CDF • Add 2 days to Delivery

This process is an effective way to achieve optimum toughness and dimensional stability, even when exposed to up to fifty degrees Fahrenheit above the steels original tempering temperature

PERFORMANCE ENHANCERS

Product availability may vary by region

VISIT US ONLINE: WWW.MOELLERPRECISIONTOOL.COM