

# MAXIMA™ Coating and Nitride Treatment For Punch Press Tooling

## What is Maxima™ Coating?

Maxima™ is a premium tool steel coating that has been specially formulated for turret punch press tooling applications. Maxima is a multilayer Zirconium Titanium Nitride coating that is hard, wear resistant, and lubricious. It acts as a barrier between the punch and the sheet metal being punched and, because of its exceptional lubricity, greatly improves stripping.

Maxima is applied to the precision ground surface of Mate's premium tool steel punches. Since Maxima is an extremely hard, wear resistant, slippery material which reduces the friction that occurs during the stripping portion of the punching cycle, it is particularly good for adhesive wear tooling applications. Less friction mean less heat build up, less galling and longer tool life.

Maxima coating is recommended for applications such as 3000 and 5000 series aluminum, galvanized and stainless steel, or any application where lubrication cannot be used such as vinyl coated or pre-painted materials. The lubricity is also beneficial when punching sharp cornered shapes with a 90 degree or smaller angle.

In real life tests around the world, Maxima has increased tool life by a factor of 2 to 10 times, keeping tools in production longer with increased up time. Maxima can be applied to M-2,



Punch with  
Maxima™ Coating

## What is Nitride Treatment?

Nitride is an optional heat treatment feature for abrasive and adhesive wear environments when punching thin materials. It is a surface treatment which becomes an integral component of the structure of the material itself, therefore extending tool life.

Punches with Nitride Treatment are recommended for punching abrasive materials such as fiberglass or materials that cause galling such as stainless steel, galvanized steel, and aluminum. It is also recommended for high speed punching (see below for nibbling limitations). It is not recommended for punches smaller than 4.01 in diameter or width, for material thicker than 6.35, or where significant punch deflection may occur. Nitride can be applied to M-2 and M4PM™ tool steel.



Punch with  
Nitride Treatment

## Application Recommendations

	3000 & 5000 Series Aluminum	Galvanized Steel	Stainless Steel	Stainless Steel Under 2.0	Vinyl Coated Materials	Prepainted Materials Under 1.5	Cold Rolled Steel Under 2.7	Fiberglass
Maxima™	•	•	•		•	•		
Nitride	•			•		•	•	•

**Select Maxima™ or Nitride based on the punch size and material being punched.**

Shape	Minimum punch size suitable for Maxima™ Coating	Minimum punch size suitable for Nitride Treatment	Minimum punch size suitable for Nitride when nibbling
Round	Minimum diameter = 2.50	Minimum diameter = 4.01	Minimum diameter = 12.70
Rectangle	If length is >6.35 The minimum width is 1.50 If length is <6.35 The minimum width is 2.50	Minimum width = 4.01	Minimum width = 12.70
Oval	If length is >6.35 The minimum width is 1.50 If length is <6.35 The minimum width is 2.50	Minimum width = 4.01	Minimum width = 12.70
Square	Minimum width = 2.50	Minimum width = 4.01	Minimum width = 12.70
Others	Consult a Mate application specialist		

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