

# OPTIMIZE YOUR STAMPING PERFORMANCE

## OPTIMA® COATING



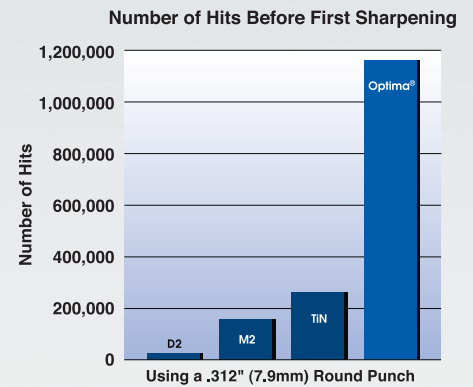
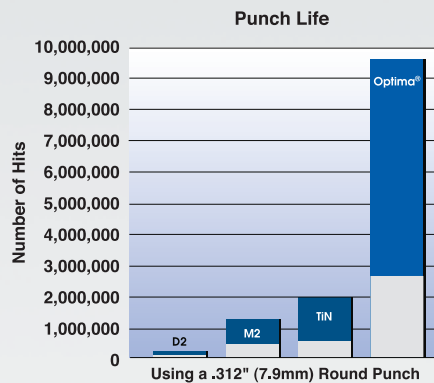
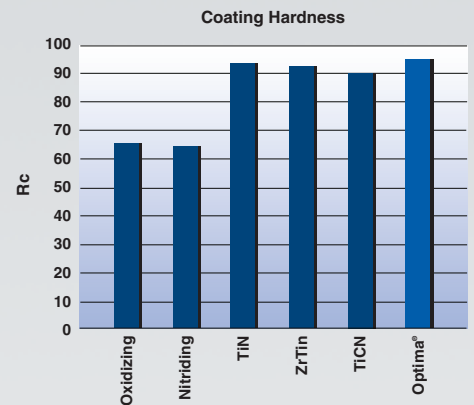
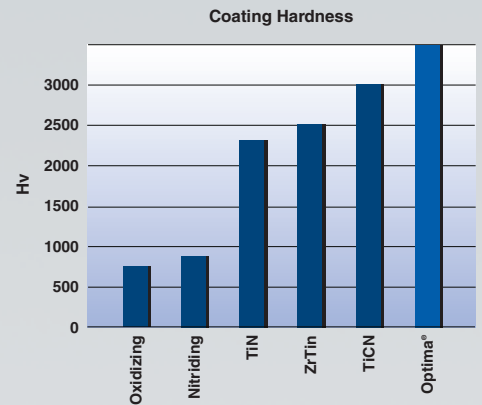
### Cutting Edge Coating Technology.



In today's competitive market, the industry's leading stampers demand nothing less than maximum performance from their tooling. Coating technology can boost tooling performance to levels far beyond that of uncoated tool steels. Wilson Tool is helping stampers achieve higher performance levels with Optima®, a revolutionary coating technology that sets a new benchmark for tooling performance. Optima coating provides a surface hardness, wear resistance and lubricity unmatched by any other coated or uncoated stamping tool.

### Longer Life Means Lower Costs.

Optima is a custom-engineered TiCN coating developed by Wilson Tool engineers in their state-of-the-art coating facility specifically for punch press and stamping die tooling applications. With a micro hardness (HV) of 3500, Optima far exceeds the hardness levels that can be achieved with conventional tool steels and will outlast untreated tools by as much as 5-7 times. The result is a longer tool life, more hits between sharpenings, reduced galling, better performance and less downtime.



The gray area indicates actual results achieved through three tool sharpenings of .010" (0.25mm) each. The complete graph indicates projected results with a total of .250" (6.3mm) removed for sharpening.

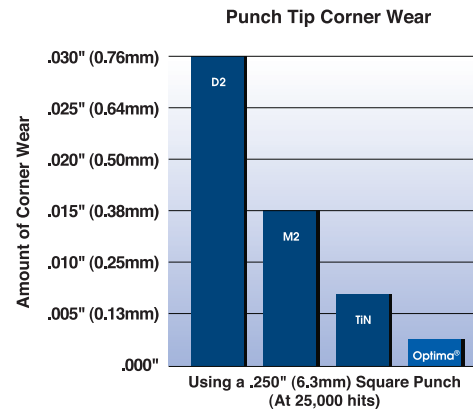
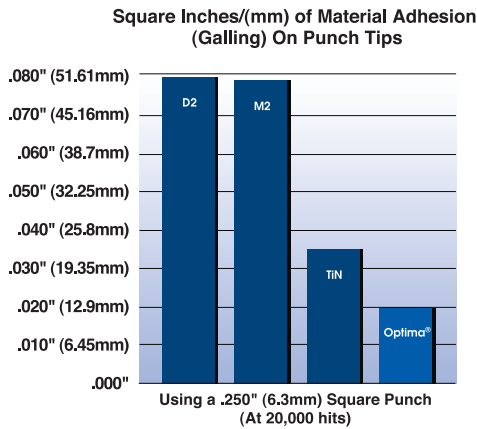


Strength. Performance. Innovation.



## Optima Coating Provides:

- As much as 5-7 times longer tool life
- 4 times less material adhesion (in most applications)
- Up to 5 times less punch tip wear (especially beneficial on square, rectangle and other shapes with sharp corners)
- Improved surface finish for reduced slug pulling
- Improved special tooling performance
- Lower overall tooling costs
- In-house coating facilities for faster deliveries and total quality control



## Cutting Through the Coating Claims.

When selecting a coating or surface treatment, it is important to understand that each has its own unique characteristics and it is essential to select a coating that is engineered for your specific application.

**Nitriding** is the introduction of nitrogen into the surface layer of a solid iron alloy and is done by heating a tool while in contact with a nitrogen atmosphere. The structure of a nitrided layer consists of a compound layer on the surface, consisting primarily of nitrides and carbonitrides, and a diffusion layer below the compound layer. The composition and microstructure of the nitride layer is greatly affected by the process selection and specific process parameters.

**Titanium Nitride (TiN)** is a commercially available coating that exhibits high hardness. It is usually produced from titanium metal and nitrogen gas using vapor deposition (PVD) techniques (gold in color).

**Titanium Carbo-Nitride (TiCN)** is a PVD coating produced by combining titanium metal with methane and nitrogen gases. It is usually harder than TiN and can range in color from pink to purple to black, depending on the specific gas composition.

**ZrTiN** is a coating that holds many similar properties to TiN, but is less widely available. It is also produced by PVD techniques. Zirconium and Titanium metal is combined with nitrogen gas to produce a coating that is light gold in color.

**Optima** is Wilson Tool's proprietary version of TiCN coating. It's a premium coating that is harder than conventional TiCN coatings, provides increased wear resistance, improves surface finish and greater resistance to corner breakdown.

**Thermal Diffusion (TD)** is a high temperature coating process that diffuses a layer of carbides onto and into the surface of the tooling. Post hardening and extensive polishing finish the surface. The TD layer is metallurgically bonded to the tooling providing superior adhesion strength, which can drastically extend the life of your tooling.

**Vickers Hardness** is a micro indentation hardness test using a 136° diamond pyramid indenter (Vickers) and variable loads. The indentation is measured using a microscope. It is a scale used for very hard materials such as PVD coatings.

**Physical Vapor Deposition (PVD)** is a process to produce a metal vapor that can be deposited on electrically conductive materials as a thin highly adhered pure metal or alloy coating. The process is carried out in a vacuum chamber at high vacuum (10<sup>-6</sup> torr) using a cathodic arc source. Single or multi-layer coatings can be applied during the same process cycle. Additionally, the metal vapor can be reacted with various gases to deposit oxides, nitrides, carbides or carbonitrides.

COATING	MICRO HARDNESS (HV)	COEFF OF FRICTION
Steel		0.7
Nitriding	800	0.5
TiN	2300	0.4
ZrTiN	2500	0.4
TiCN	3000	0.4
<b>Optima</b>	<b>3500</b>	<b>0.3</b>
TD	3500	

For more information on how Optima coating can help improve your stamping performance, call 800.944.4671.



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