



# TiN PRODUCT FAMILY

## Titanium Nitride

### Cutting tools

TiN is a classic within tribological PVD coatings and is still widely used as multi-purpose coating for cutting and forming tools.

For punching tools with moderate load, TiN is a good alternative, but for heavy abrasive or very hot processes, it is recommended to use the harder and more temperature-stable TiAlN coatings.

TiN can also be used for cutting of stainless steel, but for this purpose we usually recommend our TiCN coating as it gives higher resistance against adhesion and edging.

The Tribology Centre has many years experience of using TiN to prevent adhesion on soft metals like e.g. tin, brass, copper, and zinc or on tools which are coated with these metals.

### Low process temperature

A temperature of approx. 400 °C is normally required to make a golden and hard TiN coating with a good quality. But by a special pulse technique, the Tribology Centre is able to produce our TiN-LT at a temperature of only 150 °C. Thus, it is now possible to apply the TiN-LT coating on almost all metallic surfaces.

### Non-stick coating for plastics

Due to its low polarity, TiN has very good non-stick properties against certain plastic types. In order to solve especially complicated demoulding problems, the Tribology Centre has developed a non-stick coating,

N-TiN, produced by ion implanting the TiN coating with nitrogen ions.

Often TiN coatings may be chosen as wear protection due to its very decorative goldlike colour.

It should not be ignored that the visual appearance of tools and machine parts often leads to increased attention and carefulness.



### Contact:

**Tribology Centre**  
Kongsvang Allé 29  
DK-8000 Aarhus C

Phone: +45 72 20 15 99  
Mail: [tribo@teknologisk.dk](mailto:tribo@teknologisk.dk)  
[www.dti.dk/tribo](http://www.dti.dk/tribo)

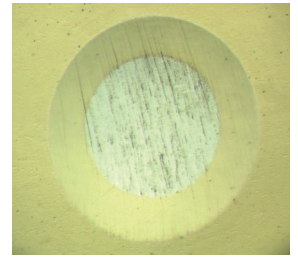


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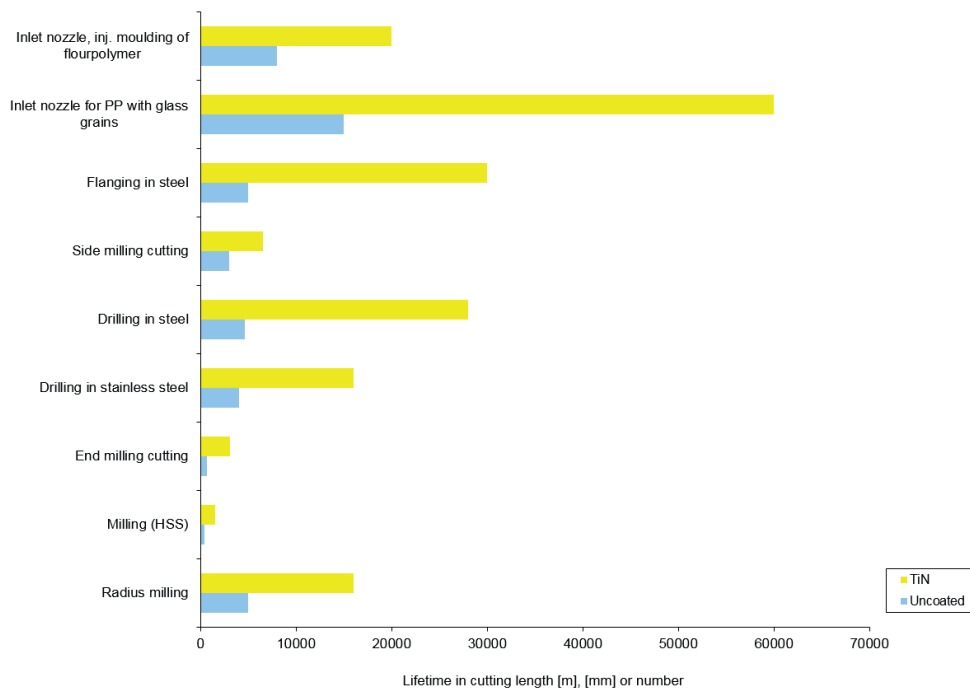
Titanium Nitride

Colour: Golden



PRODUCT VARIATIONS	TiN	TiN-LT	N-TiN
Micro hardness [HV]	Ca. 2200	1800	Ca. 2200
Process temperature [°C]	450	150	450/520
Application temperature, max. [°C]	450	450	450
Friction coefficient against steel	0,4	0,4	0,4
Processing method	PVD	PVD	II+PVD
Coating type	Single layer	Single layer	FGC
Standard layer thickness [µm]	3	3	3

## Examples of increased tool life with TiN



For clarity reasons, specific operation details are not included. The figure is based on actual operation data received from our customers. The chart is to be considered only as an illustration of the increased functionality achieved when using the TiAlN coatings.

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DK-8000 Aarhus C

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[www.dti.dk/tribo](http://www.dti.dk/tribo)



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