

Titanium alloys have very attractive strength-to-weight ratios, good fatigue strength and outstanding corrosion properties. However, these alloys have rather poor tribological characteristics resulting in problems with wear.

In lightly loaded applications the performance can be greatly improved by coating with PVD Titanium Nitride (TiN) but in the case of higher loads a process which can improve the load bearing capacity of the material is required.

Tecvac has developed the **Nitron** process to solve this problem. The components are treated using a duplex process in which a nitrated diffusion zone is produced beneath a PVD hard coating.

This patented technology results in coatings which are highly adhered and supported by a hardened subsurface layer.

Applications

Aerospace and Sub-sea

Motorsport

Chemical Plant and Food Processing

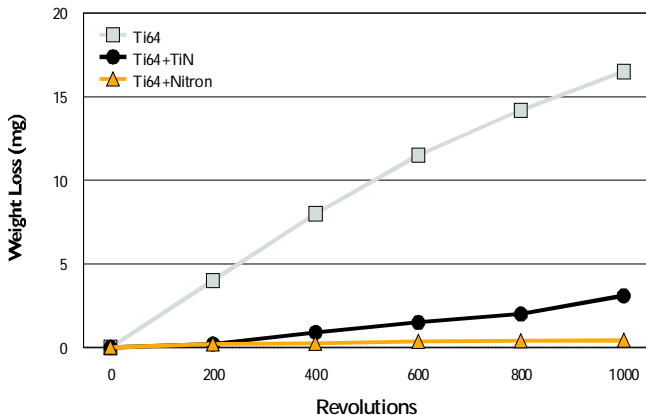
Load Bearing Ti Components

Comparison of Nitron with TiN Coating in Abrasive Wear

Test Conditions:

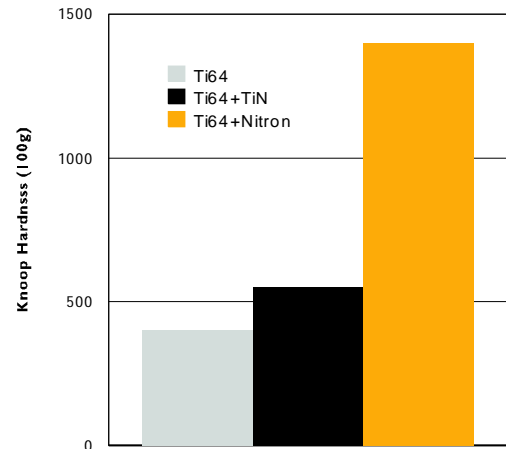
Abrasion against rubber lined wheel fed with silica grit
Normal load 10N
Rotational speed 73 rpm

Abrasive Wear Test



Ref: Wilson, Matthews, Housden, Turner and Garside
Surface and Coatings Technology, 62 (600-607)

Knoop Hardness Values for 100g Load

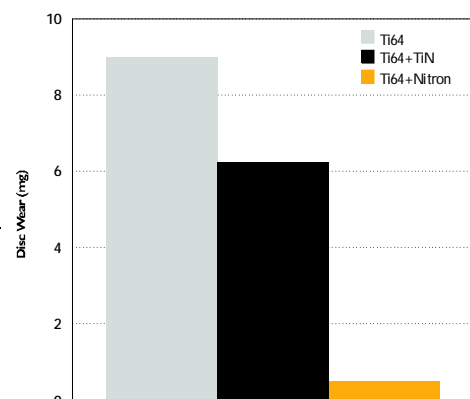


Nitron processing is carried out under vacuum at 700°C. At this temperature there is minimal detrimental effect to fatigue properties but bonding of the coating layer to the diffused zone is greatly enhanced.

Applications for **Nitron** are in areas where titanium alloys are preferred but high loading wear conditions exist.

The treatment is used in chemical plant, food processing, aerospace and motorsport industries where applications include the treatment of ball valves, gate valves, gears, screws, shafts and splines.

Sliding Wear Performance



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