



ION IMPLANTATION

Cr-Plus, N-Plus, IBAD-DLC

Realloying at low temperature

By ion implantation, atoms are "shot" into the tool surface at very high speeds. Elements, which would normally not penetrate the tool, are thereby forced into it. This gives special properties which can be tailored for any task.

Ion implantation improves the product quality and enhances the wear and corrosion resistance of production tools. Ten times the normal tool life can often be obtained. The process temperature is typically below 180°C.

Dimensional stability - no posttreatment

Ion implantation is used on finished tools and components, i.e. on hardened, tempered, ground and/or polished tools. Ion implantation does not affect the tool's shape, dimension or surface finish, thus no posttreatment is required.

N-Plus

N-Plus is ion implantation with nitrogen, which provides wear resistance to precision tools and to extremely sharp cutting edges. N-Plus is often combined with plasma nitriding in order to prolong the tool life of tools for thin sheet metal production.

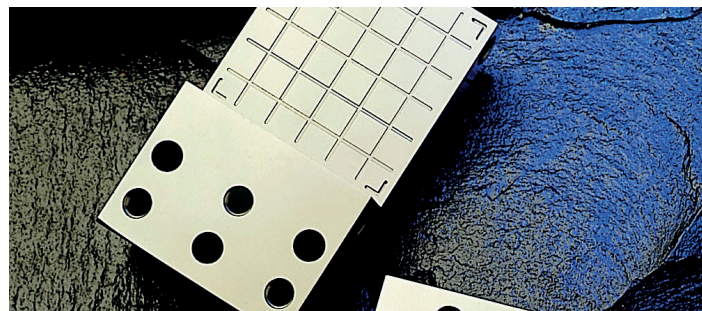
Cr-Plus

Cr-Plus is ion implantation with chromium. By this method, air vents on injection moulds may be corrosion-protected in a way that traditional hot working steel, such as W. Nr. 1.2344 (H12), acts as an

acid-resistant material. In the outermost surface, Cr concentrations as high as 30% are achieved.

IBAD-DLC

IBAD-DLC is a hard and very smooth carbon-based surface coating - at a state between graphite and diamond. The coating thickness is approx. 1 µm with friction coefficients as low as 0.05-0.1. IBAD-DLC is used on hardened tools for non-lubricated mass production of thin sheet metal products, e.g. tin cans.



Low costs

Ion implantation may be applied only to the area where a problem occurs or is expected to occur, treating only the critical area, e.g. an injection mould vent or the cutting edge of a punching tool. In such cases, the cost of ion implantation may be relatively low compared to other surface treatments.

Ion implantation is a unique surface treatment method, which is developed by the Tribology Centre and internationally, it has brought us in the lead in this field.

Contact:

Tribology Centre
Kongsvang Allé 29
DK-8000 Aarhus C

Phone: +45 72 20 15 99
Mail: tribo@teknologisk.dk
www.dti.dk/tribo



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