

PVD COATING FOR HOT WORK APPLICATION



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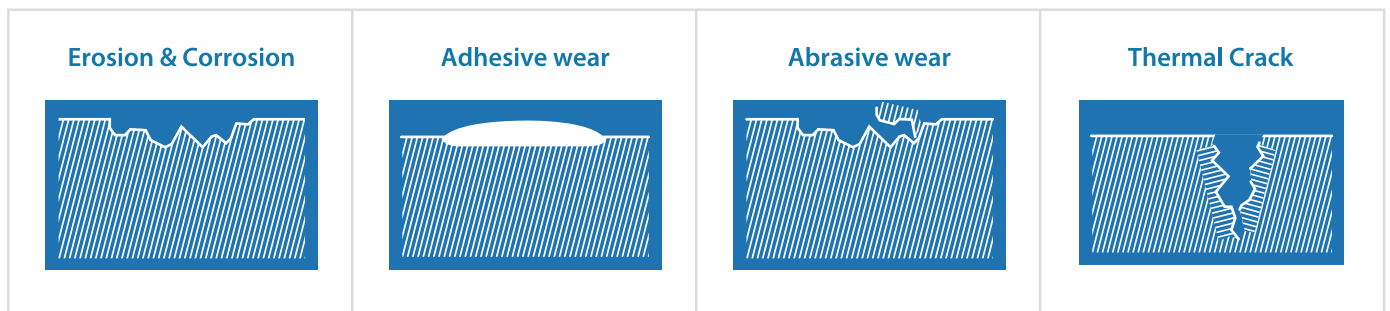


A German based PVD coating technology from voestalpine Eifeler helps to support our Indian customer in various application to increase the tooling performance.

To achieve best performance in Hot Work application, it is must to choose the suitable Tool Steel & PVD coating based on the application & failure pattern. The high performance PVD coating improves the tool life by Protecting against tool abrasive wear, adhesive wear with the reduced coefficient of friction. Oxidation resistant of PVD coating also plays a major role in achieving a good tool life.



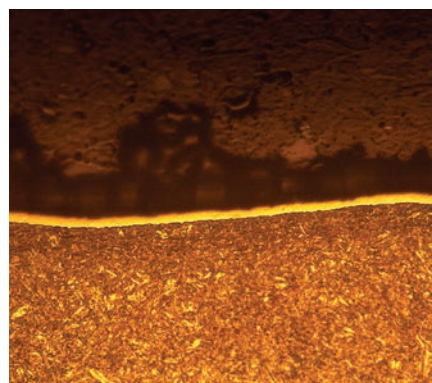
TYPICAL FAILURES IN HOT WORK APPLICATION



voestalpine eifeler Duplex Coating FOR HOT WORK APPLICATION

The combination of plasma nitriding and a subsequent deposition of PVD coating in a non-interrupted process is called voestalpine Eifeler Duplex Coating.

With Plasma nitriding, the surface hardness of the steel substrate is increased. Thus the ability to withstand pressure loads is significantly increased.



Nitriding Cross Section

ADVANTAGES

- No Compound Layer in Steel
- Increased surface hardness
- Polished surface is preserved
- Excellent adhesive strength
- No change in dimension
- Increased load capacity
- Low plasma nitriding temperature (<480°C)

ADDRESS THE PROBLEM WITH RIGHT TECHNICAL SOLUTIONS.

MAKE YOUR GOOD CHOICE FOR AL DIE CASTING	TOOL STEEL CHOICE AND HEAT TREATMENT	TAILORED PVD COATING	ABP + PVD COATING
Is responsible for	Thermal conductivity Dimensional stability Toughness	Protection against erosion Corrosion resistance High thermal resistance	Heat Checking resistance Erosion & corrosion resistance High thermal resistance
Protects against	Cracking / Gross cracking Heat Checking Plastic Deformation	Abrasive wear Adhesive wear Soldering	Heat Checking Abrasive & Adhesive wear Soldering

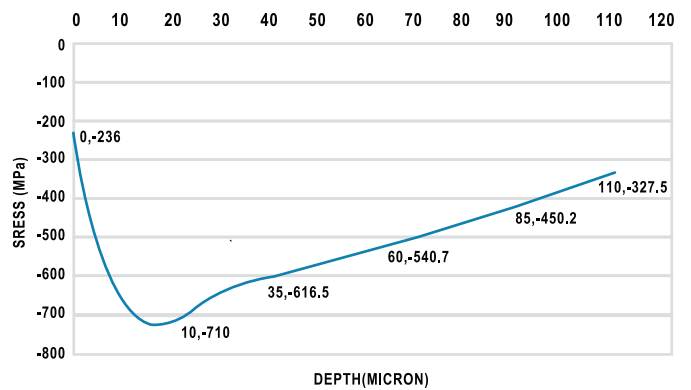
ABP SURFACE ENGINEERING:

ABP surface treatment provides our customers the best possible solution to overcome premature failures as a result of limiting fatigue factors.

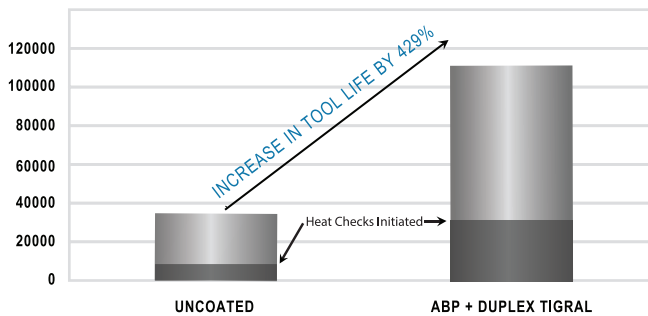
ABP surface treatment process will improve the surface properties by increasing:

- Fatigue Resistance
- Surface Hardness
- Delay Heat Checking
- Good Surface Finish
- Resist Stress Corrosion Cracking

STRESS ANALYSIS

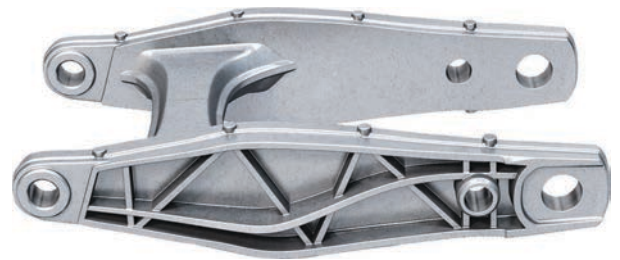


OUR COATING PERFORMANCE RESULTS



PART REJECTION REDUCED FROM 40% TO 6%

- Two Wheeler Swing Arm
- HPDC, Silafont 36, >720 Deg C (Operating Temp)
- Grade 1.2367 (46-48hrc) & Die Size - 850 X 285 X 190 & 850 X 390 X 230



APPLICATION DEMANDS

- High Aesthetic
- Reduced Casting rejection
- Reduced Buffing operation on casting part
- Increased tool longevity

COATING PROPERTIES

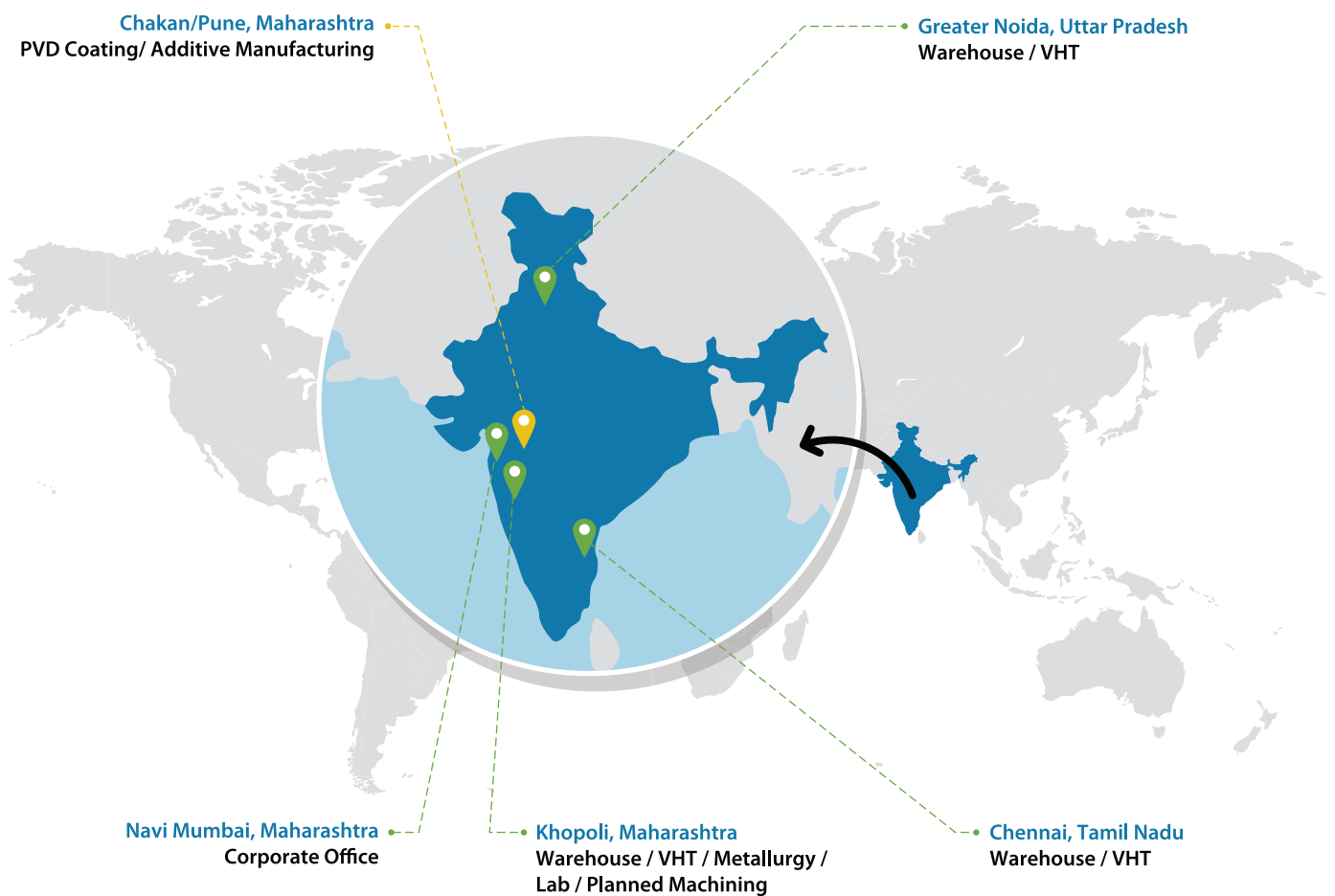
COATING	CrN / CrCN	EXXTRAL®	VARIANTIC®	ZrN / ZrCN	CROSAL®-plus	SUBLIME®	TIGRAL	TOPMATIC
Material	Cr(C)N (Multilayer)	AlTiN	TiAlCN (Multilayer)	Zr(C)N (Multilayer)	AlCrN (Based)	AlCrN (Based)	AlCrTiN (Nanolayer)	TiAlN
Micro-hardness HV0.05	2000±200 (2300±200)	3300±300	3500±500	2800±200(3100±300)	3200±300	3300±200	3300±300	2800±200
Coeff. of friction vs. steel	0,2 – 0,3	0.7	0.2	0.5	0.45	0.7–0.8	0.6	0.4
Coating thickness [µm]	2-8	2-5	4-5	2-4	2-5	2-5	4-8	5-10
Max. Operating temperature	600°C	800°C	800°C	600°C	1100°C	1100 °C	900°C	800°C
Colour	Slate-Grey	Anthracite	Old-Rose	Light-yellow/Brown-silver	Slate-Grey	Grey	Grey	Aubergine

Note: Please contact Technical Team for suitable recommendations.

ABOUT voestalpine HIGH PERFORMANCE METALS INDIA

Incorporated in 2008, voestalpine High Performance Metals India Pvt. Ltd. was formerly known as Böhler-Uddeholm India. Pvt. Ltd. It is now a 100% subsidiary of voestalpine High Performance Metals GmbH, which is part of voestalpine AG, a leading technology and capital goods group.

voestalpine High Performance Metals India is the market leader for supplying tool steel & high speed steel of premium quality and providing value added services to automotive, electronics, home appliance, packaging and construction industry sector. To meet the demand of tooling performance, we have a wide range of special steel in our product portfolio which covers cold work, plastic mould, hot work and cutting tool applications along with the Value Added Services like Vacuum Heat Treatment, Cryogenic Process, ABP Process, Components and PVD Coating Services.



Visit our website



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