



PVD COATING

FOR GEAR CUTTING TOOLS



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

To achieve best performance in various applications it is a must to choose the suitable HSS/Tool Steel & PVD coating based on the application & failure pattern. The high performance PVD coating improves the tool life by protecting the tool against abrasive wear and adhesive wear e.g. a reduced coefficient of friction. Oxidation resistant of PVD coating also plays a major role in achieving a good tool life.



voestalpine SOLUTION



BÖHLER



VACUUM HEAT
TREATMENT



CRYOGENIC



PVD COATING

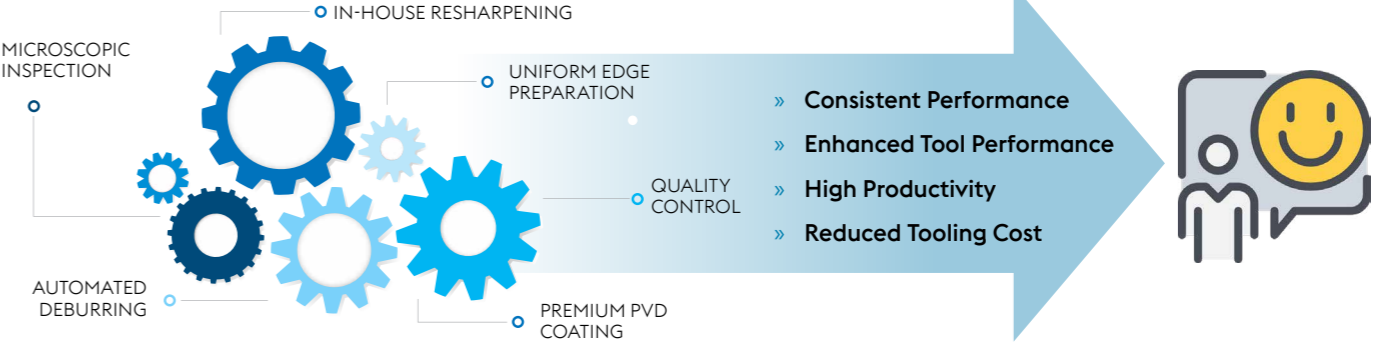
HIGH SPEED STEEL

BÖHLER grade	Chemical Composition in %										Standards	
	C	Cr	Mo	Ni	V	W	Co	Si	Mn	Others	DIN/EN	AISI
BÖHLER MC90 INTERMET												
Patented Grade												
BÖHLER S290 MICROCLEAN	2.01	3.75	2.45	-	5.05	14.30	11.00	-	-	-	-	-
BÖHLER S390 BÖHLER S392(S) MICROCLEAN	1.64	4.75	2.00	-	4.80	10.40	7.98	-	-	-	-	-
BÖHLER S590 MICROCLEAN	1.29	4.20	5.00	-	3.03	6.33	8.40	-	-	-	1.3244 HS6-5-3-8	-
BÖHLER S690 MICROCLEAN	1.35	4.13	5.00	-	4.13	5.88	-	-	-	-	~1.3351 ~HS6-5-4	~ M4
BÖHLER S790 MICROCLEAN	1.29	4.20	4.98	-	3.03	6.33	-	-	-	-	1.3345 HS6-5-3C	~ M3 Cl.2

COATING OVERVIEW

Name of Coating	Material	Micro hardness HV0.05	Coeff. of friction against steel	Coating thickness [µm]	Max. temp. of operation	Colour	General characteristic
TiN	TiN	2300 ± 200	0.6	2 - 4	500° C	Gold	Allround coating, bio-compatible
EXXTRAL®	AlTiN	3000 ± 300	0.7	2 - 5	800° C	Anthracite	High hardness, high oxidation resistance, low coeff. of friction
CROSAL® PLUS	AlCrN (Based)	3300 ± 300	0.4	2 - 5	1100° C	Slate-grey	Extremely high oxidation resistance, high warm hardness, high wear resistance
SUBLIME®	AlCrN (Based)	3300 ± 200	0.7 - 0.8	2 - 5	1100° C	Grey	Extremely very high oxidation, excellent high temperature wear resistance

voestalpine eifeler SOLUTION FOR RECONDITIONING OF GEAR CUTTING TOOL



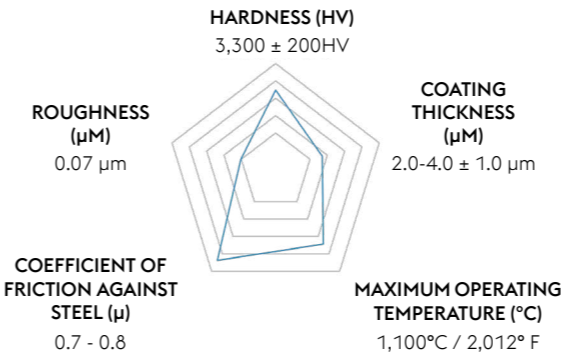
SUBLIME® COATING FOR HIGH SPEED IN THE GEARING

The SUBLIME® coating is renowned for significantly enhancing the service life and durability of tools, particularly in applications involving high-wear conditions like the toothing of gears. Its advanced properties reduce friction and wear, allowing for extended usage between maintenance intervals and improving the overall efficiency of the tool. This coating's ability to maintain the sharpness and integrity of toothed tools over long periods makes it a valuable solution for industries requiring precision and high performance in gear cutting tools operations.

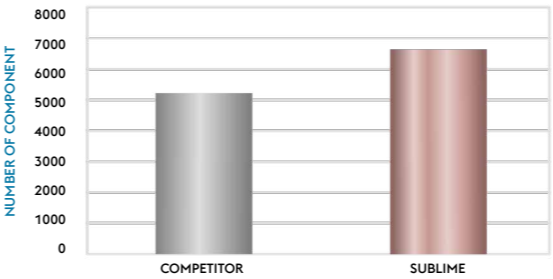
COATING ADVANTAGES

- » Up to 130% longer service life in benchmark in tests involving chemically comparable coating alternatives (proven in tooth impact tests)
- » Considerable red hardness and oxidation resistance
- » Excellent result for dry toothing, eg. on gear hobbing machines

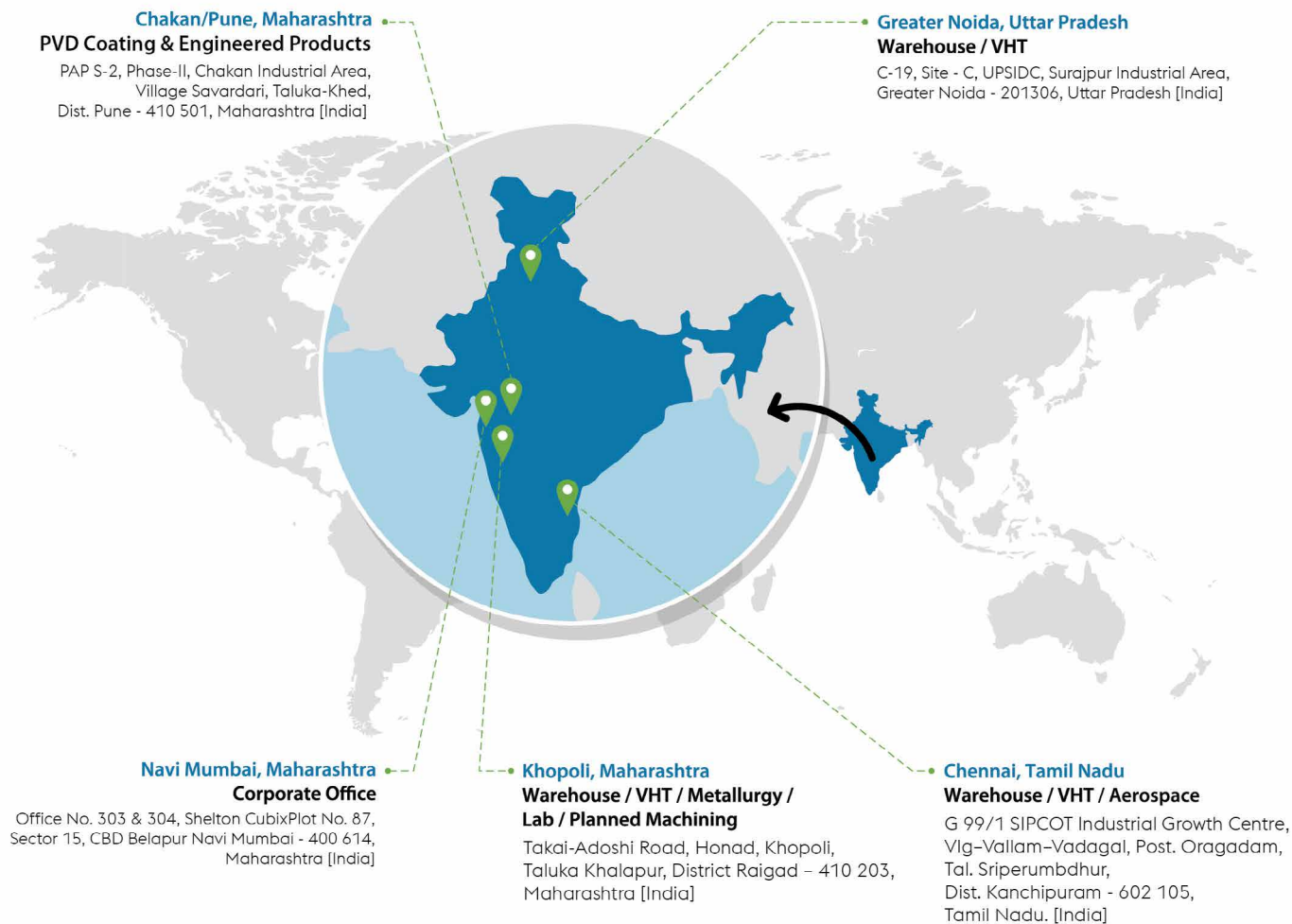
COATING PROPERTIES



SUBLIME CASE STUDY FOR GEAR CUTTING TOOLS



Tool Details - Shank type hob 2M/AAA, Ø90x310mm
Tool Grade - BÖHLER MC90 INTERMET
Component grade - 16MnCr5, Hardness-160 to 180 BHN
Machine - Felsomat, Dry cutting
Roughing parameters - Vc 250m/min, Feed-2.7 mm/min
Finishing parameters - Vc 400m/min, Feed-2.7 mm/min



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ONE STEP AHEAD.