




**UDDEHOLM**

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**Uddeholm Vanadis<sup>®</sup> 8 SuperClean**



**Uddeholm**  
**Vanadis 8 Superclean**

The next generation of Powder Metallurgical Tool Steel

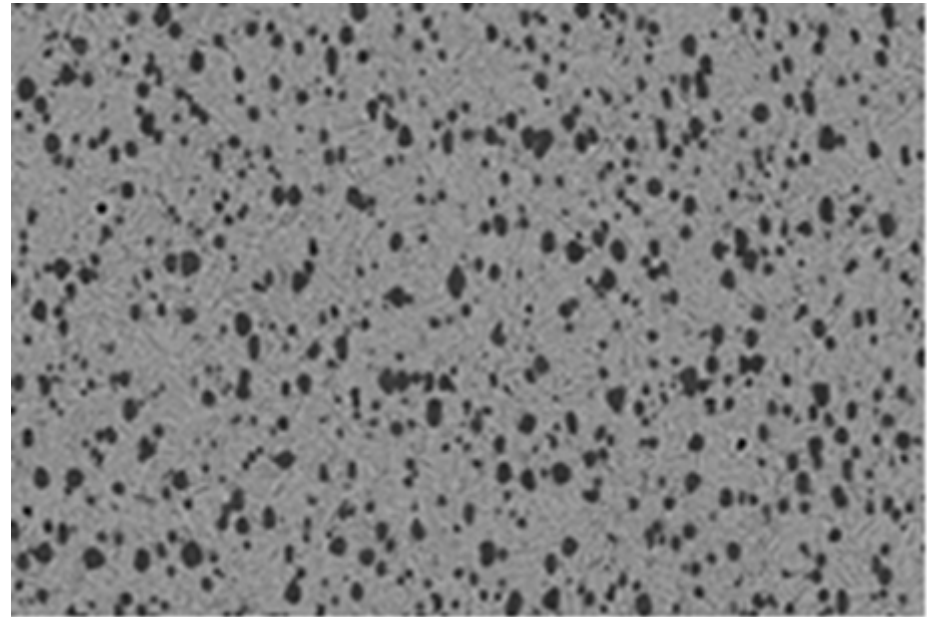
# **ABRASIVE WEAR RESISTANCE**

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# ABRASIVE WEAR RESISTANCE

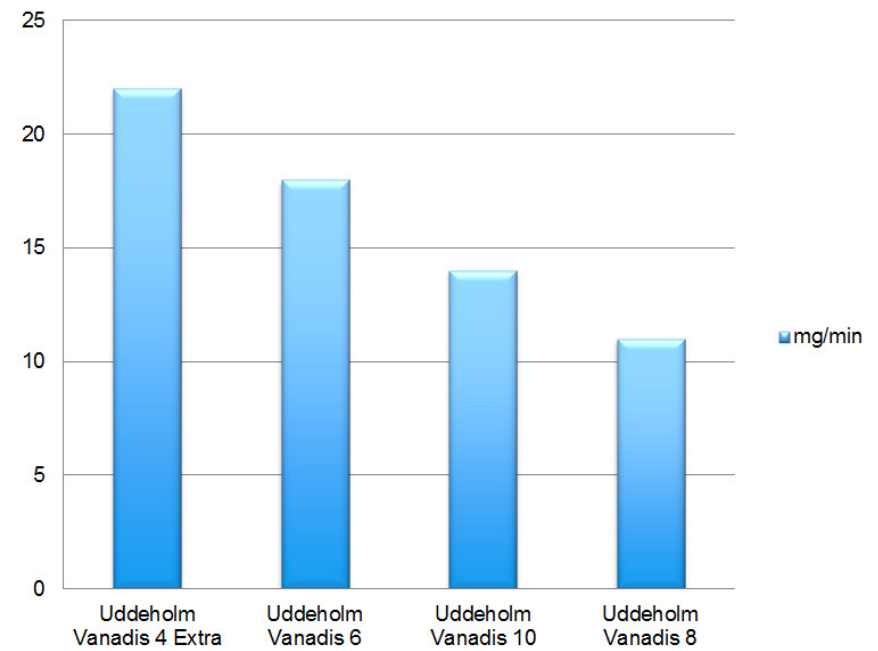
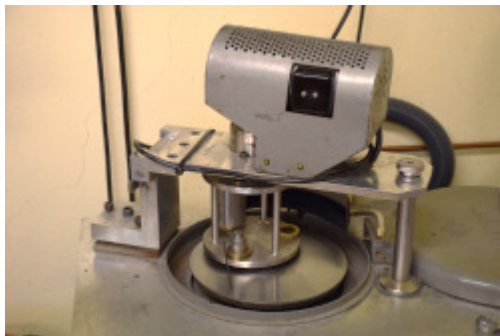
15% MC

C+V= Vanadium carbide  
Hardness: 2800Hv



# LAB TEST ABRASIVE WEAR

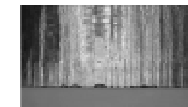
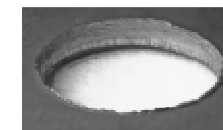
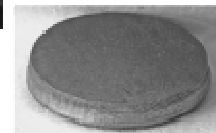
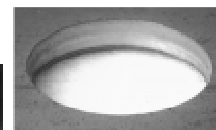
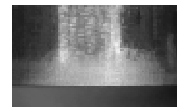
Pin-on-disc  $\text{Al}_2\text{O}_3$  (mg/min)



# PUNCHING ABRASIVE STEEL

60,000 strokes

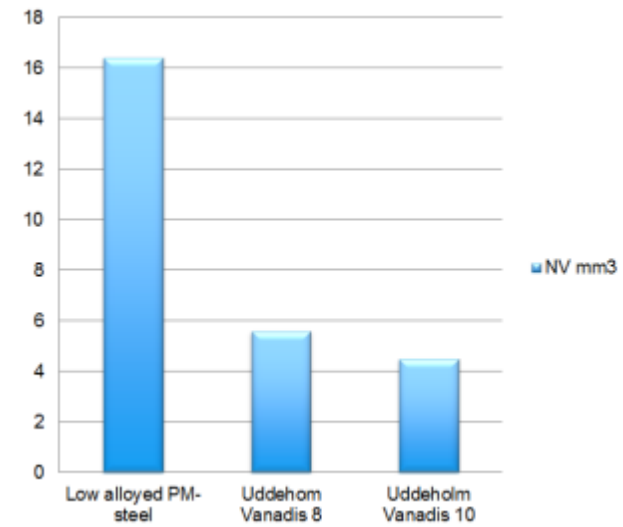
Work material: M700-100A (2,3 % Si, Electrical metal sheet)  
Thickness: 1 mm  
Comp.str: 305 MPa  
Yield str: 440 MPa  
Dimension:  $\varnothing$  9,8 mm  
Speed: 200 s/min  
Lubrication: Dry  
Die clearance: 10 %



# ABRASIVE WEAR

60,000 strokes

M700-100A (2,3 % Si, electrical metal sheet)

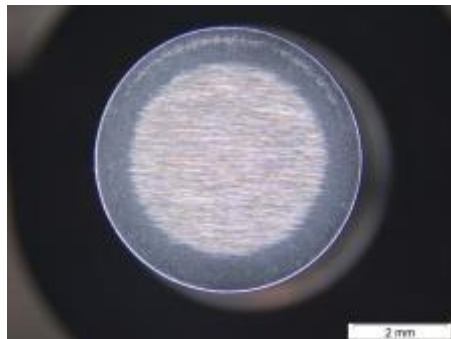




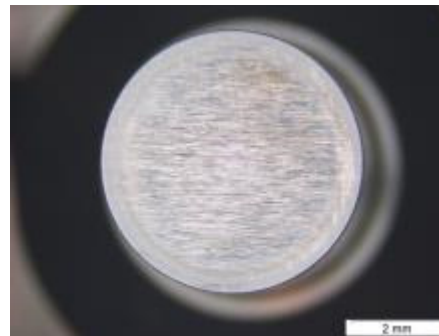
# ABRASIVE WEAR

Stamping 60,000 strokes

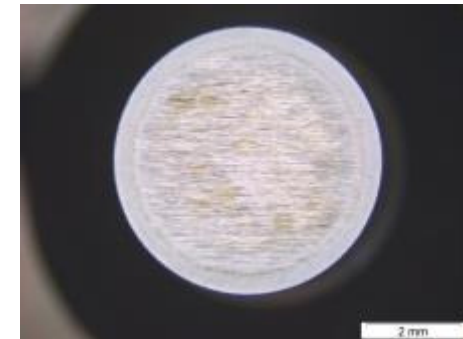
M700-100A (2,3 % Si, electrical metal sheet)



Low alloyed  
PM-steel 63 HRC



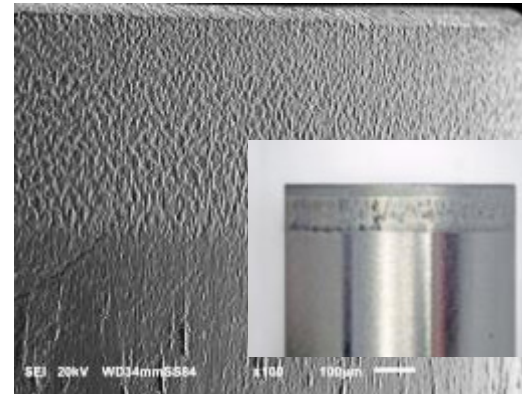
Uddeholm  
Vanadis 10 64 HRC



Uddeholm  
Vanadis 8 65 HRC

# ABRASIVE WEAR

Stamping 60,000 strokes  
M700-100A (2,3 % Si,  
electrical metal sheet)

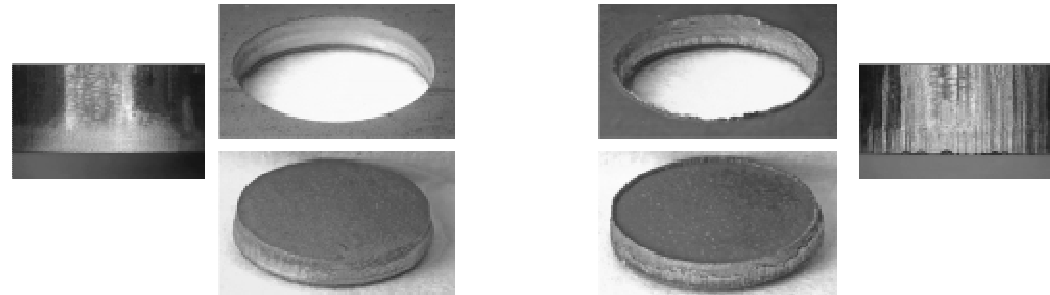


Uddeholm Vanadis 8  
65 HRC



Uddeholm Vanadis 10  
64 HRC

# ABRASIVE WEAR

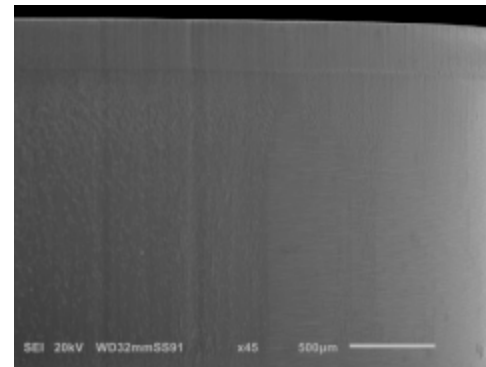


Stamping 100,000 strokes

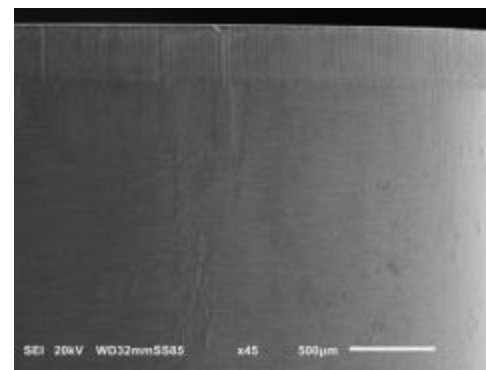
Work material:	Docol 1400M (AHSS)	Dimension:	Ø 9,8 mm
Thickness:	1 mm	Speed:	200 s/min
Compressive strength:	1150 MPa	Lubrication:	None
Yield strength:	1500 MPa	Clearance:	10 %

# ABRASIVE WEAR

Stamping 100,000 strokes  
Docol 1400 M (AHSS)



Uddeholm Vanadis 8  
65 HRC



Uddeholm Vanadis 10  
64 HRC

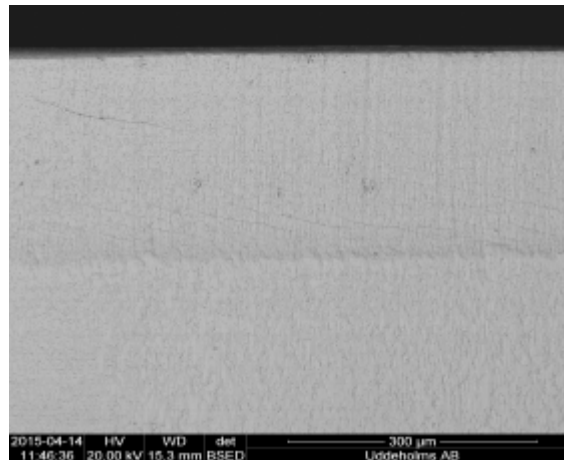
# **CHIPPING RESISTANCE**

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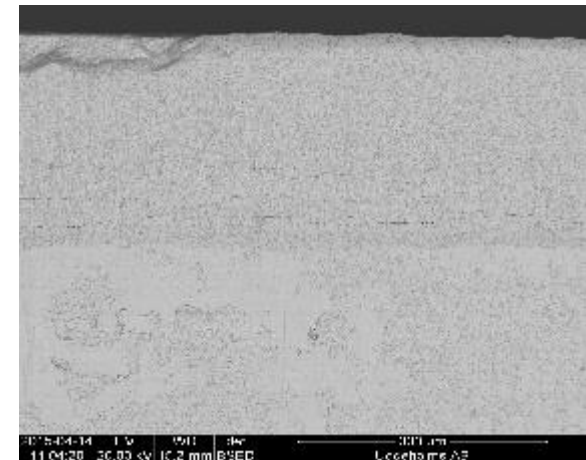
# CHIPPING RESISTANCE

Stamping 50,000 strokes

Docol 1400M (AHSS)



**Uddeholm Vanadis 8**  
65 HRC

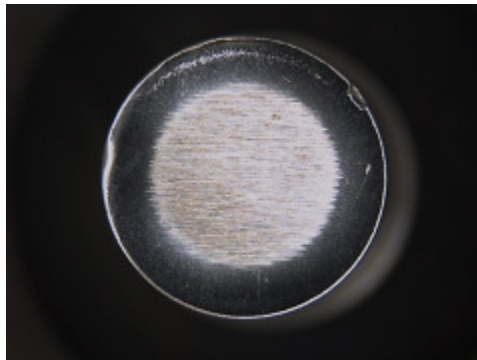


**Uddeholm Vanadis 10**  
64 HRC

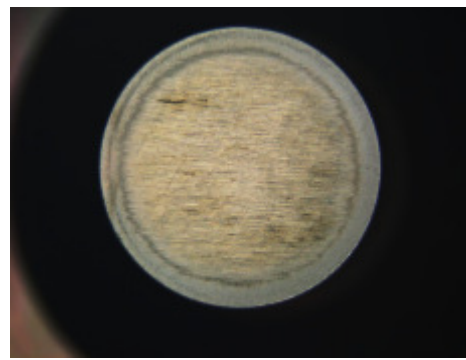
# CHIPPING RESISTANCE

Stamping 120,000 strokes

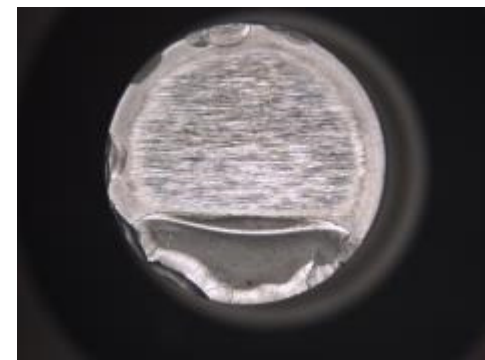
M700-100A (2,3 % Si, electrical metal sheet)



Low alloyed PM-steel  
63 HRC



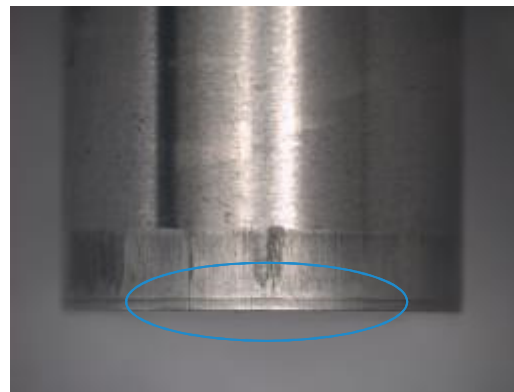
**Uddeholm Vanadis 8**  
65 HRC



Uddeholm Vanadis 10  
64 HRC

# CHIPPING RESISTANCE

Stamping 100,000 strokes  
Docol 1400M (AHSS)



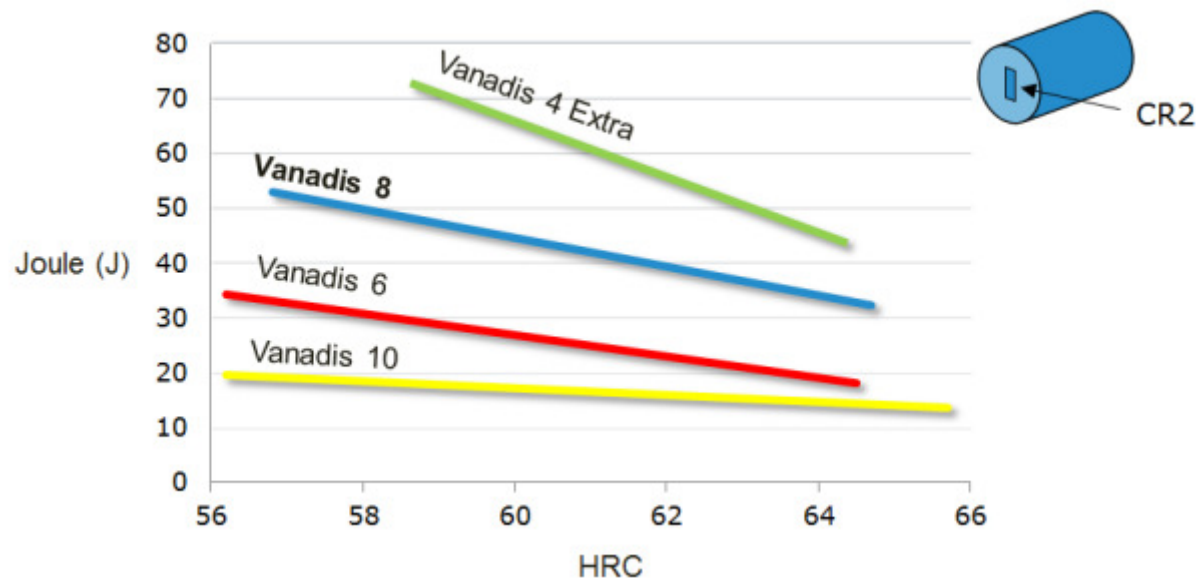
**Uddeholm Vanadis 8**  
65 HRC



**Uddeholm Vanadis 10**  
64 HRC

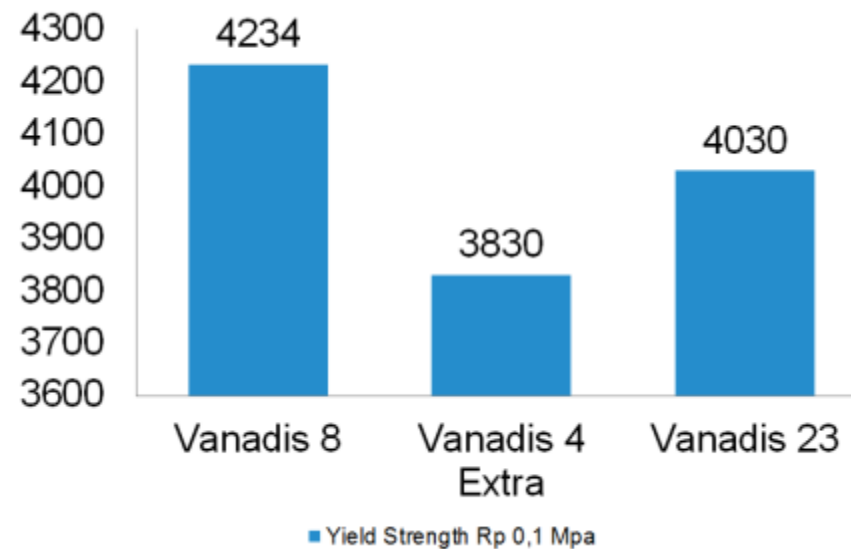


# IMPACT ENERGY TEST

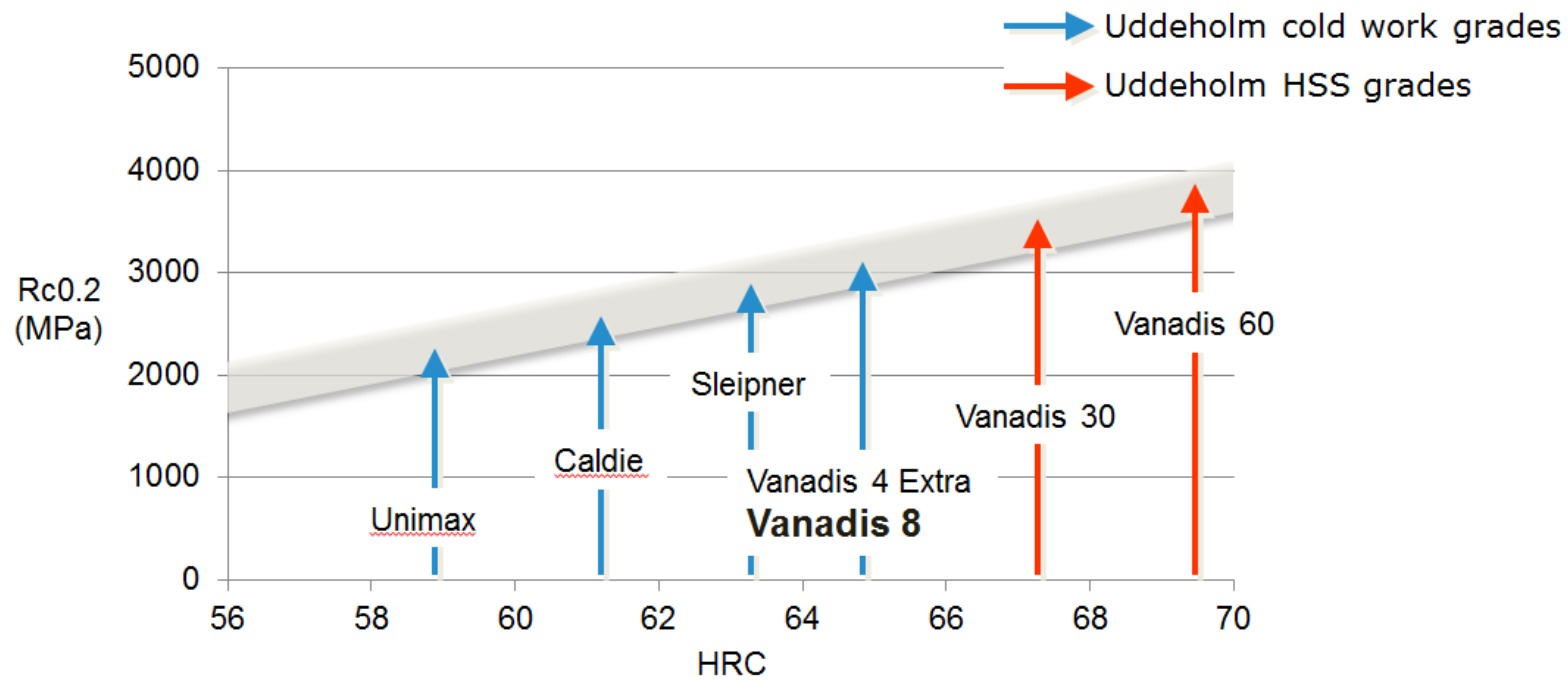


# YIELD STRENGTH

4 point bending test  
64 HRC



# COMPRESSIVE STRENGTH



# MACHINABILITY

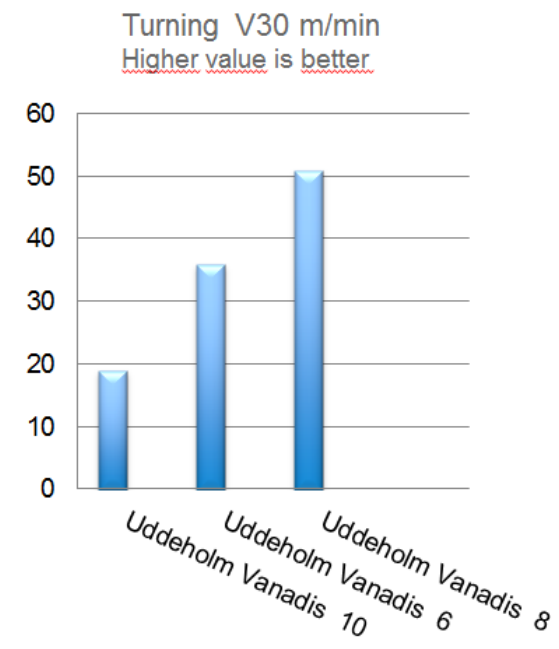
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# TURNING

## "V30 method"

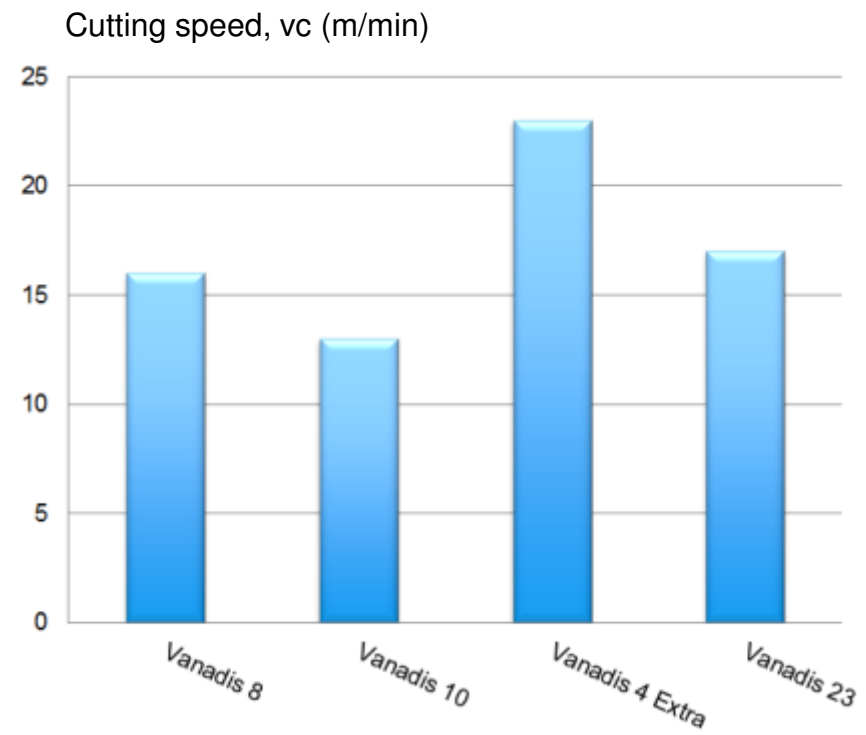
"V30 is a standardized test method emphasizing turning. The method is described in ISO 3685.

The value specified as V30 is the cutting speed which gives a flank wear of 0,3 mm under the cutting edge after 30 minutes of turning."



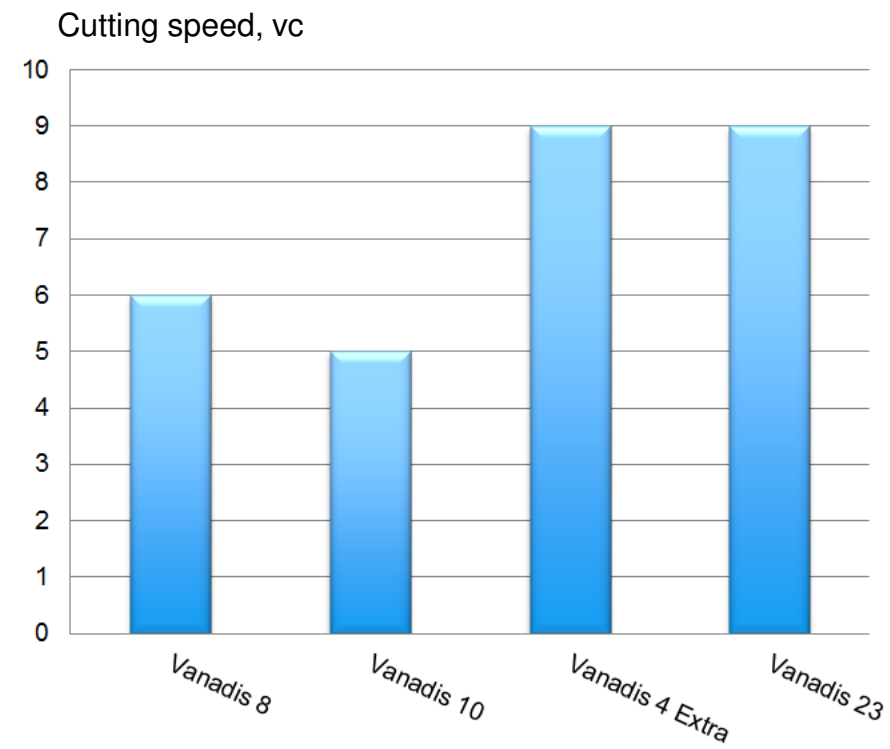
# DRILLING

Coated HSS



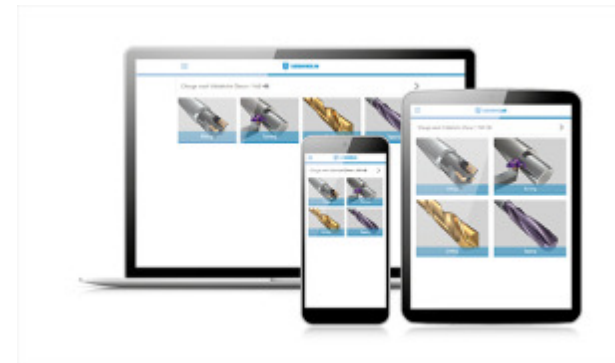
# TAPPING

HSS



# MACHINING APP

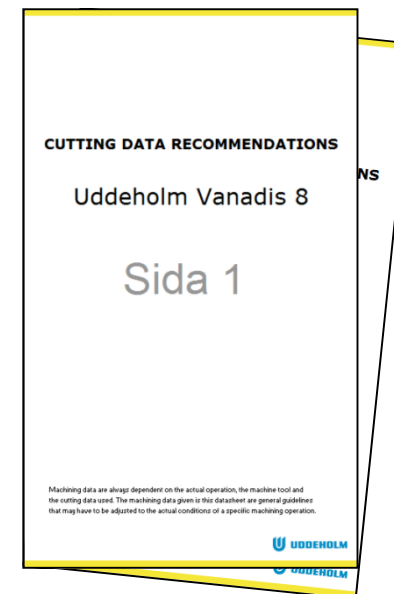
For iOS, Android & Windows





# MACHINING BROCHURE

For download at Mediaworld



# HEAT TREATMENT

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# HEAT TREATMENT

## Stress relieving

650°C (1200°F), holding time 2 hours.

Cool slowly to 500°C (930°F), then freely in air.



# HEAT TREATMENT

## Hardening

*Pre-heating 1:* 600–650 °C (1110–1200 °F)

*Pre-heating 2:* 850–900 °C (1560–1650 °F)

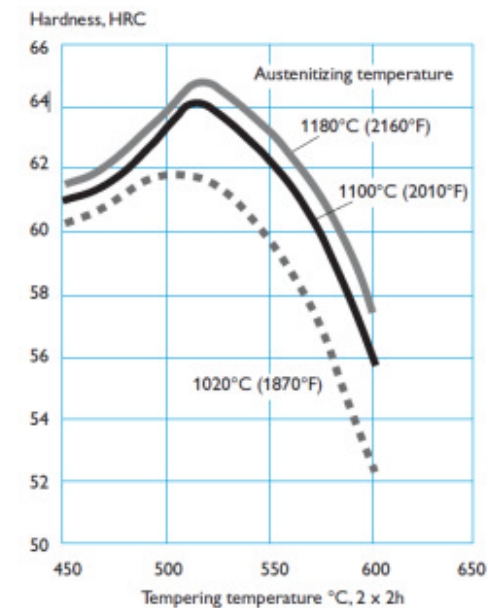
*Austenitizing:* 1020–1180 °C (1870–2160 °F)

*Holding time:*

30 min for temperatures ≤1100 °C (2010 °F)

15 min for temperatures >1100 °C (2010 °F)

TEMPERING GRAPH



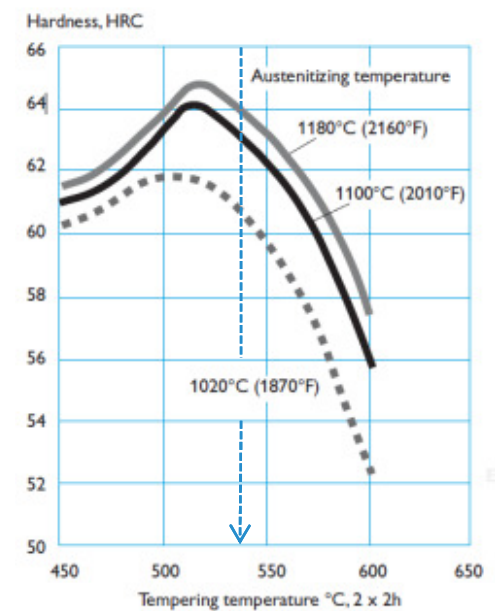
# HEAT TREATMENT

## Tempering

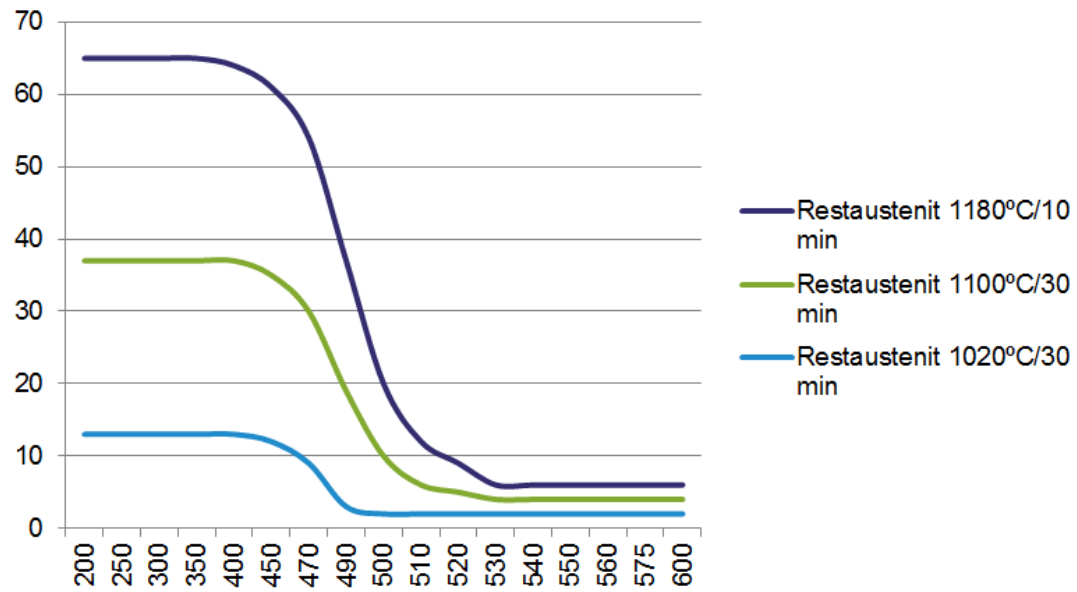
Recommended 540 °C (1000 °F) / 3x1h

3 temperings strongly recommended!

TEMPERING GRAPH



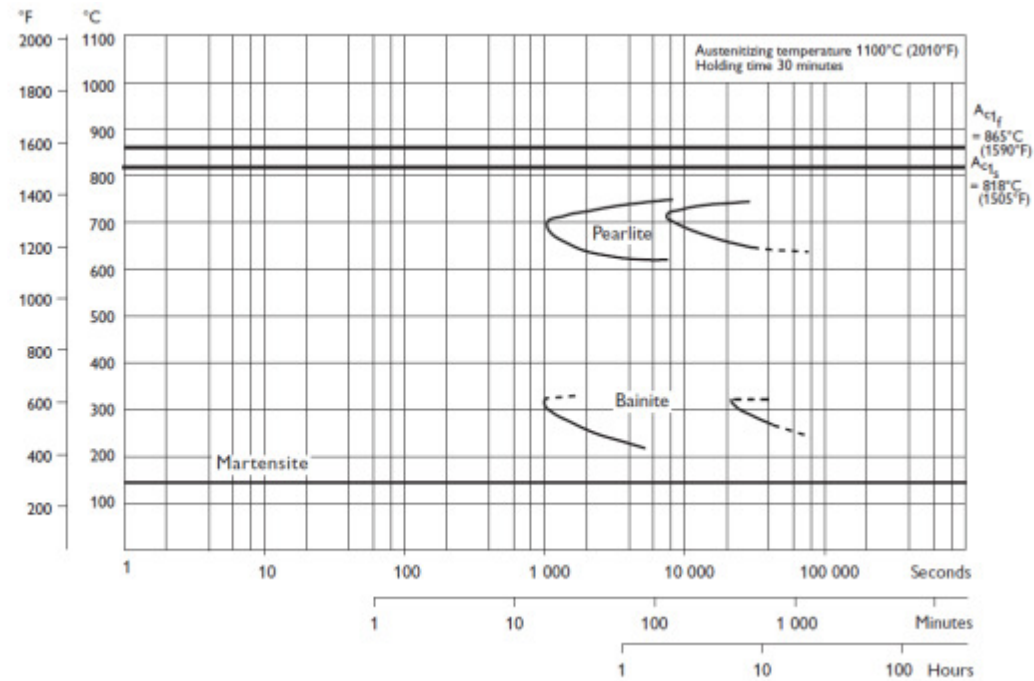
# RETAINED AUSTENITE





# TTT GRAPH 1100°C

Temp. °C	Time hours	Hardn. HV 10
750	15	270
725	12	299
700	10	365
675	8	387
650	15	403
625	20	535
350	40	867
325	28,3	736
300	23,5	572
275	15,4	599
250	22,7	620
225	22,1	583





# **CHEMICAL COMPOSITION**

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# CHEMICAL COMPOSITION



**C 2,3**



**Si 0,4**



**Mn 0,4**



**Cr 4,8**



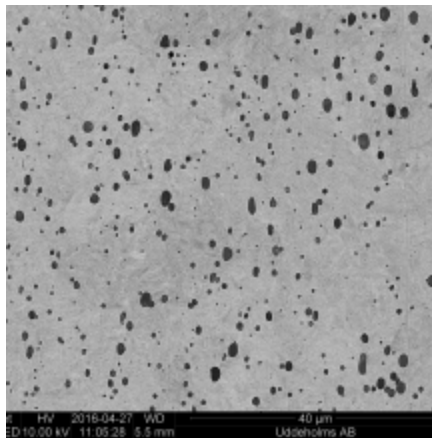
**Mo 3,6**



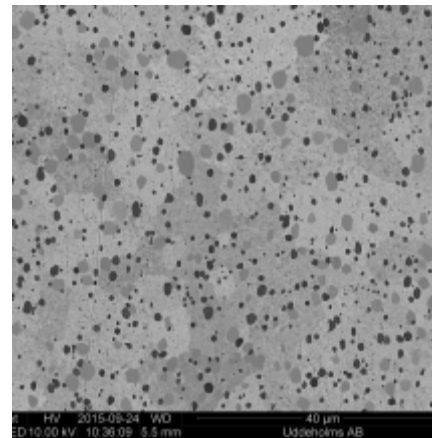
**V 8,0**

# MICROSTRUCTURE

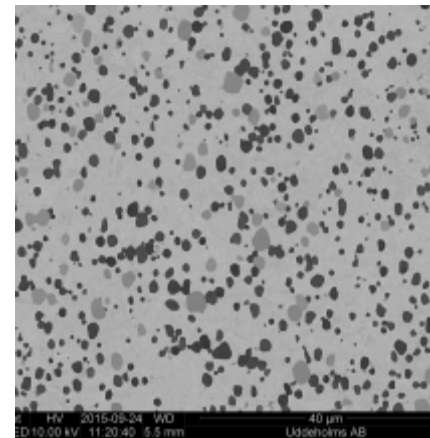
	<u>C</u>	<u>Si</u>	<u>Mn</u>	<u>Cr</u>	<u>Mo</u>	<u>V</u>
Uddeholm Vanadis 8	2,3	0,4	0,4	4,8	3,6	8,0
Uddeholm Vanadis 6	2,1	1,0	0,4	6,8	1,5	5,4
Uddeholm Vanadis 10	2,9	0,5	0,5	8,0	1,5	9,8
Uddeholm Vanadis 4 Extra	1,4	0,4	0,4	4,7	3,5	3,7



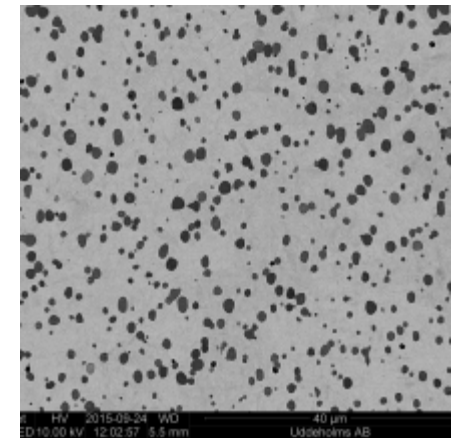
**Uddeholm  
Vanadis 4 Extra**



**Uddeholm  
Vanadis 6**



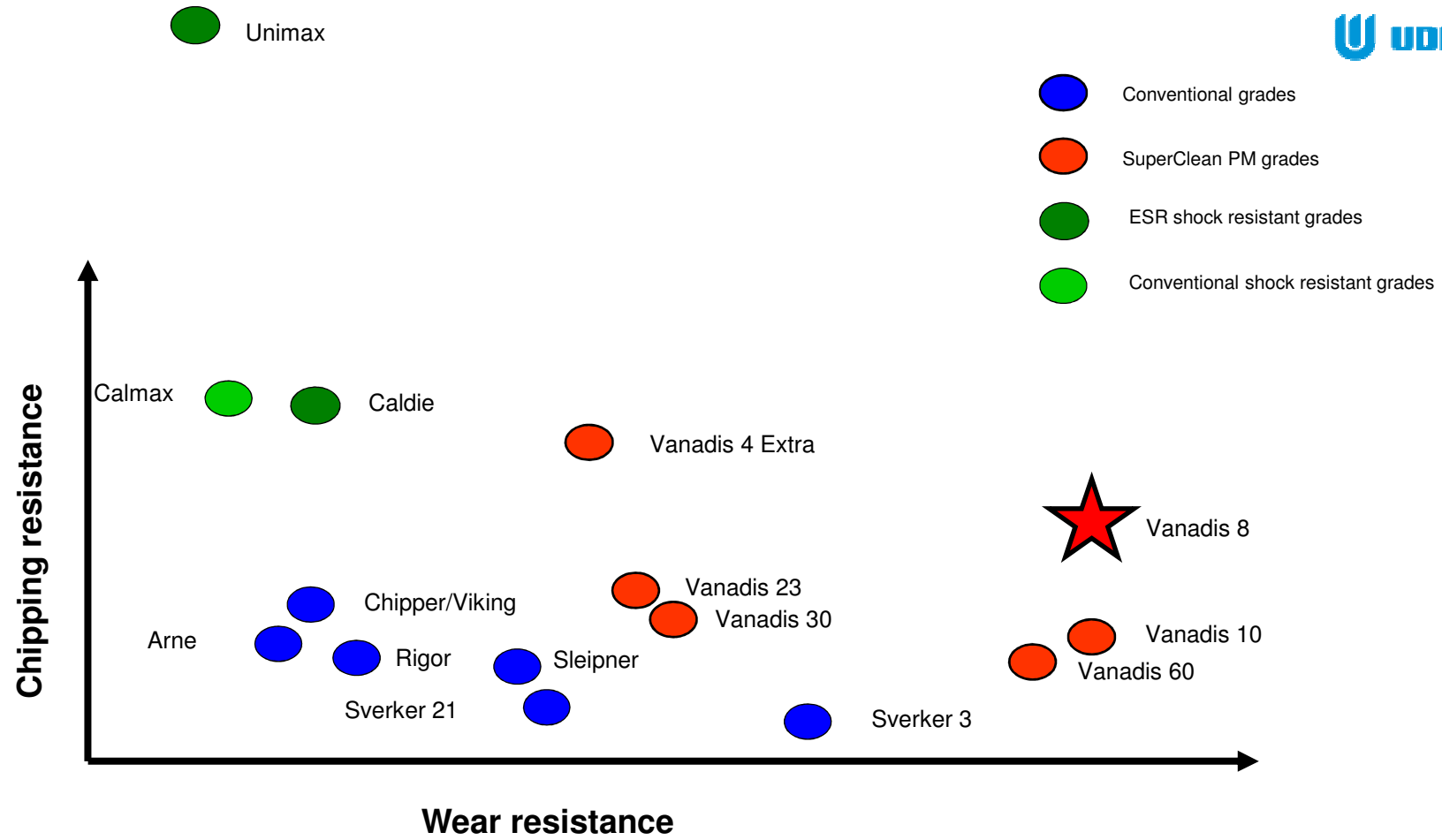
**Uddeholm  
Vanadis 10**

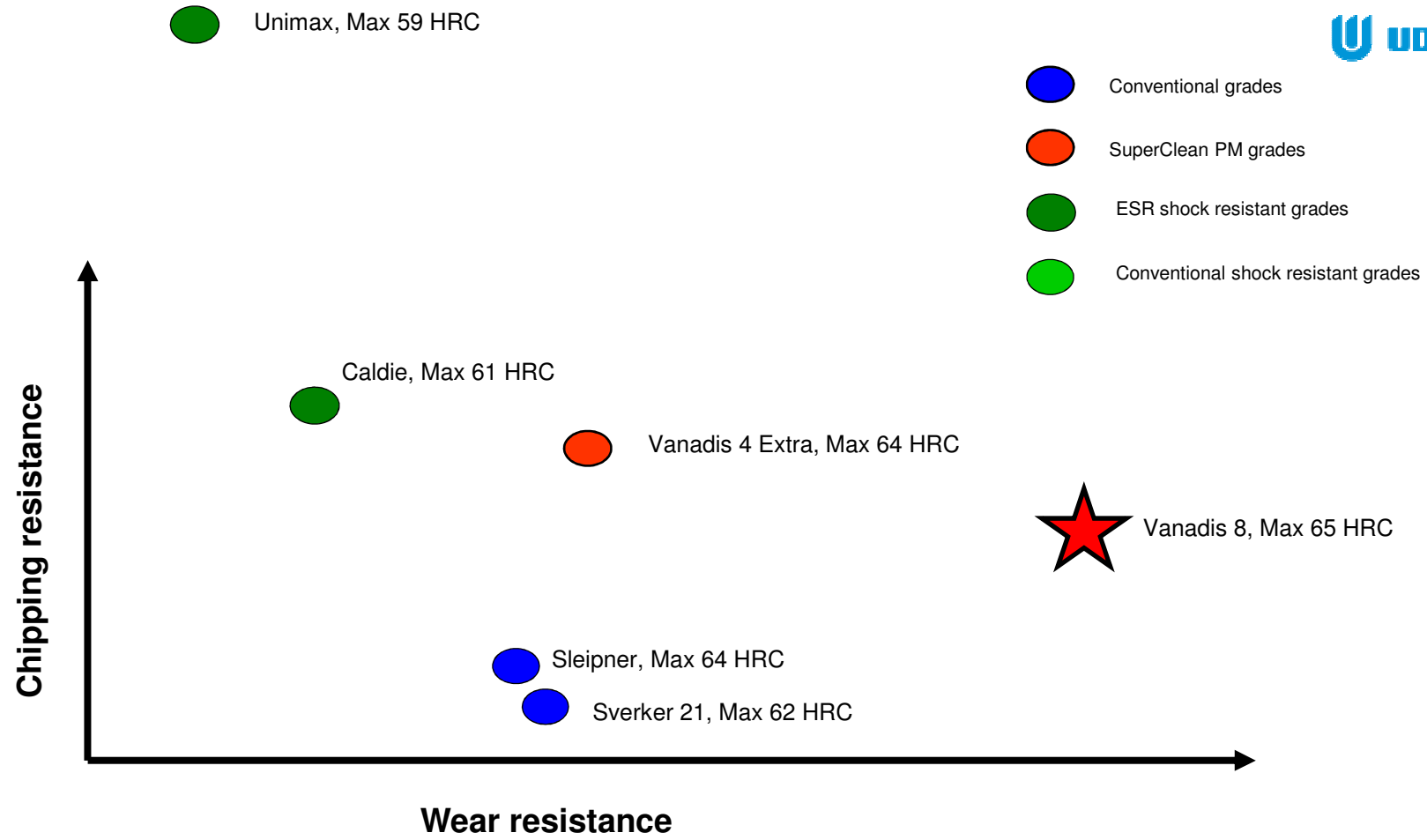


**Uddeholm  
Vanadis 8**

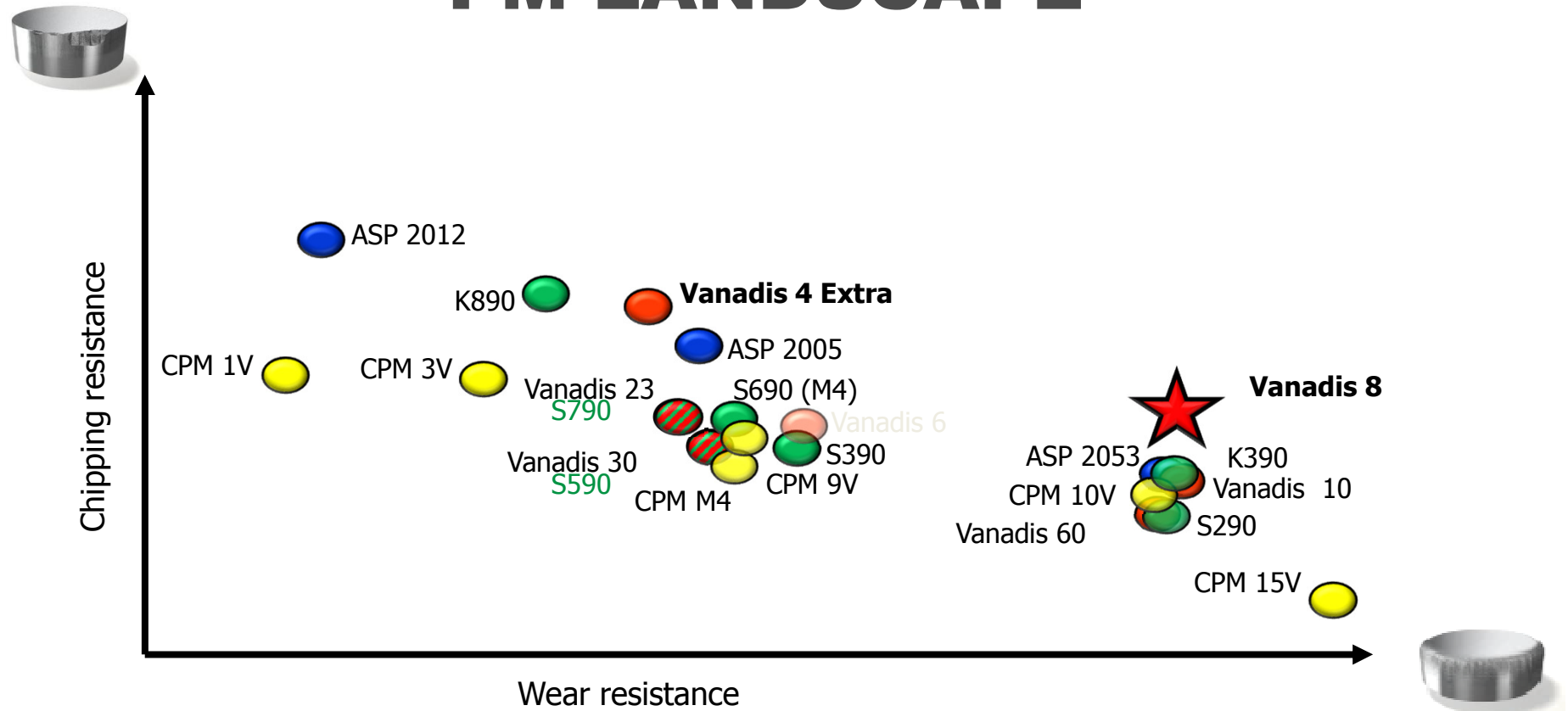
# PROPERTIES

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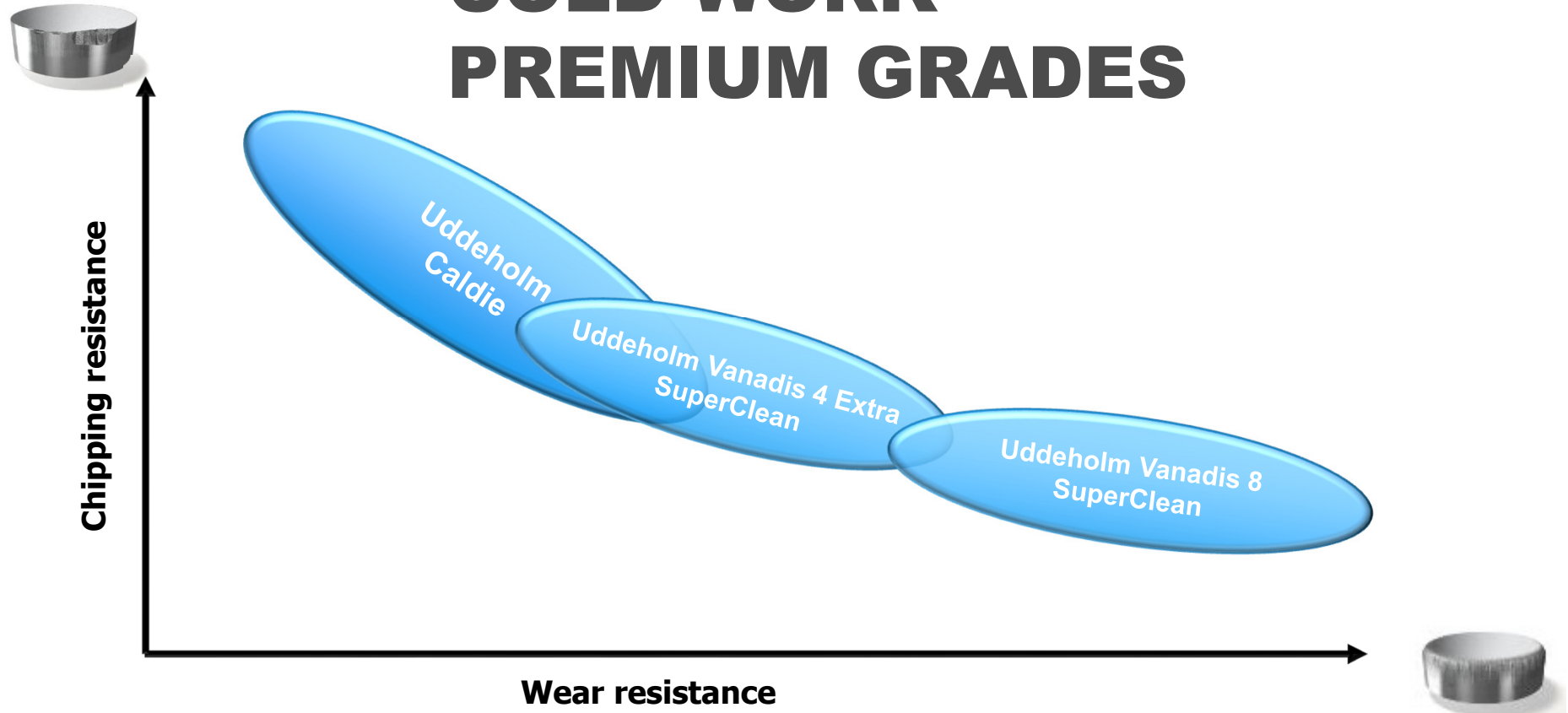




# PM LANDSCAPE



# COLD WORK PREMIUM GRADES





A low-angle, close-up photograph of a person's legs and feet as they run on a rocky, desert trail. The runner is wearing light-colored running shoes with red accents and a distinctive tread pattern on the soles. The background shows a vast, arid landscape with rolling hills under a hazy sky. The text "A PROFITABLE LONG DISTANCE RUNNER" is overlaid in the center in a bold, white, sans-serif font.

**A PROFITABLE LONG  
DISTANCE RUNNER**



**UDDEHOLM**

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