

Bohler-Uddeholm UDDEHOLM VANADIS 10 SUPERCLEAN 3 Powder Metallurgical Cold Work Tool Steel

Category : Metal , Ferrous Metal , Alloy Steel , Tool Steel , Cold Work Steel

Material Notes:

Chromium-molybdenum-vanadium alloyed steel Uddeholm Vanadis 10 is a high vanadium alloyed powder metallurgy tool steel offering a unique combination of an excellent abrasive wear resistance in combination with a good chipping resistance. It is manufactured according to the powder metallurgy process giving a very low amount of non-metallic inclusions. Vanadis 10 is characterized by: Extremely high abrasive wear resistance High compressive strength Very good through hardening properties Good toughness Very good stability in hardening Good resistance to tempering back. Applications: Uddeholm Vanadis 10 is especially suitable for very long run tooling where abrasive wear is the dominating problem. Its very good combination of extremely high wear resistance and good toughness also make Uddeholm Vanadis 10 an interesting alternative in applications where tooling made of such materials as cemented carbide tends to chip or crack.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Bohler-Uddeholm-UDDEHOLM-VANADIS-10-SUPERCLEAN-3-Powder-Metallurgical-Cold-Work-Tool-Steel.php

| Physical Properties | Metric | English | Comments |
|---------------------|-----------|--------------------------|--------------------|
| Density | 7.42 g/cc | 0.268 lb/in ³ | hardened to 62 HRC |

| Mechanical Properties | Metric | English | Comments |
|-----------------------|---------------------|---------------------|------------------------------------|
| Hardness, Brinell | 280 - 310 | 280 - 310 | Soft annealed (Delivery condition) |
| Modulus of Elasticity | 220 GPa | 31900 ksi | (hardened to 62 HRC) |
| | 200 GPa | 29000 ksi | hardened to 62 HRC |
| | @Temperature 399 °C | @Temperature 750 °F | |
| Impact Test | 210 GPa | 30400 ksi | hardened to 62 HRC |
| | @Temperature 199 °C | @Temperature 390 °F | |
| | 16.3 - 32.5 J | 12.0 - 24.0 ft-lb | Tempered at 390-1110°F (2 + 2h) |

| Thermal Properties | Metric | English | Comments |
|------------------------|----------------------|----------------------|--------------------|
| CTE, linear | 10.8 µm/m-°C | 6.00 µin/in-°F | hardened to 62 HRC |
| | @Temperature 199 °C | @Temperature 390 °F | |
| Specific Heat Capacity | 11.3 µm/m-°C | 6.30 µin/in-°F | hardened to 62 HRC |
| | @Temperature 399 °C | @Temperature 750 °F | |
| | 0.460 J/g-°C | 0.110 BTU/lb-°F | hardened to 62 HRC |
| | @Temperature 20.0 °C | @Temperature 68.0 °F | |

| Thermal Properties | Metric | English | Comments |
|----------------------|---------------------|-----------------------------------|--------------------|
| Thermal Conductivity | @Temperature 199 °C | @Temperature 390 °F | hardened to 62 HRC |
| | 22.0 W/m-K | 153 BTU-in/hr-ft ² -°F | hardened to 62 HRC |
| | @Temperature 399 °C | @Temperature 750 °F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|--------|---------|----------|
| Carbon, C | 2.9 % | 2.9 % | |
| Chromium, Cr | 8.0 % | 8.0 % | |
| Manganese, Mn | 0.50 % | 0.50 % | |
| Molybdenum, Mo | 1.5 % | 1.5 % | |
| Silicon, Si | 0.50 % | 0.50 % | |
| Vanadium, V | 9.8 % | 9.8 % | |

| Descriptive Properties | Value | Comments |
|------------------------|-----------|----------|
| Pin-On-Disc wear | 81 mg/min | 62HRC |

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