

Crucible Steel CPM® Rex® 76®(HS), AISI M48 High Speed Steel Rex® 76®(HS)

Category : Metal , Ferrous Metal , Carbon Steel , High Carbon Steel , Tool Steel

Material Notes:

CPM Rex 76 is a super high speed steel made by the CPM (Crucible Particle Metallurgy) Process. It is heat treatable to HRC 68-70. Its high carbon, vanadium and cobalt contents provide abrasion resistance comparable to that of T15 and red hardness superior to that of M42. With its high hardness, fine grain size and uniform carbide distribution, CPM Rex 76 is an outstanding choice for special purpose cutting tools requiring high red hardness, high abrasion resistance, and good toughness. The CPM process results in a homogeneous microstructure with a finer, more uniform carbide distribution imparting superior dimensional stability, grindability and toughness when compared to steels produced by conventional processes. The CPM process also allows the design of more highly alloyed grades which cannot be produced by conventional steelmaking. Information provided by Crucible Specialty Metals.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Crucible-Steel-CPM-Rex-76HS-AISI-M48-High-Speed-Steel-Rex-76HS.php

| Physical Properties | Metric | English | Comments |
|---------------------|------------|---------------------------|----------|
| Density | 8.255 g/cc | 0.2982 lb/in ³ | |

| Mechanical Properties | Metric | English | Comments |
|-----------------------|-----------|------------|--|
| Hardness, Brinell | 285 - 311 | 285 - 311 | Annealed |
| Hardness, Rockwell C | 67 | 67 | Hardening Temperature- 1165°C; Tempering Temperature- 565°C |
| | 70 | 70 | Hardening Temperature- 1200°C; Tempering Temperature- 525°C |
| Modulus of Elasticity | 214 GPa | 31000 ksi | |
| Flexural Strength | 2296 MPa | 333000 psi | Hardening Temperature- 1200°C, Tempering Temperature- 525°C |
| | 4365 MPa | 633100 psi | Hardening Temperature- 1165°C, Tempering Temperature- 565°C |
| Charpy Impact | 8.00 J | 5.90 ft-lb | Hardening Temperature- 1200°C; Tempering Temperature- 525°C |
| | 20.0 J | 14.8 ft-lb | Hardening Temperature- 1165°C; Tempering Temperature- 565°C |

| Thermal Properties | Metric | English | Comments |
|--------------------|-----------------------------|----------------------------|----------|
| CTE, linear | 10.66 µm/m-°C | 5.922 µin/in-°F | |
| | @Temperature 20.0 - 95.0 °C | @Temperature 68.0 - 203 °F | |
| | 10.8 µm/m-°C | 6.00 µin/in-°F | |
| | @Temperature 20.0 - 200 °C | @Temperature 68.0 - 392 °F | |

| Thermal Properties | Metric | English | Comments |
|--------------------|---|---|-----------|
| | 11.74 $\mu\text{m}/\text{m}^{\circ}\text{C}$ | 6.422 $\mu\text{in}/\text{in}^{\circ}\text{F}$ | |
| | @Temperature 20.0 - 540 $^{\circ}\text{C}$ | @Temperature 68.0 - 1000 $^{\circ}\text{F}$ | |
| Shrinkage | -0.220 % @Treatment Temp. 1190 $^{\circ}\text{C}$ | -0.220 % @Treatment Temp. 2170 $^{\circ}\text{F}$ | Hardening |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|----------------|----------------|--------------|
| Carbon, C | 1.5 % | 1.5 % | |
| Chromium, Cr | 3.75 % | 3.75 % | |
| Cobalt, Co | 8.5 % | 8.5 % | |
| Iron, Fe | 67.93 % | 67.93 % | As Remainder |
| Molybdenum, Mo | 5.25 % | 5.25 % | |
| Sulfur, S | 0.070 - 0.22 % | 0.070 - 0.22 % | |
| Tungsten, W | 9.75 % | 9.75 % | |
| Vanadium, V | 3.1 % | 3.1 % | |

| Descriptive Properties | Value | Comments |
|--|-------|----------|
| Grindability; Metal Removed/Wheel Worn | 3.8 | |

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