

Industeel CLC 1.2312 Prehardened Mold Steel (300HB/32HRC) with Improved Machinability

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

Material Notes:

Description: CLC 1.2312 is a chromium-manganese-molybdenum grade designed for plastic mold industry. This grade is normally delivered in a prehardened condition at a hardness level of 300HB/32HRC. The grade has a fully homogeneous martensite-bainite microstructure. CLC 1.2312 grade has specific sulfur addition (0.060% typical) in order to increase strongly it's machinability. Compared to CLC 1.2311 grade 30% increase in milling speed and 300% increase in drilling speed can be expected. At constant cutting speed, tool life is multiplied by a least 5 when replacing CLC 1.2311 by CLC1.2312 grade. Information provided by manufacturer.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Industeel-CLC-12312-Prehardened-Mold-Steel-300HB32HRC-with-Improved-Machinability.php

| Mechanical Properties | Metric | English | Comments |
|----------------------------|-------------------------------------|---|---|
| Hardness, Brinell | 300 | 300 | Typical, in Longitudinal and Transverse Direction |
| Tensile Strength, Ultimate | 990 MPa | 144000 psi | Typical, Transverse Direction |
| | 1010 MPa | 146000 psi | Typical, Longitudinal Direction |
| Tensile Strength, Yield | 820 MPa @Strain 0.200 % | 119000 psi @Strain 0.200 % | Typical, Transverse Direction |
| | 850 MPa @Strain 0.200 % | 123000 psi @Strain 0.200 % | Typical, Longitudinal Direction |
| Elongation at Break | 9.0 % | 9.0 % | Typical, Transverse Direction |
| | 10 % | 10 % | Typical, Longitudinal Direction |
| Modulus of Elasticity | 205 GPa | 29700 ksi | Typical, in Longitudinal and Transverse Direction |
| Charpy Impact | 15.0 J | 11.1 ft-lb | Typical (Transverse) |
| | 25.0 J | 18.4 ft-lb | Typical (Longitudinal) |
| | 15.0 J @Temperature -20.0 Â°C | 11.1 ft-lb @Temperature -4.00 Â°F | Typical (Longitudinal) |
| Charpy Impact, Unnotched | 20.0 J @Temperature 20.0 Â°C | 14.8 ft-lb @Temperature 68.0 Â°F | Transverse |
| | 25.0 J @Temperature -20.0 | 18.4 ft-lb @Temperature -4.00 | Longitudinal |

| Mechanical Properties | °C Metric | °F English | Comments |
|-----------------------|----------------------|----------------------|--------------|
| | 30.0 J | 22.1 ft-lb | Longitudinal |
| | @Temperature 20.0 °C | @Temperature 68.0 °F | |

| Thermal Properties | Metric | English | Comments |
|----------------------|----------------------------|----------------------------|----------|
| CTE, linear | 11.5 µm/m-°C | 6.39 µin/in-°F | |
| | @Temperature 20.0 - 100 °C | @Temperature 68.0 - 212 °F | |
| | 11.57 µm/m-°C | 6.428 µin/in-°F | |
| | @Temperature 20.0 - 200 °C | @Temperature 68.0 - 392 °F | |
| | 12.47 µm/m-°C | 6.928 µin/in-°F | |
| | @Temperature 20.0 - 300 °C | @Temperature 68.0 - 572 °F | |
| Thermal Conductivity | 34.0 W/m-K | 236 BTU-in/hr-ft²-°F | |
| | @Temperature 20.0 °C | @Temperature 68.0 °F | |

| Component Elements Properties | Metric | English | Comments |
|-------------------------------|------------------|------------------|--------------|
| Carbon, C | 0.40 % | 0.40 % | |
| Chromium, Cr | 1.9 % | 1.9 % | |
| Iron, Fe | 95.628 - 95.64 % | 95.628 - 95.64 % | As remainder |
| Manganese, Mn | 1.5 % | 1.5 % | |
| Molybdenum, Mo | 0.20 % | 0.20 % | |
| Phosphorous, P | <= 0.012 % | <= 0.012 % | |
| Silicon, Si | 0.30 % | 0.30 % | |
| Sulfur, S | 0.060 % | 0.060 % | |

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