

Zell-Metall Engineering Plastics Zellamid 1100 OIL at 50% RH

Category : Polymer , Thermoplastic , Nylon , Nylon 6

Material Notes:

Zellamid® 1100 OIL: A new type of cast nylon produced by addition of a special oil to the polymer structure. By laboratory test it was proven that this second generation oil filled product reduces friction in comparison to standard cast nylon. This means that Zellamid® 1100 OIL is particularly well suited for sliding parts under high load and increased speed. The specific advantages of Zellamid® 1100 OIL against Zellamid® 1100 are as follows: High degree of self lubrication. Low static coefficient of friction. Low dynamic coefficient of friction. Reduced heat build-up. Better wear and enormously increased part life due to less heat build-up in the area of friction. Reduced moisture absorption (about 5% for Zellamid® 1100 OIL vs. 6-7% for Zellamid® 1100). Increased dimensional stability. Zellamid® 1100 OIL features a homogeneous distribution of the lubricating oil during polymerization. Therefore the improved sliding properties remain, even after machining and part wear. The p. v. value may be used as a guideline to determine the loading capacity of slide bearings at a certain velocity. The values mentioned in the attached data sheet apply for the material combination of Zellamid® and metal for continuous use when heat is well conducted and environmental temperature is normal. Higher are permissible when on is intermittent. When using additional lubricants with Zellamid® 1100 OIL, the external lubricant influences the coefficient of friction to a very high degree. It can be reduced to 0.05. Consequently, the p. v. value may be increased. The advantages of the integrated lubrication of Zellamid® 1100 OIL are particularly noticeable when there is a combination of static and dynamic friction, especially when external lubrication is insufficient or impossible. Zellamid® 1100 OIL is supplied in yellow colour for easy identification.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Zell-Metall-Engineering-Plastics-Zellamid-1100-OIL-at-50-RH.php

| Physical Properties | Metric | English | Comments |
|------------------------------------|-------------|---------------------------|----------------------|
| Density | 1.14 g/cc | 0.0412 lb/in ³ | Dry Density |
| Moisture Absorption at Equilibrium | 2.0 - 2.5 % | 2.0 - 2.5 % | Saturation at 50% RH |
| Water Absorption at Saturation | 4.0 - 5.0 % | 4.0 - 5.0 % | 23°C |

| Mechanical Properties | Metric | English | Comments |
|---------------------------|-------------------------------|----------------------------------|-----------------------------|
| Hardness, Shore D | 77 - 79 | 77 - 79 | DIN 53505 |
| Tensile Strength at Break | 51.0 - 53.0 MPa | 7400 - 7690 psi | DIN 53455 |
| Elongation at Break | 70 - 100 % | 70 - 100 % | DIN 53455 |
| Tensile Modulus | 2.20 GPa | 319 ksi | DIN 53457 |
| | 0.350 GPa | 50.8 ksi | DIN 53457 |
| | @Temperature 100 °C | @Temperature 212 °F | |
| Charpy Impact, Notched | 12.0 - 22.0 J/cm ² | 57.1 - 105 ft-lb/in ² | DIN 53453 |
| Coefficient of Friction | 0.050 - 0.10 | 0.050 - 0.10 | to steel, added lubrication |

| Mechanical Properties | 0.15 - 0.29 Metric | 0.15 - 0.29 English | to steel, no lubrication; ISO/DTR 7147 Comments |
|-----------------------------------|-----------------------|------------------------|--|
| Tensile Creep Modulus, 1000 hours | <= 450 MPa | <= 65300 psi | DIN 53444 |

| Thermal Properties | Metric | English | Comments |
|----------------------------------|---|--|-----------------------|
| CTE, linear | 80.0 $\mu\text{m}/\text{m}\cdot\text{°C}$ | 44.4 $\mu\text{in}/\text{in}\cdot\text{°F}$ | |
| | @Temperature 20.0 °C | @Temperature 68.0 °F | |
| Specific Heat Capacity | 1.67 J/g- °C | 0.399 BTU/lb- °F | |
| Thermal Conductivity | 0.280 W/m-K | 1.94 BTU-in/hr-ft ² - °F | DIN 52612 |
| Melting Point | 205 °C | 401 °F | |
| Maximum Service Temperature, Air | 100 - 120 °C | 212 - 248 °F | long time operation |
| | 120 - 140 °C | 248 - 284 °F | medium time operation |
| | 160 °C | 320 °F | a few hours operation |
| Minimum Service Temperature, Air | -40.0 °C | -40.0 °F | |

| Electrical Properties | Metric | English | Comments |
|----------------------------|-------------------------------|-------------------------------|----------------------|
| Volume Resistivity | 3.00e+12 - 5.00e+12 ohm-cm | 3.00e+12 - 5.00e+12 ohm-cm | DIN 53482 |
| Surface Resistance | 1.00e+10 - 3.00e+10 ohm | 1.00e+10 - 3.00e+10 ohm | DIN 53482 |
| Dielectric Constant | 12 | 12 | DIN 53483 |
| | @Frequency 1e+6 Hz | @Frequency 1e+6 Hz | |
| Dielectric Strength | 15.0 - 20.0 kV/mm | 381 - 508 kV/in | DIN 53481 |
| Dissipation Factor | 0.15 | 0.15 | DIN 53483 |
| | @Frequency 1e+6 Hz | @Frequency 1e+6 Hz | |
| Comparative Tracking Index | 600 V | 600 V | KV Method; DIN 53480 |

| Descriptive Properties | Value | Comments |
|------------------------|---------|--------------------|
| Time yield limit | up to 8 | s1/1000; DIN.53444 |

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