VESCO PLASTICS SALES

Hitemp 150

The high temperature, super tough, long life, bearing material.

Hitemp 150 is a temperature resistant, internally lubricated bearing material with high abrasive wear resistance, designed to operate continuously up to 150°C (300°F), intermittently up to 170°C (340°F), and in water or steam up to 120°C (250°F).

Hitemp 150 is a low friction, long life plain bearing material designed for harsh applications where high temperatures and/or abrasives are a problem.

High temperature resistance

Hitemp 150 was designed to be a low friction long life bearing material for high temperature applications. Most standard polymers cannot resist hot water or temperatures greater than 100°C (212°F) for any extended period of time.

Applications: oven bearings, hot water, high environmental temperatures, gearbox bearings.

Abrasion resistance

Hitemp 150 gives good resistance to abrasion. This is most useful in dirty applications or when rusted shafts cannot be avoided.

Applications: pump bearings for liquids with high solids content, underground equipment, sawmills.

Typical Properties	Metric Units	Imperial Units
Melting point	265°C	509°F
Short term temperature limit	170°C	340°F
Temperature rating	150°C	300°F
Resistance to hot water/steam	up to 120°C	up to 250°F
Density	1.47	1.47
PV limit	30 MPa m/min	14,350 psi ft/min
Coefficient of thermal expansion	4 x 10 mm/mm/°C	2.2 x 10 in/in/°F
Water absorption ambient (saturated)	3-4%	3-4%
Chemical resistance	Resistant to alkalis, not suited to acids	

Production Sizes

Hitemp 150 can be produced in a variety of:

Rods Up to 100 mm (4") diameter

Bushings Up to 250 mm (10") diameter

Plates Standard plates 1000 x 200 mm (40"x8") and 500 x 400 mm (20" x 16")

Mouldings Hitemp 150 is injection mouldable at nominal moulding setup charges for a limited waste solution. Cost effective for medium and large batches.

Designing a bearing with Hitemp 150

Hitemp 150 bearings must be designed with care as allowances need to be made for water absorption in wet conditions. Hitemp 150 absorbs up to 4% water, causing swelling.

Interference fit = 0.05 mm + 0.2% housing diameter

Interference fit = 0.002" + 0.2% housing diameter

Running clearance = 0.05 mm + 2% nominal wall thickness + (water swell)

Running clearance = 0.002" + 2% nominal wall thickness + (water swell)

$$\text{Water swell} = \frac{OD^2 - ID^2}{ID} \times 0.04 \text{ (for bearings in water or steam)}$$

OD = Housing + interference fit

$$ID = \text{Shaft} + \text{interference fit} \times \frac{OD}{ID} + \text{running clearance}$$

Worked example - application immersed in water

Housing Ø = 60 mm **Shaft Ø** = 50 mm	**Housing Ø** = 2½" **Shaft Ø** = 2"
Interference fit = 0.05 mm + 0.002 x 60 = 0.17	**Interference fit** = 0.002" + 0.02 x 2.5" = 0.007"
Clearance = $0.05 + 0.02 \times 5 + \frac{60^2 - 50^2}{50} \times 0.04$ = 0.05 + 0.1 + 0.88 = 1.03 mm	**Clearance** = $0.002 + 0.02 \times 0.125" + \frac{2.5^2 - 2^2}{2} \times 0.04$ = 0.002 + 0.0025 + 0.045 = 0.05"
OD = 60 + 0.17 = 60.17 mm	**OD** = 2.5 + 0.007 = 2.507"
ID = $50 + 0.17 \times \frac{60}{50} + 1.03$ = 51.23 mm	**ID** = $2" + 0.007 \times \frac{2.5}{2} + 0.050$ = 2.059"

Design hints to overcome excessive clearances:

- *Design with as thin a wall thickness as is practically possible.*
- *Place thinner walled Hitemp 150 bearing into a steel sleeve.*
- *Split bearings along length and mechanically secure (eg. grub screws, keeper strips).*