

VESCONITE Product Information

Vesconite is a special material compounded from an advanced engineering thermoplastic with a combination of properties specially formulated for low friction, long life bearing applications. It combines a load bearing capacity greater than that of white metal with self-lubricating properties better than those of nylon, while giving up to 10 times longer service than phosphor bronze.

Developed and proven in many industrial applications over three decades, Vesconite has become the preferred material when high loads must be carried with small clearances, under dirty and unlubricated conditions. It is also most effective in moist, immersed and corrosive applications. This is because Vesconite has high dimensional stability and does not swell in water, in contrast to nylon 6 and 66 which absorbs up to 9% water by weight with consequent expansion and softening. Not only do Vesconite bushes generally last much longer, but the life of the mating pins and shafts is often greatly extended.

Vesconite has therefore gained international recognition as a versatile, high performance replacement for traditional materials in anti-friction and wear applications. Vesconite's initial cost is moderate. It is readily available in a wide range of shapes and sizes, and is easily machined to fine tolerances into finished parts on standard metal working equipment. The factory also offers a special service for the production of custom components.

Properties

High load bearing strength Vesconite has very low creep rates under design loadings of 30MPa and has much higher load capacity than nylon, being unaffected by water absorption.

Dimensional Stability

Vesconite does not swell when exposed to water or humid condition. Vesconite therefore requires only slightly more clearance than the corresponding metal parts and no allowance needs to be made for moisture changes.

Low Friction

Vesconite shows outstanding dynamic frictional properties with friction losses about half those of bronze and nylon. This allows for greater combinations of loads and speeds. The greasing of vesconite bushes on assembly further decreases friction, allowing higher speeds to be used and generally improving performance. Water is an excellent lubricant for Vesconite bushes, making the material highly suitable for immersed condition.

Temperature Limits

Vesconite's melting point of 260°C is one of the highest among thermoplastic materials and on a par with white metal. Vesconite is suitable for continuous use at 80 °C. The low thermal conductivity of Vesconite, common to all synthetic materials, means heat is removed only slowly through the bush. One should avoid extreme heat build-up by first checking the PV (load x speed) when designing a replacement for a bronze bush operating at a high PV factor.

The PV limit of Vesconite is about twice as high as that of nylon and higher than most synthetic bearing materials

| | | | | | Estimated PV limit Mpa x m/min |
|------------------------|-------------------------------------|---|--|------------|---|
| | Design loading limit Mpa | Coefficient of thermal expansion | Maximum % of water absorption | Dry | Lubricated at intervals |
| PTFE (unfilled) | 5 | 17 | 0 | 0 | 0 |
| UHMW / HDPE | 10 | 25 | 0.01 | 2 | 10 |
| Nylon 6 | 20 | 9 | 9 | 3 | 12 |
| Vesconite | 30 | 5 | 0.5 | 5 | 20 |
| Phospor-Bronze | 80 | 1.8 | 0 | 0 | 100 |

Wear Resistance

Due to its outstanding wear resistance, vesconite provides many times longer service life in comparison with bronze, and it also less affected by poor lubrication and dirty condition.

Chemical resistance

Vesconite is very resistance to dilute acids, organic solvents, oil and petrol. It has limited resistance to strong acid and alkalis, and lengthy immersion in boiling water should be avoided.

Production Range

- Rods: 8mm to 135mm diameter
- Bushing stock: 20mm to 715mm diameter in standard lengths of 1000mm. Special length to order.
- Plates and discs: plates mainly available in standard sizes 1000 mm x 200 mm from 3mm to 50 mm thickness. Discs are produced from 200 mm to 500 mm in thickness raging from 3mm to 15 mm.
- Ready to use parts: over 100 sizes of ready-to-use bushes, while standard tooling allows production of many more sizes of plain and flanged bushes from 10 mm to 650 mm inside diameter and washers up to 600 mm diameter.

Vesconite at work

The chosen bushing material is vesconite when high loads must be carried under dirty and unlubricated conditions, and fairly precise clearances must be maintained. Vesconite often gives many times longer life than phosphor bronze, can be specified for applications unsuited to nylon and is unsurpassed in most immersed applications.

Vesconite is a premium replacement for bearing materials where:

- Abrasive wear is a problem
- Lubricant cannot be allowed to contaminate the product
- Regular lubrication is impractical
- Long bush and pin life is required
- The bus runs under water/liquid
- Chemical attack is a problem
- Costs savings are desired.