

# VESCONITE®

**for low-lube and lube-free  
long life bushings**



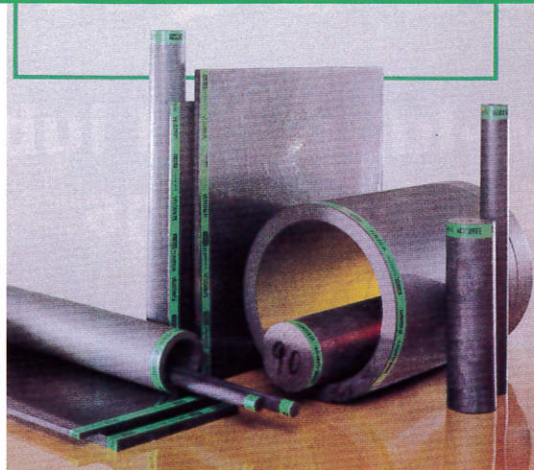
**Gives up to 10 times the life  
of traditional bearing materials**



# VESCONITE® takes on friction and wear under

## the most varied conditions

VESCONITE machineable bushing stock, rods and plates.



### PREMIUM MATERIAL

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 two 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 bushings 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

The main properties which combine to make VESCONITE an outstanding bearing material are:

#### High load-bearing strength:

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

#### Dimensional Stability:

The thermal expansion factor of VESCONITE is only 2.5 times that of bronze, while nylon and HDPE are 5 to 10 times greater respectively.

VESCONITE does not swell when exposed to water or humid conditions, while nylon can expand by up to 3% linearly when immersed.

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 of about half those of bronze or nylon. This allows for higher combinations of loads and speeds.

The greasing of VESCONITE bushings on assembly further decreases friction, allowing higher speeds to be used and generally improving performance.

Water is also an excellent lubricant for VESCONITE bushings, making the material highly suitable for immersed conditions.

VESCONITE HILUBE offers even further reduced friction (down by 50%) making it an ideal material for unlubricated applications.

#### Temperature limits:

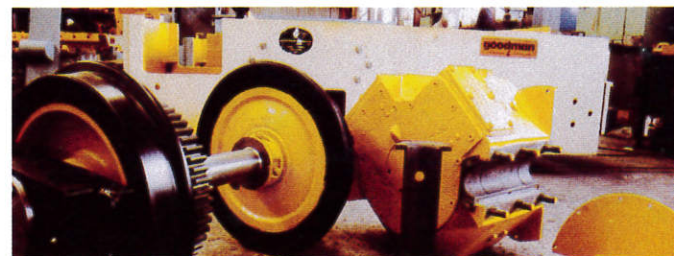
VESCONITE's melting point of 260°C is one of the highest among thermoplastic materials and on a par with white metal.

VESCONITE is suitable for continuous use at 100°C.

The low thermal conductivity of VESCONITE, common to all synthetic materials, means that frictional heat is removed only slowly through the bush.

One should avoid extreme heat buildup 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.



A VESCONITE split motor axle bush used in the 5-ton and 8-ton underground locomotives.

These parts are made to unusually fine tolerances for an engineering plastic material operating at high load and speed.

### Comparison of Vesconite with various bearing materials...

	Design loading limit (MPa)	Coefficient of thermal expansion (mm/mm/°C)	Maximum % water absorption	Estimated PV limit (MPa x m/min)	
				Dry	Lubricated at intervals
PTFE (unfilled)	5	17	0.00	-	-
UHMW/HDPE	10	25	0.01	2	10
Nylon 6	20	9	9.00	3	12
<b>Vesconite®</b>	<b>30</b>	<b>5</b>	<b>0.50</b>	<b>5</b>	<b>20</b>
Phosphor-Bronze	80	1.8	0.00	-	100

#### Abrasion resistance:

VESCONITE provides outstanding abrasion resistance, resulting in many times longer service life when compared with bronze. It is also less affected by poor lubrication and dirty conditions.

#### Longer life of metal counterparts:

The wear of metal pins and shafts is reduced by up to 90% when VESCONITE bushings are used.

This valuable benefit alone justifies the change over to VESCONITE in many instances.

#### Chemical Resistance:

VESCONITE is very resistant to dilute acids, organic solvents, oils and petrol. It has limited resistance to strong acids and alkalis, while lengthy immersion in boiling water should be avoided.

### PRODUCTION RANGE

The VESCONITE range of machineable rods, bushing stock and plates is one of the widest available for the production of low-friction bushings and other hard-wearing parts.

#### Rods:

From 8mm to 160mm (0.33" to 6.3").

#### Bushing Stock:

From 20mm to 800mm (0.79" to 28.1") diameter in standard lengths of 1000 mm (39.4"). Special lengths to order.

#### Plates and Discs:

Plates are mainly available in standard sizes 1 000mm x 200mm (39.4" x 7.9"), from 2 to 75 mm (0.079" to 2.95") thicknesses, as well as varied strips and machined sections. Discs are produced in diameters from 200mm to 500mm (7.9" to 19.7") in thicknesses ranging from 2 to 75 mm (0.079" to 2.95").



#### Ready to use parts:

These include over 100 sizes of ready-to-use bushings in both imperial and metric sizes, while standard tooling allows production of many more sizes of plain and flanged bushings from 10mm to 300mm (ID) (0.4" to 11.8") and washers up to 800mm (23.6") diameter.

#### Special factory services include:

- Machining and finishing to drawing specification, including turning, milling, drilling, thickening, cutting and joining.
- "One stop" application development service from trial prototypes to mass production parts.
- Short-run production facilities based on an extensive stock of semi-finished materials and production tooling.
- Very large wear parts can be relined with VESCONITE strips, thus saving the original expensive phosphor-bronze component and making it better than new.
- New parts lined with VESCONITE can also be produced from cheaper materials.
- Special material modifications for new application requirements, based on ongoing technical development.

#### 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 metals where:

- abrasive wear is a problem;
- lubricant cannot be allowed to contaminate the product;
- regular lubrication is impracticable;
- long bush and pin life is required;
- the bush runs under water/liquids;
- chemical attack is a problem;
- cost savings are required.

Such parts include bushings, thrust washers, wear pads, wear strips, slides and many other components subject to wear and friction.





*Vescoplastics workshop is entirely devoted to the machining of engineering plastics of up to 1 350mm (53.14") diameter. Sizes greater than this can be outsourced.*

## TYPICAL APPLICATIONS

### Heavy transport (trailers, buses, etc.):

Bogie/Trunnion/Pivot bushings and thrust washers, bushings for spring shackles, air brake cams, steering, kingpins.

### Earthmoving Equipment:

Front end loader arm bushings, idler wheel bushings in tracked vehicles, pivot points, road grader bushings.

### Hydraulics:

Pistons, neck ring bushings, varied wearing and guide parts, clevis pin bushings.

### Mining:

Plunger pump neck rings, protection plates of multistage centrifugal pumps, electric loco motor axle bushings, steam loco side rod bushings, raise borer column guides, winch bearings and thrust rings, rotary filter components, sheave wheel bushings, hopper car bushings.

### Shipping:

Cutlass stern shaft bearings, rudder bearings, sheave bushings, water pump piston rings.

### Irrigation:

Bushings for sluice gates and rollers.

### Agriculture:

Bushings for rotary sprinklers, disc ploughs, tractor king pins, lawn-mower wheels.

### Paper Industry:

Repulper bearings.

### Steel Industry:

Crane wheel bearings, ring bed bearing blocks, wear strips



*A rubber masticating mill bearing being lined with VESCONITE. A service life of over three times longer than previously used phosphor - bronze is being obtained with lower replacement costs.*

### Tyre Industry:

Liners to masticating mill bearings.

### Textile Industry:

Bushings for loom parts of all types, frame link guides.

### Bottling Plants:

Pull down cam blocks, lift cylinder bushings, centre column collar bushings, wear strips.

### Abattoirs:

Overhead roller bushings.

### Lifts:

Guide shoes and blocks.

### Rotary Air Motors / Vacuum Exhausters:

Vanes and blades in a wide range of sizes, including petrol vane-type pumps.

### Conveying/Materials Handling:

Conveyor roller bushings, screw conveyor hanger bushings, wear strips and guides, butterfly valve spindle bushings, wheel bushings, fork lift components.

### Concrete/Brick Industry:

Foot step bearing and disc pads, block-making machine guide bushings.



*A casing section of multistage centrifugal pumps reconditioned with VESCONITE protection plates.*

## WAIKATO BEARINGS LIMITED

11 Northway Street  
Te Rapa, Hamilton

P: 07 850 6155

F: 07 850 6144

E: [sales@waikatobearings.co.nz](mailto:sales@waikatobearings.co.nz)



[waikatobearings.co.nz](http://waikatobearings.co.nz)