

# IMPREGNATING OILS FOR SINTERED BEARING



## Impregnating oils

For the many applications using sintered bearing for rotary designs, such as parts of automobile, computer, appliances etc., the quality of the impregnating oils determines their life and performance of the bearings. In short, a device fails if the oil oxidizes, evaporates or migrates. Therefore, the selection of the impregnating oil is as critical as other design decisions.

The working theory of sintered bearing is like a closed circulation lube system. It is ideal that the impregnating oil be kept in the bearing as long as the bearing life is. But in reality, this lube system is not a closed system. Thus the oil will leak, creep along the axle and evaporate under operating heat. When the oil in the bearing gets less or even runs out, operating torque gets higher, noise comes out, vibration increase and wear follows.

Therefore, one needs an oil which is:

- stable against operating thermal heat
- resistant to leaking or creeping
- good lubricity
- low starting torque
- anti-corrosion
- easy for impregnating procedure

## Dulub offers the following 3 products for sintered bearing:

### Dulub METABORE 2000

This is a fluid specially designed for sintered bearing. It has a special flow behavior called 'thixotropic' or 'non-Newtonian'. This property makes it disobey the Newton's fluid theory, and therefore can stay very long in a sintered bearing lube system.

Also, thanks to its synthetic base, METABORE 2000 gets a high structure stability against against shear and thermal load.

During impregnating process, the oil bath is expected to be heated 'indirectly'. Direct heating will cause a shorter service life due to high film temperature of heater. A vacuum suction would be better for reaching an extreme impregnating. At least 30 minutes is required for the bubble air captive inside capillary to be released.

### Dulub HOTEMPFLUID ETR 40/60/90

HOTEMPFLUID ETR 40/60/90 is a specially selected fluid to be applied with sintered metal bearings or high-temp slides. Thanks to its excellent molecular structure, HOTEMPFLUID ETR has superior thermal stability compared with conventional fluids.

As an oil for sintered bearing lubrication, many of the following characteristics are required: high-temp stability, good lubricity, wear protection, low-temp torque, no creeping and good plastic compatibility. Also, good adhesion and low evaporation are highly expected.

HOTEMPFLUID ETR, combining all these required features, has proved itself a good lubricant in a sintered bearing. No carbon residue, which blocks and impairs the porosity, will be found after certain years.

### FluoroSurf FS1010TH-0.2

This is a non-flammable solvent type water/oil repellent from Fluoro Technology company in Japan. It has the following characteristics:

- It forms a strong film on the coated surface with low surface tension, which repels water and oil and stops creeping of oil, resin and solder paste.
- Film thickness ranges from nano- to micro-meter level for different applications.
- Simple application via dipping or brushing, with drying time of 5 seconds under room temperature.
- Non-flammable solvent and non-toxic, which keeps a good work space. It is also compatible with resin type materials.

Applications of FS1010TH-0.2 include:

- prevent oil leakage from micro motor
- oil barrier for FDB of HDD
- prevent oil creeping around disk head of HDD or optical head of DVD



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