

Health Hazard - Warning

There are two separate aspects of health hazard which could arise from certain usage of DU materials.

Fabrication

At temperatures up to 250 °C the polytetrafluoroethylene (PTFE) present in the lining material is completely inert so that even on the rare occasions in which DU bushes are drilled, or sized, after assembly there is no danger in boring or burnishing.

At higher temperatures however, small quantities of toxic fumes can be produced and the direct inhalation of these can cause an influenza type of illness which may not appear for some hours but which subsides without after-effects in 24-48 hours.

Such fumes can arise from PTFE particles picked up on the end of a cigarette. Therefore smoking should be prohibited where DU is being machined.

Lead contamination of food, drink and other edible products

DU contains a small quantity of metallic lead (0.25 kg/m² of total bearing surface) and the designer should ensure that this does not contaminate any edible product being processed to the extent that it might cause a health hazard.

The majority of the lead is retained in the bearing, and that which escapes does so over a long period of time. The highest rate of release occurs during the bedding-in period which normally lasts for 1-2% of the life of the bearing. As a guide a MB2525DU bush with unidirectional load will emit 0.05g of lead in the bedding-in wear debris with a further 0.1g during the remaining 98% of the bearing life. 0.05g is sufficient, if evenly distributed, to contaminate 100 kg of food product to 0.5 ppm or 1000 litres of liquid to 0.05 ppm. If the rate of food processing is comparable to or less than these quantities per 1% of the bearing life, it should be sealed so as to prevent wear debris contaminating the product. These quantities are proportional to the surface area of the bearing and should be factored for other sizes, and increased by a factor of 3 if there is a rotating load.

Where lead emission rates approach the critical level, and sealing is not effective, adequate prototype testing should be carried out to determine the bearing's operating life. Adverse conditions (extraneous material in the bearing, overloading etc) can decrease the life of the bearing and therefore increase the lead emission rates.