

rather than to the absence of chrysotile material, wear debris was heated *in vacuo* at 1100 °C in an attempt to increase the particle size of any crystalline components of the debris. X-ray diffraction of this material showed well-defined lines and the mineral forsterite was positively identified. When chrysotile asbestos fibre is heated it loses its water of crystallization at about 650 °C and at 780 °C is transformed into forsterite according to the reaction

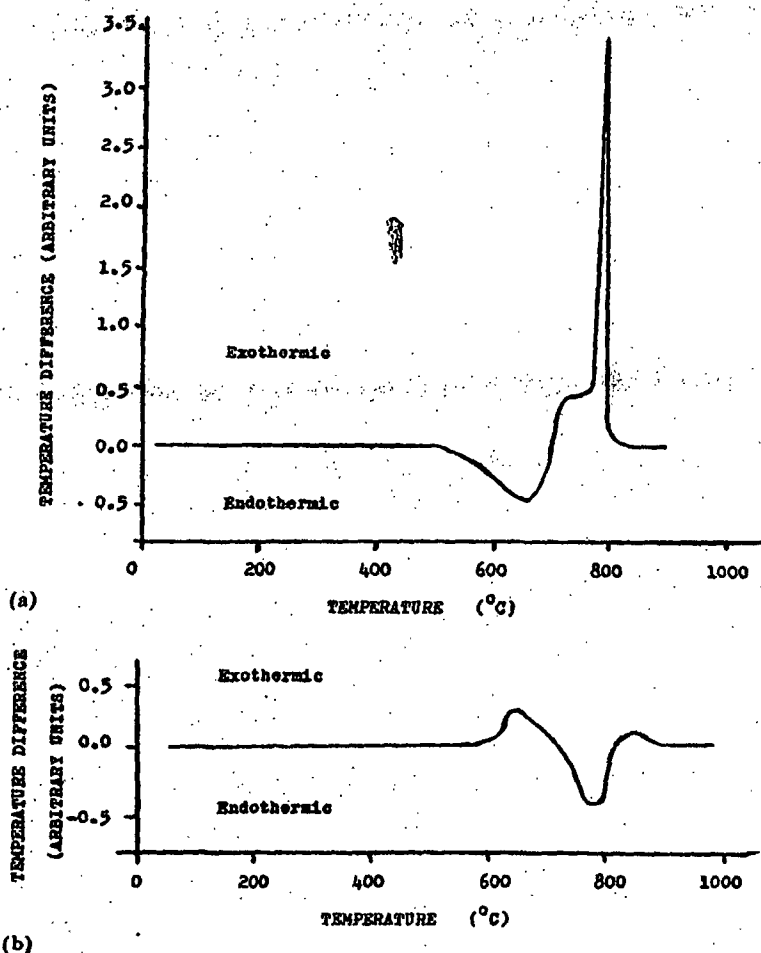
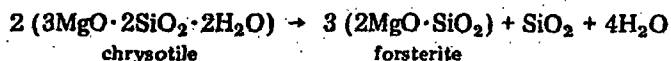


Fig. 3. (a) DTA curve of chrysotile asbestos (run in nitrogen). (b) DTA curve of wear debris (run in nitrogen).

3.3. Thermal analysis

The dehydroxylation of chrysotile at 650 °C is an endotherm, while the dehydration of that of the original material at 780 °C is exothermic. These changes are indicated by differential thermal analysis (DTA) respectively thermogravimetric analysis (TGA) respectively. The changes indicate the equivalent of 50% water loss, as shown in Figs. 3(b) and 4(b) respectively.

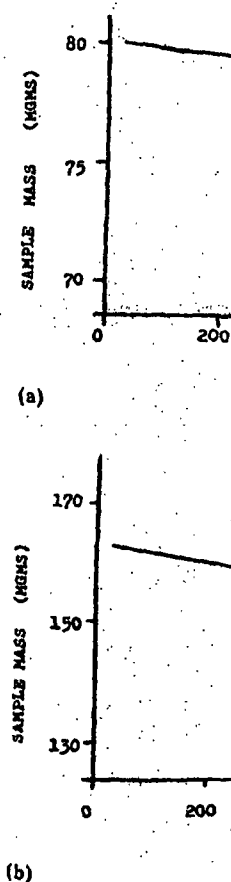


Fig. 4. (a) TGA curve of chrysotile asbestos (run in nitrogen). (b) TGA curve of wear debris (run in nitrogen).