

THE EFFECT OF TEMPERATURE AND WATER CONTENT ON THE PHYSICAL PROPERTIES OF NYLON 66 USING THE ULTRASONIC PULSE METHOD

Nylon 66 is one of the more commonly used engineering polymers on account of its toughness and general resistance to wear and deformation. British Railways makes considerable use of it in track components, such as Pandrol and other insulators and fishplate liners. Its potential use in gear wheels is also being studied in some detail. Nylon 66 has the disadvantage, however, that its mechanical properties are profoundly affected, not only by temperature strain and time (in common with all polymeric materials), but also by water content.

Manufacturers of nylon provide some empirical design data in the form of tensile creep curves, and discuss the effect of temperature and water content in general terms. Nevertheless, it was felt that more precise and specific data was needed to enable the likely behaviour of nylon components under defined conditions to be more accurately predicted for design purposes.

This report describes the use of the pulsed high frequency liquid immersion technique to determine the effect of temperature and water content on the physical parameters of nylon 66.