



18. Epoxy protective coating. Exposure to salt water study.

Instrument: Tritec 2000 Dynamic Mechanical Analyser

Sample: Epoxy film

Geometry: Tension

Frequencies (Hz): 1.0

Thermal profile: 2°C/min thermal scans (Figs 1, 3 & 4)
Isothermal @ 70°C in brine (Fig 2)

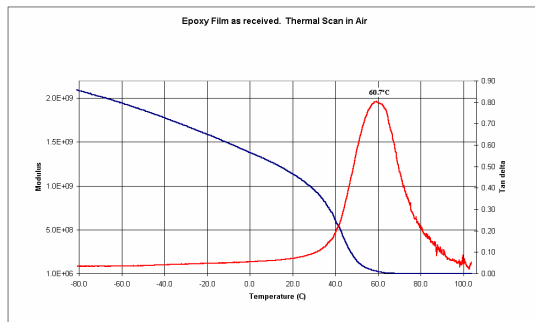


Fig 1

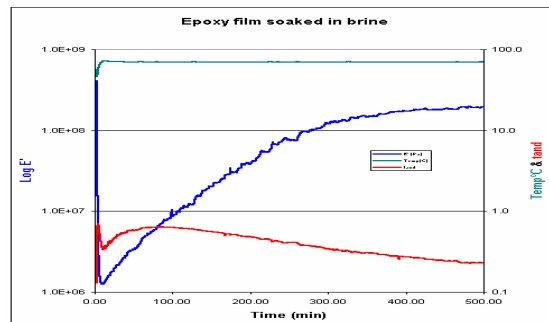


Fig 2

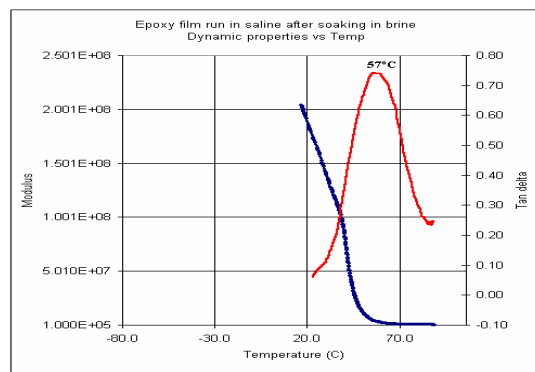


Fig 3

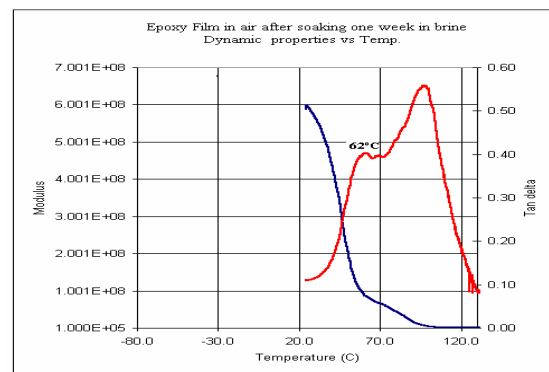


Fig 4

Comments:

The series of results shown here highlight how easy it is to obtain misleading information by conducting badly constructed experiments. Fig 1 shows a sample of an epoxy protective film run in air. This same sample was immersed in brine at 70°C using the Tritec2001 Bath Chamber. The results are shown in Fig 2. After several hours, the same sample was cooled down and the sample re-run as a thermal scan in the same brine solution. The result for this is shown in Fig 3. The sample was very slightly plasticised moving from 60°C to 57°C with a little broadening, essentially though, not greatly affected by immersion. However, if the same sample, after immersion, is run in air to ascertain the characteristics, completely different results are obtained as shown in Fig 4. The second relaxation at 98°C appears to be an artefact, possibly due to water being driven out of the sample as it is heated.