

## TEST REPORT

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**APL Project #:** SPR-0106-03  
**Customer PO #**

**Sent Via Fax:** 205-957-0021

**SUBJECT:** DMTA Creep Testing

**SAMPLE RECEIVED:**

Retains from SPR-1217-02

**OBJECTIVE:**

Determine the creep recovery and project the modulus using dynamic mechanical analysis and time/temperature superpositioning software.

**SUMMARY AND CONCLUSIONS:**

The table shows the projected modulus as taken from the master curve.

Hours	Flexural Modulus (PSI)	Flex. Mod. % Retained	Flex. Mod. % Lost
10	648,300	-	-
100,000	509,000	78.5%	21.5%
262,800	482,900	74.5%	25.5%
441,600	466,400	71.9%	28.1%
579,100	453,000	69.9%	30.1%

**EXPERIMENTAL:**

The instrument used was TA Instruments 983 DMA in the Creep Mode, with software packages DMA4.2 and DMASuprPosV4.1B. The sample was placed in the vertical clamps of the DMA, with a clamped length of 26.7mm. The width measured 9.98mm and the thickness measured 3.32 mm. The sample was subjected to a displacement of 0.2 mm, with a 30 minute displacement and a 30 minute recovery. The first temperature equilibration step was 27.5°C, with 2.5°C incremental steps up to 50°C. The reference curve for the superpositioning of the nine other curves generated was at 37.5°C. The reference temperature for the master curve was 10°C.

**Results and Discussion:**

Figure 1 is the plot of percent creep for each temperature increment between 27.5°C and 50°C. Figure 2 is the Arrhenius Plot. Figure 3 is the superpositioned master curve. (The electronic report only contains Figs. 2 and 3.)

**FIGURE 2**

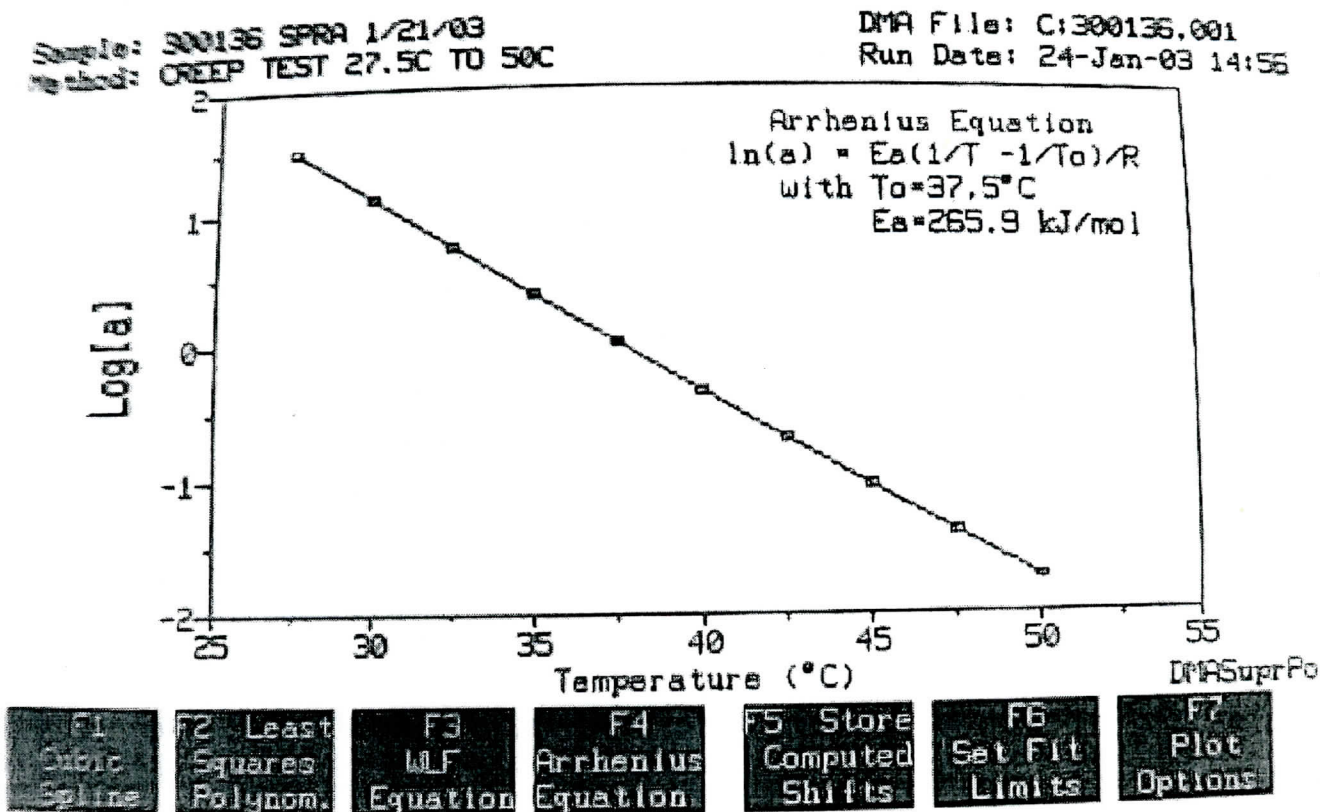
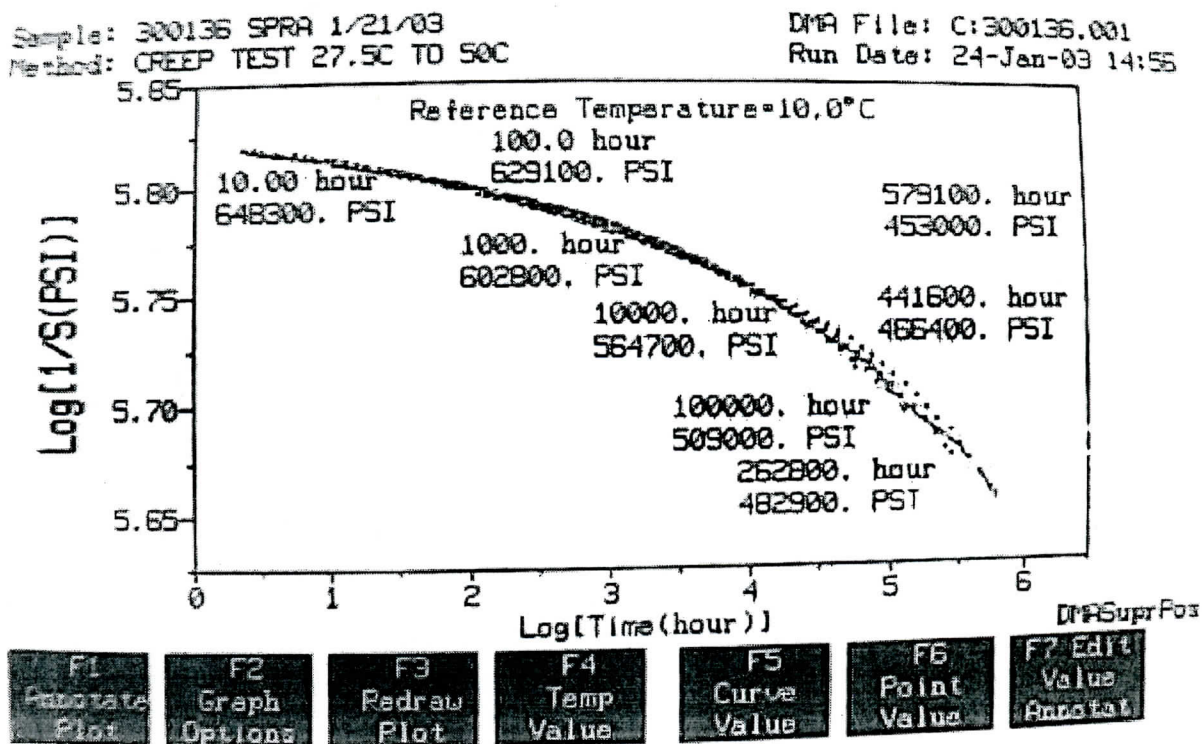


FIGURE 3



Written By: *Dave Russell* Reviewed by: *Allison Ryan*  
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