**Flexural Fatigue Test Method**

TP477 (Draft)

**1.0 SCOPE**.

This test method shall be the same as Austroads AG:PT/T233 January 2006 with the following changes:

**2.0 REFERENCES**

Austroads AG:PT/T233 January 2006

**3.0 DEFINITIONS**

As in Austroads AG:PT/T233 January 2006

**4.0 APPARATUS AND MATERIALS**

As in Austroads AG:PT/T233 January 2006

**5.0 SAMPLING AND SAMPLE PREPARATION**

Clause 4.1 ‘*Number of Replicate Specimens’* to be replaced with:

4.1: Number of Specimens

A minimum number of five specimens shall be tested, all at different strain levels. A minimum of two strains shall be used such that failure condition is greater than E6 cycles.

**6.0 PROCEDURE TO BE FOLLOWED**

Replace Clause 5 ‘ *Standard Reference Test* *Conditions*’ with the following:

For the purpose of testing production asphalt for fatigue life, the standard reference test conditions in Table 1 are specified.

Table 1: Standard Reference Test Conditions

|  |  |
| --- | --- |
| **Test Parameter** | **Standard Reference Test Conditions** |
| Test Temperature (oC) | 20 ± 0.5 |
| Loading Frequency (Hz) | 10 ± 0.1 |
| Mode of Loading | Continuous Sinusoidal in controlled displacement |
| Tensile Strain | Strains to be chosen to be approximately centred around cycles to failure of E6 spaced at 25 µε intervals |
| Initial stiffness | The flexural stiffness at 50th cycle |
| Failure condition | When the flexural stiffness is reduced to 50% of the initial flexural stiffness |
| Air void content (%) | 5 ± 0.5 |
| Number of beams | One at each strain with a minimum of five beams |
| Fatigue Life (µε) | Strain at E6 from line of best fit (log strain verses log cycles plot) |

Delete Clause 6 (s). *‘Repeat steps (a) to (r) for remaining replicate specimens.’*

**7.0 CALCULATIONS**

Determine the micro strain at 1 million fatigue cycles from a plot of micro-strain (exponential) verses fatigue cycles (exponential).

**8.0 PRECISION**

A determination of an uncertainty of measurement has not yet been prepared for this procedure.

**9.0 REPORTS AND DOCUMENTATION**

Replace Clause 8.1 (a) to (h) with the following:

Asphalt description: Production Mix details.

Replace Clause 8.2: For all replicate beams tested under the same conditions, report the following (a) to (f) with the following:

For all beams tested report the following summary:

1. Number of beams
2. UTM printout for each test
3. The strain at E6 cycles
4. Precision (r squared) of line of best fit

Asphalt description: Production Mix details.

For the purpose of testing production asphalt for fatigue life, the standard reference test conditions in Table 1 are specified.