

Experiments for Characterizing the Fatigue of Plastic

1. Tear Strength

Purpose: determine the ultimate capacity of the material to support a static load. The strength provides an upper bound useful in planning fatigue experiments. The critical tearing energy may be determined from this experiment

Typical Testing Conditions:
Specimen: compact tension

Output:
Raw Data File: *Raw Data File: Displacement, Force (N), Time (seconds)*

2. Crack Growth

Purpose: determine the rate of crack growth as a function of crack driving force.

Typical Testing Conditions:
Specimen: compact tension
Frequency: 0.5 Hz (for example)
Control: Load Controlled Sine Wave

Output:
Summary File: Peak Strain, Peak stress, specific work during loading, specific work recovered on unloading, hysteresis, energy release rate, crack growth

Note: This testing is still very developmental in nature. Sometimes these tests just don't work well. We have had considerable success but understand that this is new technology.

3. Tensile Fatigue

Purpose: determine the fatigue life as a function of maximum alternating stress.

Typical Testing Conditions:
Specimen: ISO 8256 Type 3
Frequency: 2 Hz
Ratio of Minimum Stress to Maximum Stress: 0.2

Output:
Summary File: Peak stress, Cycles to Failure

General Pricing for Characterizing the Fatigue Crack Growth of Plastic

| Prices are shown in US Dollars | Lab Temp. (23C) | -40C to 150C |
|---|--------------------|-----------------|
| 1. Tear Strength (3 tests) | 630 | 945 |
| 2. Crack Growth (3 tests, each less than 5 hour duration) | 4200 | 6300 |
| 3. Tensile Fatigue (3 tests, total cycles to failure between 500-1500; 3 tests, total cycles to failure between 1500-50,000; 3 tests, total cycles to failure between 50,000-500,000 3 tests, total cycles to failure between 500,000-1,500,000) | 4100 | 6150 |

March 2014. Pricing subject to change.

Notes:

These are typical durability and crack growth tests. Feel free to request a proposal for other interests or specifications.

The data is delivered via e-mail in an ASCII format.

Customer data and materials will be retained for 1 year after initial data delivery.

Purchase Order, VISA, MasterCard, AMEX, and Discover Card are accepted methods of payment.

Terms: NET 30 Days after Delivery of Data