

*Client*

FIRST WORLD TRADE CORPORATION  
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**Laboratory  
 Report**

<i>Attention</i>	<i>Client's Order Number</i>	<i>Date</i>	<i>Report Number</i>
Frank Baldwin	RFA	15 June 2010	<b>10-1994</b>
<i>Client's Material / Product Description</i>		<i>Date Sample Received</i>	<i>Material / Product Specification</i>
Biomile Fuel Additive: 1) Pill Format, 2) Crumble Format 3) Powder Format		04 June 2010	-----
<i>Test Performed</i>		<i>Result</i>	<i>Specification</i>

**SCOPE:**

Various forms of Biomile Fuel Additive, (1) Pill, (2) Crumble and (3) Powder, were submitted for dissolution testing. The Client indicated that the recommended dosage is 1 pill or 1.1 grams in 70 litres of fuel (Diesel or Gas). The purpose of this investigation is to determine when the equivalent of this dosage of Biomile will completely dissolve in 1 litre of fuel (0.016 grams of Biomile).

**METHOD:**

Biomile in the various formats were administered to the two types of fuel (Diesel and Gas):

- 1) For Pill format: One single fragment of Biomile weighing approximately 0.016 grams was used for each fuel type.
- 2) For Crumble: One solid fragment, one smaller or flake-like fragment and some small amounts of powder weighing approximately 0.016 grams was used for each fuel type.
- 3) For Powder: Approximately 0.016 grams of powder was used for each fuel type.

For this investigation, Shell Regular Unleaded Gas and Shell Regular (lower grade) Diesel were used. The Biomile was released into volumetric flasks already containing one litre of each fuel. To condition the fuel, the volumetric flasks were immersed in a temperature monitored bath of water for at least five minutes prior to administering Biomile. At approximately half hour intervals, the fuel was visually examined to determine if Biomile fuel additive was still present (for example particulate or residue). Temperature of the water bath was maintained between 21 and 22 °C. In all tests no agitation was used.

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**RESULTS:**

Pill, Gas

Mass Administered: 0.0178 grams in 1 L of gasoline

Time lapse: 0.5 hours until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C

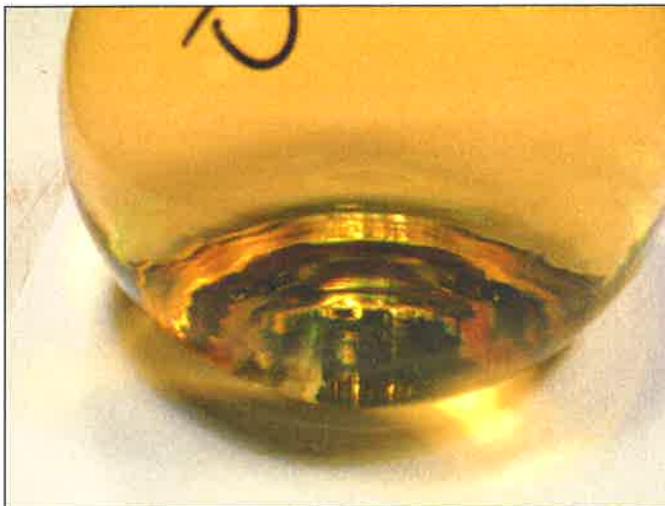


Figure 1. Complete dissolution of Pill (one piece) of Biomile (time 14:12, after 30 minutes)

Pill, Diesel

Mass Administered: 0.0163 grams in 1 L of gasoline

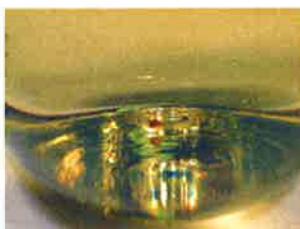
Time lapse: 4 hours until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C



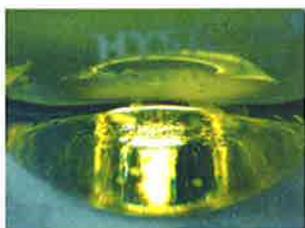
Time: 13:22 Start  
Lapse: 0 mins



Time: 14:24  
Lapse: 1 hr 2 mins



Time: 15:23  
Lapse: 2 hour 1 min



Time: 16:26  
Lapse: 3 hrs 4 mins



Time: 17:29  
Lapse: 4hrs 7mins (7 minutes after complete dissolution)

Figure 2. Set of time lapsed pictures of the Pill Biomile (single piece) dissolving in diesel fuel.

Crumble, Gas

Mass Administered: 0.0159 grams in 1 L of gasoline

Time lapse: 20 Minutes until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C



Figure 3. Complete dissolution of Crumble Biomile (time 11:10, after 20 minutes)

Crumble, Diesel

Mass Administered: 0.0159 grams in 1 L of gasoline

Time lapse: 3 hours 27 minutes until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C



Time: 16:33

Lapse: 1 hr 1 min



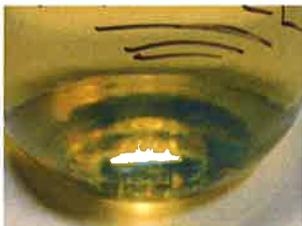
Time: 17:35

Lapse: 2hrs 3 mins



Time: 18:39

Lapse: 3 hour 7mins



Time: 18:59

Lapse: 3 hrs 27 mins

Figure 4. Set of time lapsed pictures of the Crumble Biomile dissolving in diesel fuel (Time lapse 3 hours 27 minutes).



**ACUREN**

Powder, Gas

Mass Administered: 0.0164 grams in 1 L of gasoline

Time lapse: 6 minutes until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C



Figure 5. Complete dissolution of Powder Biomile in gasoline (time 19:17, after 6 minutes)

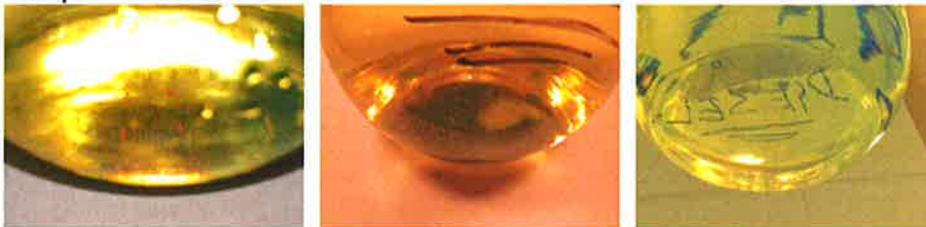
Powder, Diesel

Mass Administered: 0.0161 grams in 1 L of gasoline

Time lapse: 1 hour 15 minutes until absence of Biomile remnants at bottom of volumetric flask.

Agitation: None

Temperature: 21-22°C



Time: 14:17

Lapse: 8 mins

Time: 15:08

Lapse: 59mins

Time: 15:24

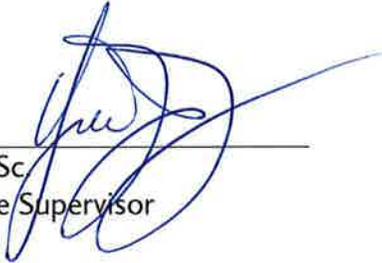
Lapse: 1 hour 15 mins

Figure 6. Set of time lapsed pictures of the Powder Biomile dissolving in diesel fuel (time lapse 1 hour 15 mins).

**SUMMARY:**

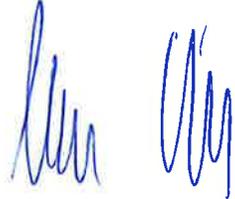
Table 1. Summary of complete dissolution time listed according to Biomile Format, Fuel and Mass. All testing performed at 21-22 °C.

Format	Fuel	Mass (g)	Dissolution Time
Pill (single fragment)	Regular Unleaded Gasoline	0.0178	30 minutes
Pill (single fragment)	Regular Grade Diesel	0.0163	4 hours
Crumble	Regular Unleaded Gasoline	0.0159	20 minutes
Crumble	Regular Grade Diesel	0.0159	3 hours 27 minutes
Powder	Regular Unleaded Gasoline	0.0164	6 minutes
Powder	Regular Grade Diesel	0.0161	1 hour 15 minutes




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#### **SCOPE OF SERVICES**

The agreement of Acuren to perform services extends only to those services specifically provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested inspection of specific equipment provided for in writing and the preparation of reports or similar documents. Any descriptions, statements, comments or expressions made reflect the opinion or observations of the Acuren examiner based solely upon data available at the time, and are not intended, nor can they be construed, as representations or warranties as to the actual circumstances. Acuren does not assume any responsibilities of the owner/operator, and the owner/operator retains complete responsibility for all engineering, repair and use decisions.

#### **STANDARD OF CARE**

In performing the services provided, Acuren shall use the degree of care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. ***No other warranty, expressed or implied, is made or intended by Acuren, and all other warranties are expressly disclaimed.*** In the event of any breach of this warranty, Acuren's sole and exclusive obligation will be to correct or re-perform the deficient service or, at Acuren's option, to refund the amount paid for the deficient service.

#### **LIMITATIONS OF LIABILITY**

Nothing in this agreement shall be construed to mean that Acuren assumes any liability on account of injury to persons or property, including death, except and only to the extent those directly caused by the willful or negligent misconduct of Acuren in the context of performing the requested services. In no event shall Acuren's aggregate liability for any reason, in connection with any claim asserted, exceed the amount paid for the services in question. Acuren shall not be held responsible or liable for any loss, damage or delay caused by accidents, strikes, fires, floods, or other circumstances or causes beyond Acuren's control, including actions taken or not taken by the owner/operator or other third parties. In no event shall Acuren be liable for indirect, incidental, special, punitive, or consequential damages including, without limitation, damages relating to reputation, lost profits, goodwill, downtime, loss of use, business interruption or other economic loss.

#### **OTHER**

Unless otherwise agreed in writing, the following terms shall apply to this agreement. Payment terms shall be payment in full within 30 days. Acuren reserves the right to charge interest at a rate of 12% per year on outstanding accounts. Acuren also reserves the right to charge for any extra costs that are incurred as a result of delays, cancellations, or postponements resulting from the client's instructions, lack of instructions or mistakes for which Acuren is not responsible. The fees quoted for in this agreement exclude all costs of re-inspection or abortive visits. The client will be notified of such costs as and when they occur, and the costs will be added to the contract price. Film that is not accepted by the client when the report is issued will be disposed of by Acuren.