Mexico City, September 15, 2014

Outcomes of the anaerobic biodegradation of Ekcos screen with Eco One additive at 10% pursuant to ASTM-0-5511-02

Treatment

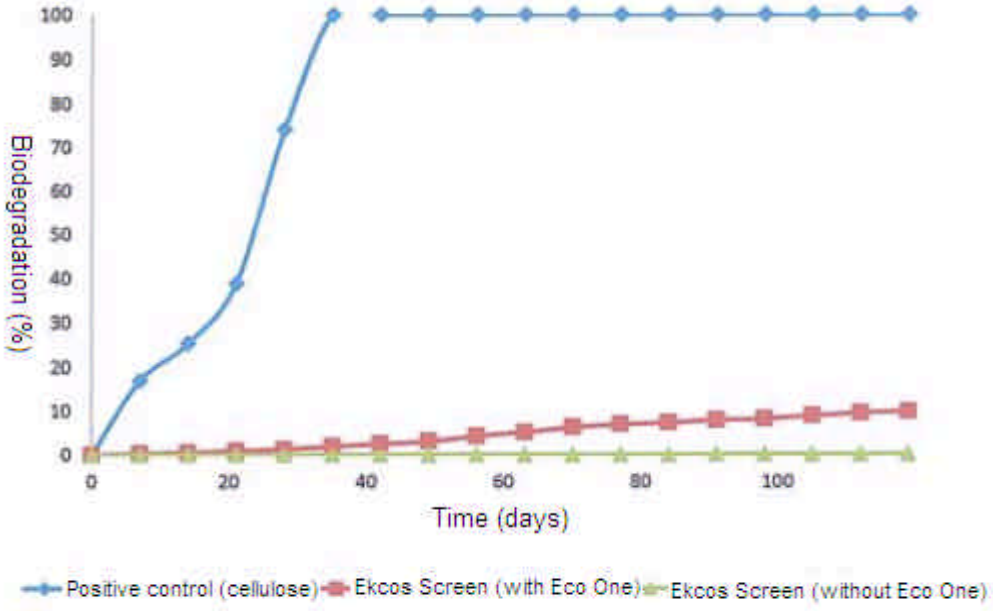
Ekcos screen, with 1% of Eco One additive, as well as samples without additive and cellulose as negative and positive controls respectively, were cut to reduce their size to form strips of approximately 2mm, afterwards the strips were put in glass flasks of 0.125 L capacity, in a ratio of 2% of solid total weight with the inoculum of anaerobic degradating micro organisms and filling up to 90% of the flask space. To prevent air from entering into the flask which could inhibit the degradation process, the flask was sealed with an aluminum cap with a rubber washer to allow us to take gas samples from inside the flask. The flasks with the inoculum and samples were purged with helium gas to remove all the air from inside. Finally the flasks were incubated at 50º in a dark area and were stirred manually. Samples were taken periodically to inject the gas chromatograph and determine biogas composition (methane and carbon dioxide). The volume was measured by the displacement of the syringe plunger, that is a method that allows to measure the biogas volume generated, reducing the possibilities of introducing air into the flasks.

The positive control of cellulose is used to verify that the inoculum is functional at the beginning of the test. The negative control is used to share the results of a sample without additive.

Calle 30 de Junio de 1520 s/n, Barrio La Laguna Ticomán C.P. 07340 Del. Gustavo A. Madero México D.F. 5729 6000 Ext. 52703

Results

In figure 1 is shown the biodegradation percentage of Ekcos samples with Eco One additive at 1%, sample without Eco One additive and a positive cellulose control



The positive cellulose control at this time has been biodegradated completely, the Ekcos Screen sample with Eco One additive has been biodegradated at 8.99% in relation to the initial mass versus the sample without additive (Table 1)

Calle 30 de Junio de 1520 s/n, Barrio la Laguna Ticomán C.P. 07340 Del. Gustavo A. Madero México, D.F. 5729 6000 Ext. 52703

Table Results of plastic material biodegradation

	Sample with Eco One	Sample without Eco One
Initial mass (g)	2.0348	2.0143
Time (days)	119	119
Volume of biogas produced (ml)	137	2
Methane concentration (%)	28.98	1.60
Carbon dioxide concentration (%)	71.02	98.40
Biodegradated mass (g)	0.1829	0.0000
Biodegradation (%)	8.99	0.00*

*Presently, the biogas generated by the sample without Eco One additive corresponds only to the inoculum residual nutrients and not to the sample without additive.

Conclusion

Ekcos Screen samples with Eco One additive at 1%, show a clear trend of biodegradation because the quantified biogas is enough to show a difference from the same material sample without additive.

Based on the aforementioned results, the sample with Eco One additive after 119 days was biodegradated at 8.99%.

From the previous data we have enough elements to prove the efficacy of Eco One additive to accelerate plastic material biodegradation.

J

Environmental Engineer Rodngo Abraham Castro Corona