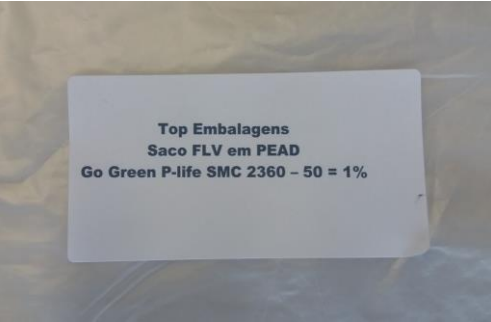


## ANALYSIS REPORT

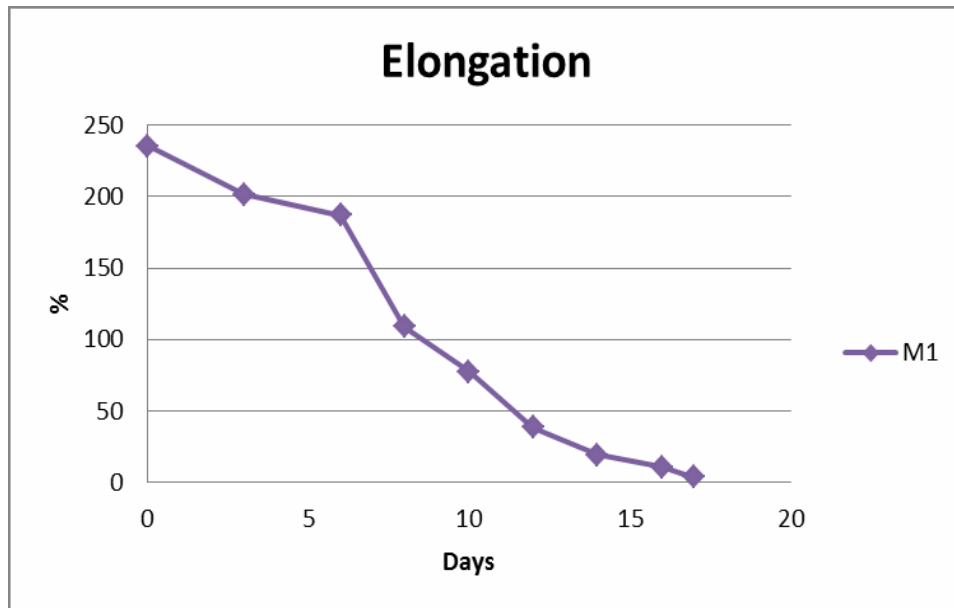
<b>General information</b>	
<b>Date:</b> April 29, 2016.	
<b>Analysis number:</b>	Q-110416F112
<b>Client:</b>	Ecoventur
<b>Analysis period:</b>	11-04-2016/28-04-2016
<b>Test Description:</b>	Accelerated Photodegradation
<b>I.- Sample Description:</b>	
	<p>M1. B.2 FLV            Manufactured to test in the company: Top Embalagens            P-Life 1%</p>
<b>II.- Objective:</b>	
<p><b>Accelerated Degradation based on temperature of the structure and determination of its shelf life time.</b> According to; "Tensile Test" ASTM D3826-98, "Standard Practice for Exposure of Photodegradable Plastics" ASTM D5208.</p>	
<b>III.- Laboratory equipment:</b>	
<p>a. Universal Testing Machine.</p> <p>b. QUV accelerated weathering tester. Cycle: Continues of UV at 50°C and 0.70 W/m2.</p>	

**IV.- Results:**

**MECHANICAL PROPERTIES**

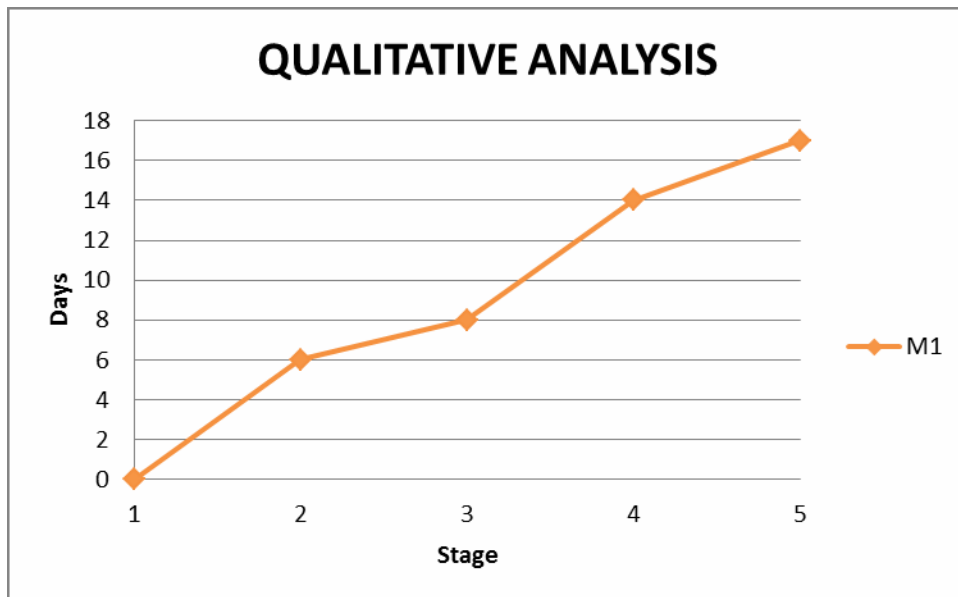
For this study we decided to analyze the results of the elongation percent.

Days in the oven	Elongation (%)
	M1
0	235.17
3	201.73
6	186.83
8	109.04
10	77.53
12	38.26
14	19.26
16	10.57
17	3.84



**QUALITATIVE ANALYSIS**

		Sample
		M1
Stage		Days
1	The sample enters to study.	0
2	Maintains Physical Properties.	6
3	The structure changes his initial properties (color, hardness)	8
4	The product is broken easily.	14
5	The degradation process has finished.	17





**V.- Conclusions:**

After exposing Sample M1 to the accelerated aging process, the change in mechanical and physical properties were also clearly observed.

It is considered that the period of useful life ends by losing more than 50% of the initial elongation percent that took place after 8 days of exposure. Therefore, it is determined that **a shelf life of Sample M1 is considered to be 20 months (1 year with 8 months) under 30°C warehouse environment.**

Based on ASTM D5510-94 is considered that the sample has reached its accelerated degradation, when it support less than 5% of elongation that happened after 17 days of study therefore we concluded that this sample has a **degradation time of 43 months (3 years with 7 months).**

Please be advised that 1 day of study shall be converted into 2.5 months under 30°C environment. The conversion rate is calculated based on Arrhenius Activation Energy.

Please be also advised that the determination of shelf life time as 50% retained property is based on our long term experiences we have been conducting a degradation test for a number of customers throughout the worldwide region.

Ing. Martha Castillo Cruz

ANNEX IMAGE



Illustration 1. Sample M1 in the universal machine before the study began.

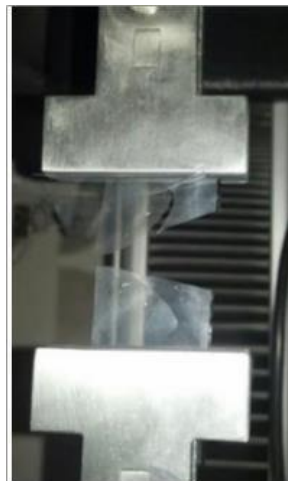


Illustration 2. Sample M1 after 8 days of study.



Illustration 3. Sample M1 after 17 days of study