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## KTA-TATOR, INC.

115 Technology Drive, Pittsburgh, PA 15275

May 1, 2009

Via email: [jburato@lifelast.com](mailto:jburato@lifelast.com)

Mr. Jeffrey Buratto  
Lifelast, Inc.  
1301 NE 144th St., Suite 125  
Vancouver, WA 98685

**SUBJECT: Results of Sulfuric Acid Exposure Testing; KTA-Tator, Inc. Project No. 290229**

Dear Mr. Buratto:

In accordance with KTA-Tator, Inc.'s (KTA) Proposal Number PN090251 and subsequent signed Authorization to Proceed dated March 27, 2009, KTA has analyzed samples of DuraShield 210 and DuraShield 310 coating membranes to determine the resistance to immersion in 50% sulfuric acid solution. The test method of analysis and results are provided in this report.

### **SAMPLES**

The following samples were received from Lifelast, Inc. on March 20, 2009:

Sample #1 – Three (3) - 3" x 3" free film sections of material, designated as DuraShield 210.

Sample #2 – Three (3) - 3" x 3" free film sections of material, designated as DuraShield 310.

It should be noted that at no time did KTA personnel witness the preparation of the above samples.

### **LABORATORY INVESTIGATION**

The laboratory investigation consisted of testing samples of DuraShield 210 and DuraShield 310 for resistance to immersion in sulfuric acid according to a method provided by Lifelast, Inc. The samples were reported to have cured a minimum of seven (7) days prior to receipt at KTA. The three (3) sections of each material were weighed, then immersed in a 50%

(by weight) solution of sulfuric acid and deionized water at room temperature ( $24^{\circ}\text{C} \pm 1^{\circ}\text{C}$ ). The samples were removed following eight (8) hours, twenty-four (24) hours, seventy-two (72) hours, seven (7) days, and thirty (30) days in order to determine the weight change. Prior to each weight measurement, the samples were rinsed with deionized water and allowed to dry at room temperature for a period of one hour. The specified weight change was a maximum of 1%. The results of the individual measurements are contained in Table 1, and the resultant percent change and averages are contained in Table 2. Because the percent weight changes following eight (8) hours, twenty-four (24) hours, and seventy-two (72) hours were negligible, they were not included in the calculations.

**Table 1 - Results of Individual Weight Measurements**

Sample	Replicate ID	Initial Weight (g)	Weight Following 8 Hours Exposure	Weight Following 24 Hours Exposure	Weight Following 72 Hours Exposure	Weight Following 7 Days Exposure	Weight Following 30 Days Exposure
DuraShield 210	A	20.861	20.861	20.867	20.868	20.892	21.188
	B	20.644	20.644	20.647	20.651	20.671	20.880
	C	21.586	21.586	21.591	21.595	21.617	21.819
DuraShield 310	A	27.371	27.371	27.375	27.376	27.384	27.482
	B	27.832	27.832	27.837	27.837	27.845	27.953
	C	26.075	26.077	26.082	26.082	26.094	26.215

**Table 2 - Resultant Percent Weight Changes**

Sample	Replicate ID	Weight Change Following 7 Days	Average Change Following 7 Days	Weight Change Following 30 Days	Average Change Following 30 Days
DuraShield 210	A	0.1%	0.1%	2%	1%*
	B	0.1%		1%	
	C	0.1%		1%	
DuraShield 310	A	0.05%	0.06%	0.4%	0.4%*
	B	0.05%		0.4%	
	C	0.07%		0.5%	

\*Value meets the specified 1% maximum weight change.

If you have any questions or comments, please contact me by telephone at 412-788-1300, extension 181, or by email at [cpravlik@kta.com](mailto:cpravlik@kta.com).

Very truly yours,

**KTA-Tator, Inc.**



Carly M. Pravlik  
*Physical Laboratory Supervisor*



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