



# LyTec® The Original EL Wire vs. Imitations

LyTec® is protected by US Patent 5,485,355, China Patent ZL-97121158.2

**Elam – EL Technologies Ltd** invented the original innovative EL Wire and introduced it into the market in 1998. Elam is the leading manufacturer of the EL Wire in the market with many different types and colors of **Lytec®**.

Despite the patented technology, some imitations have arisen. A new challenge for the EL Wire users came into being. The consumer has to learn how to recognize the different quality between the LyTec® and the Imitations.

As part of the effort to help our customers and partners to distinguish between the LyTec® and the Imitations we are presenting some easy to recognize characteristics.

## **WARNING:**

### **1. Heavy metals - Health risk to consumers!!!**

Dealing with Imitation EL-Wires, you have to be aware of a basic danger related to the raw materials.

All the Imitation EL Wires are PVC based, as are most of the LyTec®.

Not like the PVC materials Elam is using in it's LyTec®, the Imitation's PVC is a low cost and low quality materials and are **carrying traces of Cadmium (Cd)**.

According to a firm analytical report, from an approved lab (an outside official technical lab), the quantity of Cadmium in the Imitation EL Wire is **570 mg/kg**.

**Cadmium** is defined as "Heavy Metal" which is dangerous to anyone that is exposed to it.

The relevant standard for the content of Heavy Metals (for example in toys) - is EN-71 (part 3). This standard is also accepted in the US.

**The Maximum allowed quantity** of **Cadmium** is **100mg/kg** (or in other terms: 100 PPM).

In some imitation EL Wire tested, the content of Cd is **5.7 times more than the MAXIMUM** allowed quantity!!!



The Cadmium risks: Cadmium poisons the liver and the kidney.

At Greenpeace web site

[http://www.greenpeaceusa.org/media/factsheets/toxic\\_fact\\_englishtext.htm](http://www.greenpeaceusa.org/media/factsheets/toxic_fact_englishtext.htm) ,

you can read the following:

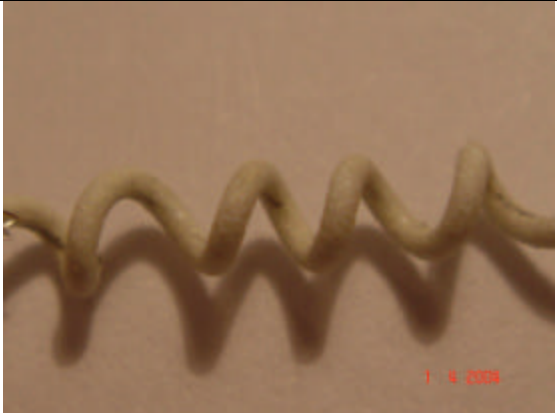

"Stabilizers are added to all PVC products because without these additives, the chlorine would degrade the plastic. Two common stabilizers are particularly alarming: lead and **cadmium**. Lead poisoning is widely recognized to be one of the most serious preventable public health hazards. Even extremely low doses cause permanent damage to the human brain, leading to decreased intelligence. It is even possible to predict how much a child's IQ will drop for every increase of lead in the blood. **Cadmium is even more toxic than lead-it causes kidney damage and is linked to cancer.** "

All of Elam's products – LyTec® - **do not contain ANY Cadmium at all.**

**Be aware that using or selling EL Wire Imitation with High Quantity of Cadmium is a Legal and Health risk.**

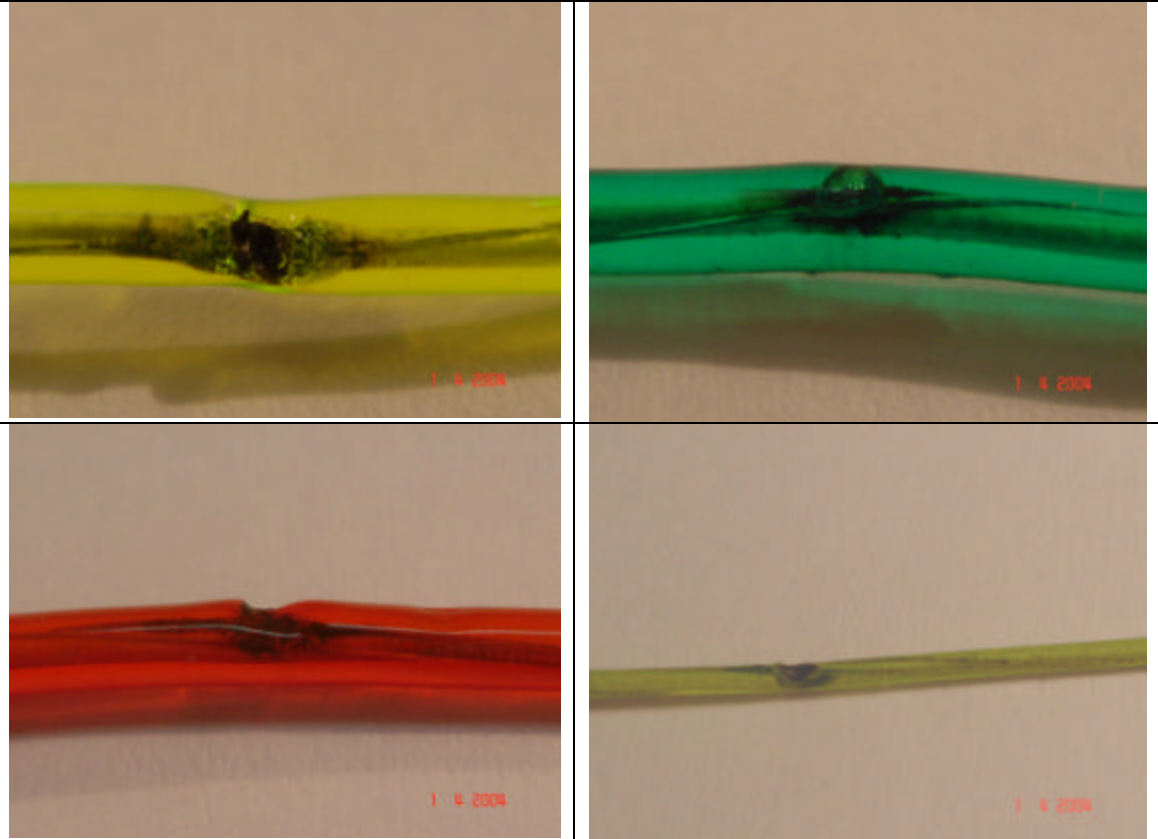
**2. EL Wire Quality - Points of comparison:**

In order to define the performances of an EL Wire, you need to look into characteristics in addition to the brightness and the lifetime specifications. Without becoming too technical, we can demonstrate the differences in pictures.

<b>The Core Structure</b>	
<p>In these pictures, you can see the technologies supporting the different EL-wires. In the left picture, you can see a perfect coating structure of the internal core of the LyTec® EL-wire, after it was put around a rod. This demonstrates its resistance to bending.</p> <p>In the right picture, you can see how an Imitation EL Wire will look after a basic bending test done on the internal core. You can easily notice the brakes and cracks, sure conditions for faulty working after bending and twisting.</p>	
<b>LyTec® High Quality EL Wire</b>	<b>Other Imitations</b>
	
<b>The Imitation will not last</b>	

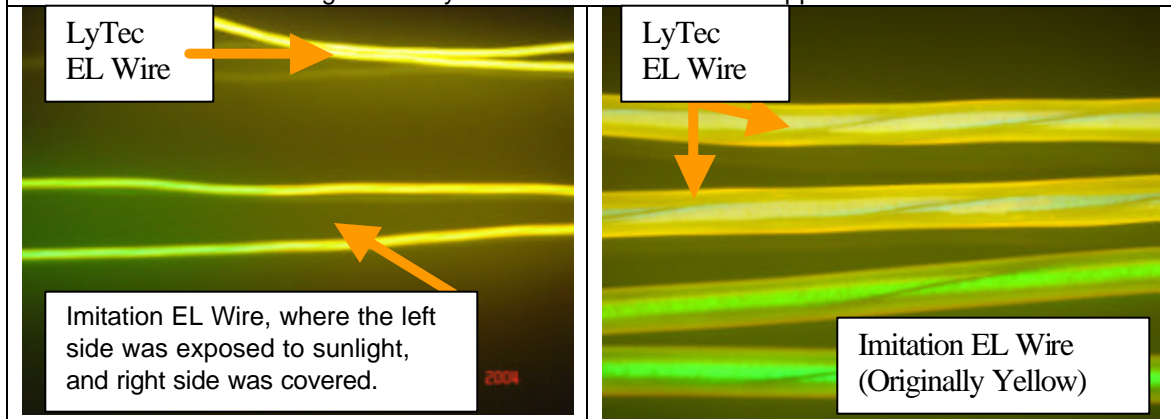
### Typical mechanical faults

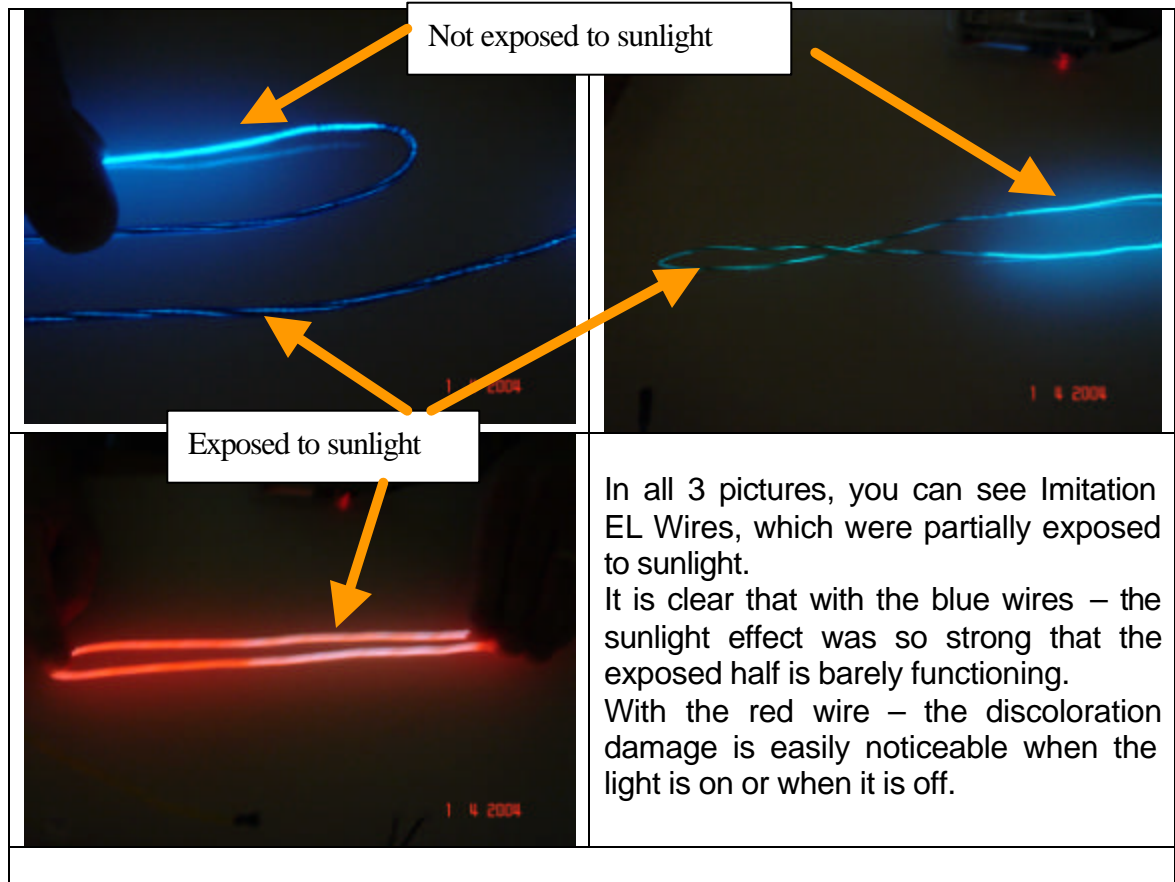
In the 4 pictures bellow, you can see the results of the faults explained and shown in the above pictures. All are directly related to the defective inner construction of the core wire, and its behavior with regular bending.



### Typical sunlight effects

In the pictures below, you can see the results of the exposure to sunlight on the LyTec and the Imitation. In all pictures, you can see what had accrued after having been exposed to a typical 1 month of East Coast sunlight. Exactly the same conditions were applied to both.





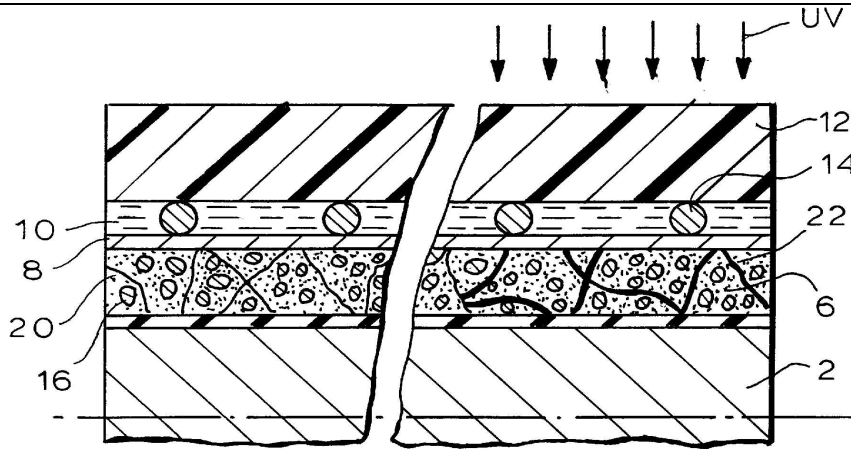
### 3. An Additional parameters for comparison:

In addition to the above-demonstrated points, there are some additional considerations a user should evaluate:

1. **Humidity Resistance: Black spots** – In many cases, where an Imitation EL Wire is offered, it may be very sensitive to the humid conditions. Humidity is an enemy to the EL-wires. It creates black spots, non-illuminating spots and areas noticeable both when the power is on or off.  
**LyTec** has great humidity performances, which no Imitation can compete with.
2. **Brightness** – how bright will the LyTec® EL-wire will look compared to the Imitation? Such comparison should be done either on the same operating conditions (AC Volts, AC Frequency) or under the maximum operating conditions.
3. **Lifetime** – A critical characteristic to the consumer is the expected lifetime of the EL Wire. Lifetime is measured by hours of operation, at specific operating conditions. The manufacturer has to specify to what level of brightness he calculates the Lifetime. Does the brightness reduction go to 50% of the initial brightness or is it 25% of the initial brightness?

#### 4. Patented technology: LyTec® The original EL wire:

Our LyTec® technology is patented in many countries. Among them we can list the US Patent; presented below and the China Patent No. ZL-97121158.2.



US005869930A

**United States Patent** [19]  
**Baumberg et al.**

[11] **Patent Number:** **5,869,930**

[45] **Date of Patent:** **Feb. 9, 1999**

[54] **ELECTROLUMINESCENT LIGHT SOURCE WITH A MIXTURE LAYER FILLED WITH A TRANSPARENT FILLER SUBSTANCE**

5,469,020 11/1995 Herrick ..... 313/511  
5,485,355 1/1996 Voskoboïnik et al. .... 313/511

**FOREIGN PATENT DOCUMENTS**

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3742412 12/1987 Germany .  
4342264 12/1993 Germany .  
9715939 5/1997 WIPO .  
9724015 7/1997 WIPO .

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[21] Appl. No.: **736,021**

[22] Filed: **Oct. 22, 1996**

[51] **Int. Cl.**<sup>6</sup> ..... **H01J 1/62**

[52] **U.S. Cl.** ..... **313/506; 313/511; 313/509; 428/917**

[58] **Field of Search** ..... 313/498, 506, 313/509, 511, 512, 502, 505; 428/917, 690; 315/169.3

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

3,819,973 6/1974 Hosford ..... 313/498

[57]

**ABSTRACT**

There is provided a light source consisting of at least one flexible, cable-like electroluminescent filament, each filament having a central electrode (2) surrounded by an electrically insulating dielectric layer (4), and a layer (6) consisting of a mixture of an electroluminescent powder and a binder. The mixture is applied to the dielectric layer (4). The light source also includes a transparent electrode (8) surrounding the mixture layer (6). Pores formed in the mixture layer (6) are filled in by a transparent filler substance. A method for preparing the light source is also provided.

**17 Claims, 6 Drawing Sheets**