



April 10, 2009

RE: THE TRUE FACTS ABOUT PHOTOLUMINESCENT PRODUCTS

To Whom It May Concern:

This letter is meant to rebut any statements or inaccurate reports that have been put out by competitors or skeptics about photoluminescent products. We would like you to know the truth about this safety technology and the reasons that standard and code organizations are making photoluminescent products mandatory in up coming legislation if they haven't already done so.

There have been various types of photoluminescent products offered in the marketplace, as the Technology has advanced. We use STRONTIUM ALUMINATE, mined from the ground to manufacture our products. In its original state, it has minimal luminance, and no longevity, making it quite useless as an Energy Conservation, or Safety Product.

In order to improve its Quality, originally the catalysts that were added were Zinc, and Phosphorous, which are TOXIC. We have developed a Proprietary Laboratory process, which is 100% NON-TOXIC, yet performs at a higher level than any other product available.

As a result of this, and after many years, our Products have now achieved every Building, Fire, and Safety Code there is in North America. Our Products are completely LEED qualified and environmentally friendly as well, which again cannot be said for any competitive option.

Photoluminescent material is now fully accepted as an alternative to "traditional options", in 2 separate Categories:

1. ENERGY CONSERVATION - EXIT SIGNS
2. SAFETY WAY GUIDANCE STRIPS AND SAFETY SIGNAGE

BACKGROUND

Photoluminescent Material (PLM) has been used throughout Europe and Asia for Safety and Emergency Egress since the mid 1980's. In 1988 The International Maritime Organization (IMO) made PLM Mandatory for all Passenger Ships, for SAFETY WAY GUIDANCE SYSTEMS in all Stairwells and Hallways, as well as Safety Signage. (I.M.O. RESOLUTION A-752 [18])

WHY? Because only PLM material is GUARANTEED to always perform in any Emergency, and it has been proven to SAVE LIVES.

Similarly, The International Standards Organization (I.S.O. 15370, 16069) implemented the same standards for Safety Way Guidance Systems in Buildings.

In 2001, in the aftermath of The World Trade Centre Tragedy, it was noted by survivors that in the 2nd Tower, some of the stairwells were illuminated by Strips of a "GLOWING" material. These strips provided enough light through the smoke and darkness to assist these people to get out of the Building quicker.

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These were PLM Safety Way Guidance Strips, and although all other power was cut off, including Back up Generators, and Exit Signs, PLM worked!

As a result, New York City passed a number of new Laws for PUBLIC SAFETY as BY LAW 26. One of these new Mandatory Regulations was to require PLM in all stairways throughout all Buildings 3 storeys or higher (75 FEET). The LAW requires PLM strips on the Walls, Handrails, and Steps. It also requires Low Level Safety Signs throughout.

WHY? TO SAVE LIVES.

Since this initial Legislation, similar Laws are being passed throughout North America as noted with the changes to the 2010 NBC. The Safety Way Guidance System, using PLM has received support from every Safety Organization, ranging from the N.F.P.A., E.P.A., PUBLIC WORKS CANADA, O.H.S.A., U.L., U.L.C., C.C.M.C., I.C.C., and many more.

The current ASTM Standard for Safety Way Guidance Systems requires 2.8 mcd/m^2 after 60 minutes. Our PLM used for Safety Way Guidance Systems achieves 22.7 mcd/m^2 which is a far superior level than any other Lighting option. In addition, only PLM is GUARANTEED to always perform in any Emergency.

SAFETY ISSUES

It has been mentioned in a recent report that the luminance levels of photoluminescent pigments didn't meet the grade accepted by and electrical CSA standard. Since we are not an electrical product, we fall under another set of standards and codes that are recognized throughout North America which include the NBC, CCMC, NFPA, ICC, UL and ULC to mention a few.

We used a market leader in evaluating our photoluminescent pigment for luminance levels and longevity. Intertek Group ETL is one of the largest testing facilities in the world with clients ranging from McDonald's Corporation, Samsung, Shell, The Home Depot, Toshiba and Wal-Mart to name a few.

Intertek Group ETL's test results actually showcase a larger mcd/m^2 luminance level for a photoluminescent pigment as compared to LED's which competitor's state run continuously at 8.5 mcd/m^2 . It was reported that tests indicated that photoluminescent pigment degrade over time and that tests show that after 30 minutes in no-light conditions, the average luminance of photoluminescent falls under 0.15 mcd/m^2 and after 2 hours drop to less than .5% of the CSA C22.2 No. 141 requirements.

Our actual test results which were performed by Intertek Group ETL showed our numbers to be quite different. The tests were performed as followed:

The luminance measurements were made on the photoluminescent test samples with the Intertek Group ETL License Plate Test Apparatus. The centre of each test sample was measured at normal viewing angle. The aperture of the Optronic based luminance meter was adjusted in order to view the maximum area on the test sample. The Intertek Group ETL License Plate Test Apparatus consists of an Optronic based luminance meter and a horizontal and vertical movement system. The luminance calibration of the luminance meter is traceable to the National Institute of Standards and Technology through the calibration of the Optronic Luminance Standard.



The test samples were conditioned for at least 16 hours at zero footcandle illumination. The photoluminescent material samples were then conditioned for 120 minutes (2 hours) by 2 footcandle illumination from a 4100K fluorescent light source. Luminance measurements were made on each test sample at two minutes intervals after conditioning for a period of one hour and at ninety minutes after conditioning. In addition, luminance measurements were taken 120 minutes after conditioning.

The results were as follows: After 10 minutes of non-light conditions our samples showed an average of 84.9 mcd/m² of luminance. After a 30 minute period our samples had a luminance level averaging 26.2 mcd/m². To even go one step further, after testing our samples for a period of 2 hours, the luminance level averaged 13.7 mcd/m² which is almost twice the luminance level of the industry suggested LED's at 8.5 mcd/m².

What these numbers actually tell us is that photoluminescent pigments that have been properly manufactured can actually out perform the emergency lighting norm of LED's or Compact Fluorescents. So, from a true safety perspective, our luminance levels have been achieved for both electrical and non electrical standards and codes within North America.

The question that should really be asked pertaining to safety issues is which locations have internally powered emergency lighting and proper backup support working which include battery or generators consisting of an operating span of 90 minutes. This would leave us to believe that our product is still working long after these other norm products have failed. This is proven by receiving the UL and ULC certification which states that our product is required to have luminance levels above the average for a period of 8 hours in complete darkness.

Fire officials, building inspectors, architects, engineers, maintenance managers, property owners and government officials have proven that our signs when properly installed are guaranteed to work in any emergency situation. Can internally powered exit signs say the same?

ENERGY CONSUMPTION

It is correct by stating that the NBC requires that all exit signs be illuminated continuously while the building is occupied. By NFPA and UL/ULC standards, this information must be visible on our signs. Unfortunately the following statement that is commonly mentioned about our signage is that illumination be powered by a dedicated circuit and be connected to emergency backup power is not accurate. The BMEC document that we have received under Section 6 "Authorization" Subsection "Specific Terms & Conditions", point number 3 states... "The Exit Signs are not required to be provided with an emergency power supply as described in Sentence 3.2.7.4.(1). of the OBC." It is also stated in our CCMC document that..."The exit sign must be illuminated by an exterior source of energy with a minimum illumination on the sign face of 54 LUX. Normal illumination level in a building during occupancy is usually above 60 LUX as stated in code."

The question that might be asked in this case due to energy consumption is that while a building is not occupied, the internally lit exit signs continually use electrical power and contribute to the carbon footprint. Even during non building occupancy, our signage is still functioning until building occupancy returns and a light source required by code for the occupants is activated thus charging our signage for the next non occupied state or emergency situation.



TOTAL COST

To ensure that the appropriate lighting exists for the installation of our photoluminescent exit signs, light meters are used to collect a series of light readings which are performed using an NFPA Standard analysis' procedure and the reading is collected from faces of each sign or location where the sign will be installed. For Double Facings, both sides are read for lighting accuracy.

Since our signage is non-electrical, the only maintenance really required is that of removing the build-up of dust collected on the sign face and housings. To do this, you are not required to go up on a ladder as this can easily be performed by cleaning staff and a dust extension. With the internally illuminated signs, you have to look at bulb replacement for luminance depreciation and burnouts. You have to take into account that if the exit sign is greater than 8 feet, by law you have to be ladder certified and have a spotter which now require 2 salaries to be paid. The largest complaint from maintenance crews is the inconsistency of internally lit emergency signage with different screws and assemblies making it a guessing game each time maintenance is required prolonging the fix.

It is a mistake stating that the light source has to run 24/7. It has to be during building occupancy. Example, an office building that has employees end work at 6pm leaving floors unattended are considered non-occupied and thus do not require illumination on the sign faces. A residential building that has occupants living in it have to have lighting, by law, on 24/7 anyways thus our signage will comply with the code.

The real issue about energy conservation is removing unnecessary electrical usage anyway we can to reduce the carbon footprint and photoluminescent signage allows for that.

Let us look at an example of **100 LED** exit signs and the energy associated with them as sourced by the Cycle Cost Estimator from Energy Star.

- Energy Cost would be approximately \$586.57 per year
- Energy Consumption in kWh is 7008 per year
- Over the course of 25 years the energy saved would be 175,200 kWh
- Air pollution reduction would be 268,932 lbs of CO₂
- Air pollution reduction equivalence of 23.45 cars removed from the road/year
- Air pollution reduction equivalence of 33.34 acres of forest saved

Looking at price, our signs have minimal maintenance; have no electrical wiring thus not consuming any internal energy. Our signs do not contribute to air pollution as our signs are environmentally friendly. Most important, our signs are guaranteed to work and the luminance levels will remain above the requirements found in the mandated standards and codes within North America for a 25 year warranty period.

USE AND TESTING

Competitors and skeptics have reported that photoluminescent products are constricted to minimal uses and locations. We have had a Material Evaluation Analysis performed on our products which originated in New York for By-Law 26, and now the MEA testing has become the standard for all quality



photoluminescent products everywhere and will be adopted in Canada as well with the onset of the 2010 NBC.

Understanding the MEA testing procedure, we utilized the testing laboratories of Bodycote Materials Testing, California Institute of Electronics & Material Science, DL Labs Inc and Intertek Group ETL. The prescribed tests included; Brightness Rating, Washability, Toxicity Bombardier, Radioactivity, Flame Spread and UV Degradation. All products tested met or exceeded the required standards set forth by the MEA testing and thus we have the approved MEA test results indicating so.

Our signage can be used in a vast amount of locations. We agree that there are some situations where our signage can not be utilized due to luminance levels. In most cases though, an easy solution of moving the sign to a more appropriate location, or the addition of newer light source rectify the problems.

CONCLUSION

Based on the findings found in reports and articles written outlining the weaknesses of photoluminescent products, we have found that our product not only passes all standards required by law but have also proven that the findings are usually inaccurate from the standpoint of individuals misrepresenting the true facts about photoluminescent products. We know our photoluminescent product line is going to take the industry by storm.

If you require any of the above mentioned documentation or would like to discuss any other points regarding photoluminescent products in greater detail, please feel free to contact us directly at 888-268-0520. We would like ensure that you have the correct facts before making any decision regarding emergency lighting and safety way guidance systems.

Thank you!