

GEORGIA INSTITUTE OF TECHNOLOGY

ENGINEERING EXPERIMENT STATION

ATLANTA, GEORGIA 30332

July 29, 1965

FAT
KAS.
199-282-A

Mr. Warren A. Tharpe, Manager
Quality Control Department
Lithonia Lighting Incorporated
Box A
Conyers, Georgia 30207



Re: Project A-232-281

Dear Mr. Tharpe:

This letter will confirm our discussions of July 27, 1965 concerning the corrosion on the light fixture that you sent to us for analysis.

The electron probe microanalyzer was used to look at the sample by two somewhat different methods. Both methods were employed on a portion of the sample as received and then on the same piece of sample after cleaning by washing with detergent and rinsing with distilled water.

ATL

The first method was to pick a corroded area and run an x-ray spectrum of this spot. Photostatic copies of these scans are enclosed. As can be seen from these enclosures, the as-received sample shows: titanium, iron, chlorine, calcium, and silicon. On the other photostats, titanium, lead, and iron show significant peaks, with some very small calcium peaks.

A second method was employed, using the beams scanner attachment for the microprobe. Here, the x-ray goniometer and counting electronics are set up for a particular characteristic x-ray for an element such as chlorine or calcium. Except for some natural background, other radiation is screened out. When the electron beam strikes an area that contains the selected element, a dot of light appears on the cathode ray tube of the beams scanner. Pictures of this type of display are enclosed. Also, another presentation on the cathode ray tube is a sample current picture, which gives a picture of the sample surface of the same area as the x-ray print. These are both magnified 400 times.

From our investigation, it seems that both calcium and chlorine were deposited on the surface of the lighting fixture. Chlorine is well known to be a very active ion in promoting the rusting of iron and steel in the presence of sufficient moisture.

Jay
KAS
8-12-65

Mr. Warren A. Tharpe

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July 29, 1965

If we can be of further assistance on this problem, please let us know.

Yours truly,

James W. Johnson
Research Physicist

JWJ:brj

Enclosures

bcc: Security
Dr. E. J. Scheibner
Mr. W. R. Tooke

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