

National Electrical Manufacturers  
Association (NEMA)  
and SPFA  
Recessed Lighting Research



# NEMA

## Lighting Systems Division

### Luminaire Technical Committee

1. Set out to write a White Paper or SOP to install spray foam around the recessed luminaires
2. Realized they did not have data to complete the task
3. Sought out cooperation from SPFA to conduct testing



# PURPOSE

Conduct research regarding the heat  
buildup in recessed luminaires

With insulation in contact with the fixture housing

# Study Plan

Measure the temperature of  
cellulose insulation compared to  
ocSPF and ccSPF  
in contact with  
the luminaire

# Goal

Develop application

Guidelines

For installing SPF in contact with  
recessed luminaires

**Light Fixture** – the physical parts of the light

**Lamp** – the bulb

**Luminaire** – the combination of fixture and lamp

This is to help anyone reading a report from NEMA or the lighting industry



6 luminaires      3 with ocSPF    +    3 with ccSPF

Light source	Wattage	Foam Density
Par 38 Incandescent	100	Med ccSPF
LED	13	Low ocSPF
BR40 Incandescent	65	Low ocSPF
Compact Fluorescent	26	Med ccSPF
Compact Fluorescent	26	Low ocSPF
LED	20	Med ccSPF

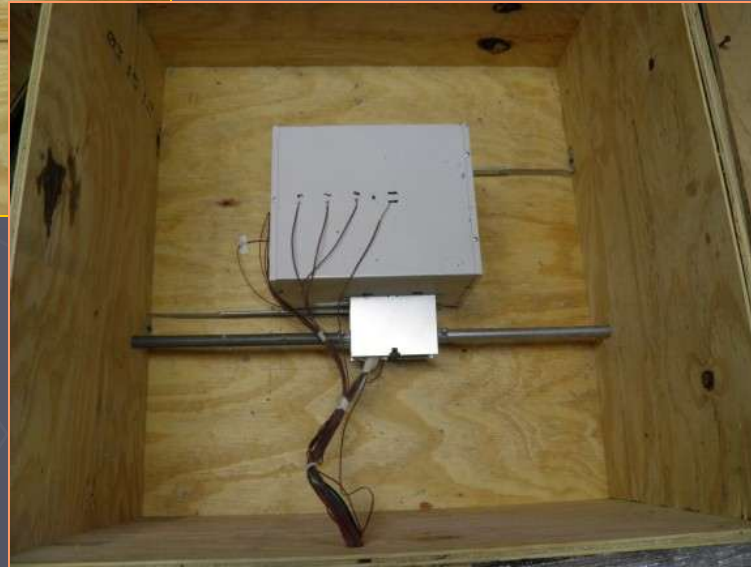


Luminaire  
mounted in a  
test box

~2 feet square  
15 1/2" deep.



Luminaires were installed to the bottom of the box to simulate an attic floor



Thermocouple leads



Some adjustments  
were made before SPF  
application

ocSPF



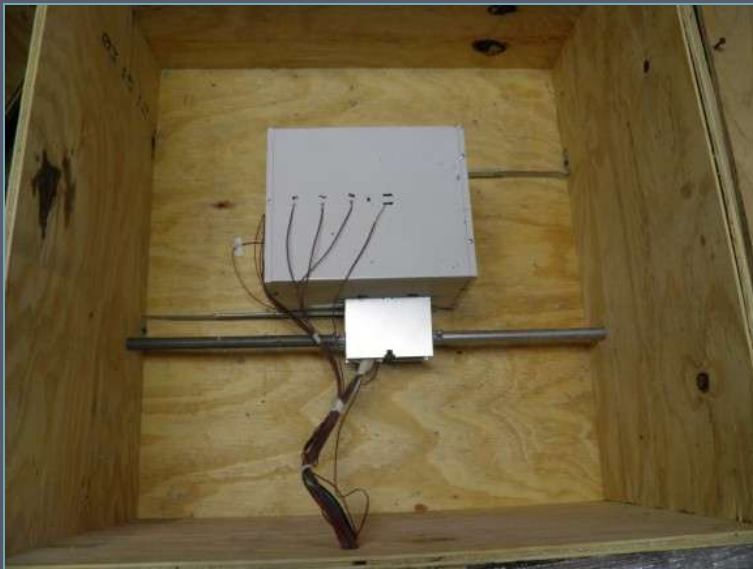
Cover sides  
and  
top to R 30

ccSPF





# Incandescent 100 watt

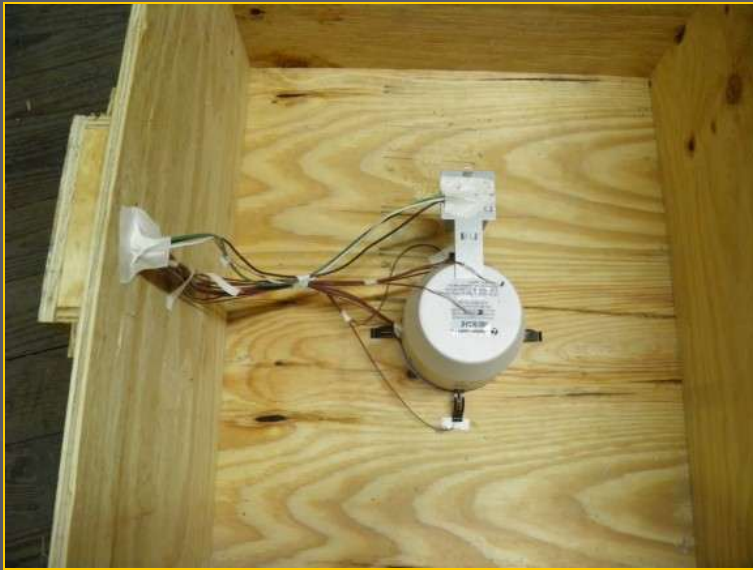


ccSPF



LED 13 watts

ocSPF



Incandescent 65 watt



ocSPF







Compact  
Fluorescent  
26 watt

ccSPF



# Compact Fluorescent 26 watt



ocSPF





LED 20 watt



ccSPF

Test results indicated that luminaires covered with ocSPF had temperatures similar to those obtained when tested with blown-in cellulosic insulation

$\sim 90^{\circ}\text{C} = \sim 190^{\circ}\text{F}$

Luminaires with ccSPF  
tested with slightly higher  
temperatures than with blown-in  
cellulosic insulation

+ 3 to 5°C



## CURRENT DESIGNS

Current luminaires are designed to continuously operate with external surface temperatures at or below 90°C.

While 90°C service temperatures will not ignite foam, these temperatures are above the 82°C (180°F) prolonged maximum service temperatures of SPF.

# CURRENT DESIGNS

Two other concerns with current luminaire designs:

(1) Need full access to junction boxes; SPF coverage can prevent access in some designs

(2) Luminaires not evaluated for intrusion of foam; vent holes and other penetrations in current designs allow foam inside fixture

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## Conclusions

1. NEMA agrees with current SPFA Policy to avoid spraying foam directly on luminaires.

Currently individual NEMA luminaire manufacturers have recommendations regarding compatibility & installation practices when their luminaires may be installed with spray foam.

2. Distance of separation between SPF and luminaire is not specified

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## Conclusions

3. NEMA will be discussing possible future testing or development of luminaires designed and/or designated for use with direct contact with SPF
  - a. lower operating temps (below 80C)
  - b. no vent holes to prevent foam intrusion
  - c. easy access of junction boxes from below

# QUESTIONS ?

**SPFA**  
CONVENTION & EXPO

Jacksonville,  
Florida  
February 12-15, 2013





