A red-orange glow at the end of a fluorescent lamp in a common corridor

A field observation compared with four Japanese fire investigations

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Abstract

From outside the building, I saw a light flickering through an opening in the common corridor. Near the fitting I noticed an unusual odor. A photograph taken before removal shows a red-orange glow at one end of the tube. I compared the photograph and my account with four Japanese fire reports that included examinations of the damaged fittings. In Osaka, a flame was seen at the end of a fixture, yet the tube from that side lit normally when tested in the other circuit. The photograph from the corridor locates the glow. The source of the odor and the condition of the components after removal remain unknown.

Keywords fluorescent lamp, lampholder, electrical fire, LED retrofit, fire reporting

1. The corridor observation

The common corridor is inside the building, with one section open to the outside. I was outside the building when I saw the ceiling light flicker through that opening. The flicker first drew my attention. I noticed an unusual odor near the fixture. I took the photograph in Figure 1 before removing the tube.



Figure 1

The near end of the tube and the ceiling beside it appear red-orange. A section farther along the same tube appears white. The flicker was observed in person.

No model number, operating history, temperature reading or inspection of internal components is available for this fixture. The photograph alone cannot establish whether material burned.

2. Sources and comparison

I selected four investigation reports that describe both the discovery and the examination of a damaged fixture [1–4]. For each, I recorded the witness account, physical findings and investigators’ interpretation separately. A product-damage record involving a red lamp base [5] and a fire after an LED retrofit [6] provide two further comparisons. Neither is counted among the four fluorescent-lighting fires.

3. Four investigations of fluorescent-lighting fires

From floor level, the tube end and its holder are hard to distinguish. The electrode is inside the glass. The pins on the end cap fit into the holder. A starter-operated fitting may also have a glow starter close by. Table 1 distinguishes these parts wherever the investigators could identify them.

Table 1. Discovery and investigative findings in four Japanese fire reports

Site and source	First observation	Examination and interpretation
Kyoto Electronics store [1]	A cashier noticed a smell like burning plastic. Smoke and sparks appeared intermittently at one end of one tube in a four-lamp fitting.	The cap and lampholder had melted. Investigators attributed ignition to a conductive path across deposits on the glass stem. The ballast reduced power but continued to supply current to that path.
Tokyo Delivery area Dec 2012 [2]	Staff checked an unlit ceiling lamp in an underground delivery area and found the lamp and its surroundings already damaged by fire.	One electrode filament was consumed; the other remained intact. The fixture lacked protection against cap overheating at lamp end of life. A test with equivalent equipment produced several times the normal filament current.
Sendai Retail premises June 2015 [3]	A replacement tube would not light. When the tube was moved, it lit faintly; smoke and a bluish-white light appeared at one end.	The damaged lampholder was marked 75 W; the holder at the opposite end was marked 120 W. The fire department traced the fault to mismatched parts fitted during manufacture and the load on the lower-rated holder.
Osaka Office in a house Nov 2010 [4]	An occupant noticed a burning smell as a glow starter fell from the ceiling. Looking up, the occupant saw a flame at the end of the fixture.	The starter socket was charred and melted. The lamp and ballast worked when tested separately. The manufacturer acknowledged a defect in the starter and offered to replace affected starters.

4. What the appearance can establish

In Osaka, the occupant recalled that one tube had been dark for four or five days while the other stayed lit. After the fire, investigators connected the dark tube to the other circuit. It lit normally [4]. That detail changes how a maintenance entry such as “lamp out” should be read: it records what the occupant saw, but leaves the tube, its holder and its starting circuit open to examination. In Sendai, the 120 W marking on the undamaged holder gave investigators a comparison they would have lost if only the burned end had been kept [3].

On a stair landing in Tottori in 2006, a compact fluorescent lamp also looked red at its base. In that case the surrounding plastic had melted. Japan’s National Institute of Technology and Evaluation (NITE) attributed the overheating to air entering through a faulty glass seal and recorded the incident as product damage [5]. No comparable examination was made of the straight tube in the corridor.

5. What changes when a corridor is converted to LED?

White LEDs emit little infrared radiation. A surface lit by an LED can therefore feel cool while the emitter and power supply are warm [7]. A different heating mechanism was involved in a 2019 fire in Hyogo. An LED replacement lamp had been fitted to an incompatible electronic-ballast fixture. NITE attributed the fire to excess current through the lamp’s circuit board [6].

Japan is phasing out manufacture, import and export of general-lighting fluorescent lamps by the end of 2027. Existing stock may still be sold and installed lamps may remain in use [8]. An entry reading “LED fitted” could mean a complete new fixture or a replacement lamp in the old fitting. Record which work was done and when, and keep the specification with the maintenance record [6, 10].

6. From the first report to the investigation

Once something catches my eye, it is easy to keep looking in that direction. On routine rounds, I recommend pausing occasionally in a safe spot to look up, glance diagonally to the left and right, and check the floor.

If smoke, sparks, flame or a worsening burning odor suggests fire, alert people nearby and call 119 from a safe place. Give the address, building, floor and position in the corridor, then say what you saw or smelled and whether it is changing [9]. Do not delay the call to reach the fixture, remove the lamp or switch it back on. An account as simple as “smoke is coming from the end nearest the stairwell” gives the crew a place to look.

Our staff in every role report abnormalities to the company on weekdays and to the person responsible for the property on weekends and public holidays. A suspected fire takes priority over that internal call. For the investigator, retain the original photograph and maintenance records, note any removal or switching already carried out and identify who observed each change.

7. Conclusion

The first sign was the flicker I saw from outside the building through the corridor opening. The photograph shows the position of the red-orange glow at one instant. I could not trace the odor to a component or confirm that anything had burned. In a future case I would record which end faced the nearest fixed landmark, when the light was last seen working, and who switched it off. Keeping the fixture with both lampholders would allow an investigator to compare the two ends, as the Sendai team did [3].

References

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