



QUICK RESPONSE

*Saving life and property through effective licensing, plan review,
and inspection of fire protection systems.*

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Heat Collector

The concept of placing a small “**heat collector**” above a sprinkler to assist in activation is not appropriate nor has it been contemplated in the NFPA standards. This is not new to the standards although the practice of using such devices at times has been misused. New language in the **2010 edition of NFPA 13 (Section 8.5.4.1.4)** reinforces the position that the use of **heat collectors** does not comply with the requirements in **NFPA 13**.

Heat collectors, which usually take the form of round or square metal baffles, or “pie plates,” are occasionally prescribed where sprinklers are suspended too far below a ceiling or where there are other concerns about timely response. Ironically, they can do more harm than good. While these devices may seem like a logical solution to an immediate problem, there is no engineering or scientific data that supports their use or performance. In fact, there is evidence that objects like this above a sprinkler will delay its activation. A ceiling jet moving above this deflector could not reach the sprinkler.

Work done at Factory Mutual showed that convective heat typically supplies more than 80 percent of the heat sprinklers need for activation. However, convective heat requires a flow of air past the sprinkler, and testing has shown that **heat collectors** with edges, such as inverted boxes, can actually delay sprinkler response, presumably because they create dead air space. Even flat **heat collectors** are only effective where the edge of the heat collector picks up the fire plume and acts like a small ceiling. To work effectively, the combined areas of **heat collectors** need to make up a large percentage of the floor area.

Sprinklers are to be located within 12" of the roof deck (with a few exceptions). The rules describing the maximum distance permitted for sprinklers below ceilings must be followed. One of the objectives of the standard is to cool the ceiling near the structural members with spray from a nearby sprinkler, which is not accomplished by a sprinkler far down from the ceiling and a **heat collector** will not help this situation.



Exhibit 1: “Heat collector”
improperly utilized in lieu of proper
sprinkler placement.

Water shields used on in-rack sprinklers should not be confused with **heat collectors**. They are sized to prevent water discharge from higher sprinklers from wetting and cooling the lower sprinkler operating mechanisms, thus inhibiting proper activation.