

# Insight: Idle Pallet Storage

## Recognizing the Risk

An idle pallet stack fire is one of the greatest challenges to successful automatic sprinkler protection suppression. This challenge comes not just from the combustibility of the pallets but their standard design. When stacked, very dry pocket areas can be created for a fire to quickly grow with horizontal paths that are obstructed from ceiling sprinkler discharge above. Additionally, due to this fast growth and intensity, fire upward heat velocity can quickly affect effective sprinkler system water discharge by limiting water penetration. Age is a factor to consider when thinking about the degree of risk from the pallets at your facility. And, as wood pallets age and experience repeated use/turns, the wood can become drier and the edges become frayed – becoming exponentially easier to ignite.



Figure 1 Storage of idle pallets inside of a building

Source: iStock

water making absorption from prewetting impossible. And, the higher the pallet stacks, typically the more challenging a fire will be to control and the more water will be required.

Good risk management around these areas is critical and includes consistent housekeeping, enforced no smoking policies, and no allowance for any hot work. The safest location for pallet storage is outside and away from building walls and openings.

A common issue is the “temporary storage” of pallets in general production areas under sprinkler systems not designed for this type of fire. In general, storage of combustible idle pallets inside buildings should be as limited as much as possible. And in every case, the specific fire sprinkler design must be confirmed to match the pallet stack arrangements.

The following idle pallet locations should be considered to minimize the risk as noted below in order of preference:



Figure 2 Yard storage of idle pallets

Source: iStock

## Controlling the Hazard

Idle pallet fires inside buildings can quickly result in a total building loss unless automatic sprinklers are designed per NFPA 13, properly installed, tested, and fully operational at the time of ignition.

With most pallet fires and associated sprinkler designs, the only effective way of control is prewetting the wood ahead of fire growth with a large quantity of water. Where plastic pallets are used, control becomes even more challenging as prewetting is not possible as plastic repels

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- 1) Outside in stable piles with adequate space separation away from critical/primary buildings or structures, and other combustible yard storage. Guidelines on stack heights, aisle width and clearance from buildings can be found in NFPA 1\*.
- 2) Inside within detached, low-valued buildings or canopies that are not attached to critical/primary buildings or structures. If pallets are stored indoors, automatic sprinkler systems should be in place designed per NFPA 13\*. Storage should never be allowed in non-sprinklered interior areas or those without proper sprinkler design. Given the intensity of pallet fires, in most cases under-designed sprinkler systems have little affect in fire control.
- 3) Inside of critical/primary buildings in space-separated areas under sprinkler systems properly designed per NFPA 13 remembering design for wood pallets will be different than for plastic pallets and switching from wood to plastic pallets could severely impact the effectiveness of any sprinkler system warranting a complete reanalysis.
- 4) In general, to minimize risk the following considerations are also recommended:
  - Protect loading docks used to store pallets with properly designed sprinkler systems per NFPA 13. Systems in these area are not typically designed to protection “temporary idle pallets.”
  - Pallets stored in exterior yards could be subject to malicious attack. To prevent intruder access, protect property perimeter boundaries by using or installing perimeter fencing, cameras and night-lighting in all areas.
  - Compliance with maximum allowable pallet storage heights, piles sizes, and separation distances based on fire sprinkler designs should be checked regularly.

## References & Resources

NFPA 1: Fire Code

NFPA 13: Standard for the Installation of Sprinkler Systems

\*While NFPA documents are the global standard used by AIG, international equivalents may be acceptable.

[For more information, contact your local AIG Risk Engineer.](#)

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