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Important Insights from the Bradford White Product Department

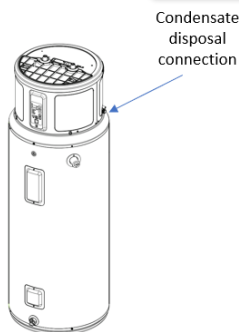
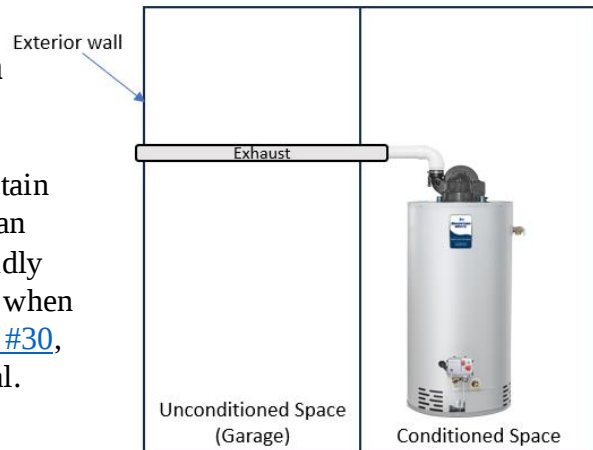
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Understanding Condensation in Water Heaters

In [April of 2020](#), we covered condensate and neutralization as it relates to high-efficiency gas water heaters. The combustion process in gas water heaters creates hot exhaust gases that are routed through the heat exchanger. Today's high efficiency (condensing) heat exchangers are very efficient, rapidly cooling the hot exhaust gases as stored water is heated. When flue gas temperature drops below a certain point, water falls out of suspension in the form of condensation. This process is affected by the heat exchanger design. Today, we are focusing on some other reasons you may come across condensation in non-condensing gas water heater installations as well as hybrid electric heat pump water heater installations.

Can ambient conditions cause condensate in “non-condensing” models?

Condensate can form in non-condensing products if certain ambient conditions align. For example, venting through an unconditioned space. This can cool the exhaust down rapidly causing acidic condensate to form inside the vent pipe, even when the unit is not designed to condense. As covered in [Edition #30](#), acidic condensate must be neutralized for proper disposal.



Condensation with hybrid electric heat pump water heaters

Hybrid electric heat pump water heaters work by moving air and extracting heat from the air to heat the water inside of the tank. During this process, you simultaneously extract moisture from the air. This moisture is turned into condensation, which is non-acidic and does not require the use of a neutralizer for proper disposal. The condensate should however be directed to a suitable drain to prevent damage to the heater or surrounding area.

NOTE: This document provides general information from the Bradford White Product Department. All installations and field situations present unique conditions and requirements so always consult the product manual(s), local codes and any authorities having jurisdiction.


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