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**Compatible/Properly Matched Partial Replacement of a Split System Heat Pump or Air
Conditioner – A2L Refrigerant Considerations**

Code: 2018 NC Mechanical Code
Section: 301.7, 304.1
Code: 2018 NC Residential Code
Section: M1307.1, M1401.1

Date: June 6, 2025

This interpretation applies to a residential or light commercial condenser (or heat pump), air handling unit, or coil replacement where the new unit uses a different classification of refrigerant than the existing unit. The scenario specifically addressed within this interpretation is a partial change-out of a split-system, where a unit which used an A1 refrigerant is being replaced with a unit which uses an A2L refrigerant.

For compatible/properly matched partial replacements of split-systems which use the same refrigerant class, please refer to the following interpretation, “**Compatible/Properly Matched Partial Replacement of a Split System Heat Pump or Air Conditioner**,” republished May 31, 2025, originally published April 28, 2019.

Background information: A1 refrigerants are classified as “lower toxicity and no flame propagation,”ⁱ and are commonly referred to in the field as “non-flammable.” R-22 and R-410A are two commonly utilized A1 refrigerants. A2L refrigerants are classified as “lower toxicity and lower flammability.”ⁱⁱ R-454B and R-32 are two commonly utilized A2L refrigerants.

Frequently Asked Questions

Question: When replacing the outdoor section of a split system AC or heat pump that uses an A1 refrigerant with a unit that uses an A2L refrigerant, can the existing A1 air handler unit or indoor evaporator coil be left in place for use with the new A2L outdoor unit? What about vice-versa?2

Follow-up question #1: Can just the A1 coil in an existing air handling unit be replaced with an A2L coil, while leaving the existing unit’s cabinet and motor in place?2

Follow-up question #2: If the system includes a gas furnace, does that also need to be replaced?3

Follow-up question #3: Can the existing linesets remain in place?3

Follow-up question #4: Beyond the refrigerant considerations, are there any other factors to consider when determining the compatibility of equipment installed as part of a partial replacement?3

ⁱ Refrigerant classifications can be found in ASHRAE 34 or Table 1103.1 of the North Carolina Mechanical Code.

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Question: When replacing the outdoor section of a split system AC or heat pump that uses an A1 refrigerant (such as R-410a) with a unit that uses an A2L refrigerant (such as R-454B), is it allowed by code to leave the existing A1 air handler unit or indoor evaporator coil in place for use with the new A2L outdoor unit? What about vice-versa?

Answer:

The existing A1 air handler or indoor evaporator coil is required to be replaced.

In order for the code to consider a condensing unit (or heat pump) and air handler/coil compatible, Section 301.7 requires that the replacement appliance is listed¹ and labeled, and Section 304.1 additionally requires that the proposed combination meets the manufacturer's installation instructions. UL 1995, which was the previous listing for the majority of heating and cooling appliances utilizing refrigerant, only covered equipment utilizing A1 refrigerants. A2L refrigerants are a higher flammability classification than A1, and there are additional safety requirements that are part of the A2L appliance listing. Modifications to convert equipment which utilized A1 refrigerant to instead utilize A2L are not covered by the older UL 1995 listing or the newer UL 60335-2-40 listing. As of the date of this interpretation, there are no established technical guidelines for field modifications or field evaluations to convert listed A1 systems to A2L. In addition, the manufacturer's instructions also include a statement in some form that their A2L split system components shall only be used with other A2L split system components. Retrofitting equipment and appliances listed for A1 refrigerant to instead use A2L refrigerant is therefore NOT in accordance with the listing and as such is prohibited by code per Sections 301.7 and 304.1. This is also true for the reverse scenario, where the A1 indoor unit or coil is replaced by an A2L unit/coil but the outdoor unit would otherwise remain.

As an informational note for installers, the EPA's SNAP program, which regulates refrigerants for use in specified systems, lists R-454B and R-32 as "Acceptable Subject to Use Conditions," and those conditions include that those refrigerants:

"may be used only in new equipment specifically designed and clearly identified for the refrigerants (i.e., none of these substitutes may be used as a conversion or "retrofit" refrigerant for existing equipment designed for other refrigerants)."iii

Follow-up question #1: In the scenario described by the question above, can just the A1 coil in an existing air handling unit be replaced with an A2L coil, while leaving the existing unit's cabinet and motor in place?

Answer:

The entire air handling unit, including the coil, cabinet, and motor, must be replaced in accordance with the listing requirements and the manufacturer's installation instructions. Please refer to the question and answer above for more information. There is not an approved method for partial split-systems replacements that solely replace an A1 coil with an A2L coil while leaving the existing air handling enclosure in place. As stated above, A2L refrigerants are a higher flammability classification than A1, and as such there are additional safety requirements that are part of the A2L appliance listing. The listing covers the air handling unit as a whole, not just the coil. Solely

ⁱⁱⁱ Appendix W to Subpart G of Part 82 – Substitutes Listed in the May 6, 2021 Final Rule – Effective June 7, 2021

replacing the coil in the listed appliance while leaving other components of that appliance in place is not in accordance with the appliance listing and is prohibited by code per Sections 301.7 and 304.1.

Follow-up question #2: If the system includes a gas furnace, does that also need to be replaced?

Answer:

It depends on the manufacturer's instructions, but typically the gas furnace will be permitted to remain in place. The code requires installation in accordance with the manufacturer's instructions per Section 304.1. Most instructions will require a flame-arrestor (an effective flame arrest, such as a flame roll-out switch) on any gas appliance with a continuously operating pilot light located in the same room. The instructions will likely also have additional requirements for the minimum airflow provided by the furnace, and require that the refrigerant leak detection system be connected to the furnace, in order to power the fan in the event that leaked refrigerant is detected. Requirements from the manufacturer are required to be followed per Section 304.1.

Follow-up question #3: Can the existing linesets remain in place?

Answer:

It depends on the manufacturer's instructions, but typically the existing linesets will be permitted to remain in place. The code requires installation in accordance with the manufacturer's instructions per Section 304.1. If the existing linesets meet the requirements of the manufacturer, then the code permits them to be re-used with the new system. Any manufacturer requirements with regards to the reuse of linesets, including evacuation requirements and leak detection, must be followed. If the existing linesets do not meet the manufacturer's requirements, then the code requires new lines to be installed in accordance with Section 304.1.

Follow-up question #4: Beyond the refrigerant considerations, are there any other factors to consider when determining the compatibility of equipment installed as part of a partial replacement?

Answer:

Yes. Please see the interpretation titled "**Compatible/Properly Matched Partial Replacement of a Split System Heat Pump or Air Conditioner**," republished May 31, 2025, originally published April 28, 2019.

Keywords:

A2L, A1, R410A, R-410A, R454B, R454-B