PURON ADVANCE

Mingledorff’s Technical Services / SE

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A2L PURON ADVANCE™

- What to know: Final EPA Ruling
  - January 1st, 2025
    - All newly manufactured or imported units must be designated for use with low GWP refrigerants
    - One year sell through for residential splits manufactured prior to January 1st, 2025
    - Three year sell through for SPP and light commercial RTUs
    - Any component of a 410A system, including a complete indoor or a complete outdoor unit can be serviced at any time as long as the servicing does not qualify as a new system per the ruling – (*Except California or Washington*)
      - Increasing the capacity of the system will be defined as a new system
      - Changing both outdoor and indoor units will be defined as a new system
      - Assembling a system for the first time with new or used components will be defined as a new system
      - Complete unit service component must be marked “For Service Only”

FAQ

- Q: Is R-454B a R-410A drop-in?
- A: No, Puron Advance is not a drop-in replacement for Puron. The pressures and temperatures are close to Puron, but they still require new compressors and expansion devices for ideal operation, therefore R-454B should not be used in R-410A systems.

- Q: Will Carrier Fan coils have leak detection sensors factory installed?
- A: All Carrier fan coils will have full leak detection systems already installed in the equipment when shipped.

- Q: Will the thread pattern be reversed from the standard set of residential service gauges?
- A: Gauges, will not have reverse threads. A thread adaptor will be needed for the cylinder that can be purchased through Replacement Components.

FAQ

- Q: Are we getting away from torches and going with all compression fittings?
- A: You can use press or braze fittings.

- Q: Can I use the same recovery tanks for Puron Advance that I currently use for Puron?
- A: No. It is important to avoid mixing the refrigerants so you must use separate tanks for each unique refrigerant type.

- Q: Are the R-454B coils/TXV's compatible with R-410A condensing units?
- A: Full furnace coils are not interchangeable. The refrigerant designed for the indoor coil must match that of the outdoor unit. Replacement Components will offer replacement coils only that can be used to replace either R-410A or R-454B coils.

FAQ

- Q: Are indoor coils/units required to have the refrigerant type marked?
- A: Yes. Indoor coils/units must be marked with the refrigerant type prior to leaving the factory to be compliant, effective January 31, 2025. Updated November 13, 2024. Requirements of UL 60335-2-40

- Q: Why are you including a dissipation system on all ducted products?
- A: All Carrier ducted products with Puron Advance ship with more than 3.9 pounds of refrigerant – meeting the UL m2 level requiring dissipation systems.

- Q: Are there other benefits to the new products featuring Puron Advance?
- A: There will be standard stub outs on HPs/ACs/furnace coils/fan coils to give flexibility for installation options, mechanical TXVs on furnace coils, QR codes on products for quick access to installation instructions, and InteliSense technology on all mid-tier AC/HP units.

FAQ

- Q: Will the new equipment come dry or with charge in it?
- A: The new equipment will come with charge in it much in the same way that our current R-410A equipment comes today.

- Q: Will an existing gas furnace be required to be replaced on a split AC system replacement using R-454B or will add on components be available to ensure that the furnace is in compliance?
- A: No. The dissipation controls provided with the new coil will intercept the signal from the thermostat. The furnace will not operate any differently than designed. The dissipation control will change the inputs into the furnace based on any need for dissipation. There will be no extra add on items needed to make changes to the furnace.

- Q: Does R-454B contain propane?
- A: There is no propane present in R-454B. It is a blended refrigerant much like R-410A, but it's made of 68.9% R-32 and 31.1% R-1234yf.

FAQ

- Q: How can we store multiple containers of R-454B in our unconditioned warehouse? Will we need sprinklers and obtain a local fire dept. inspection and certification first?
- A: The current ruling says that 20,000 lbs. of refrigerant can be stored in a single control area in an unconditioned warehouse without a sprinkler system. To increase storage capability, fire-rated walls can be installed to establish additional control areas, or a sprinkler system can be installed.

- Q: How must we transport it in service and installation vehicles?
- A: The transport of A2L refrigerants will be similar to that of R-410A. There will be a need for a Class B dry powder fire extinguisher.

- Q: How should you transport and store R-454B in a service truck?
- A: Up to 440 pounds of refrigerant can be transported without need for DOT placards. Refrigerant can be transported in horizontal or vertical orientations. If you haven't yet, we encourage you to stay up-to-date on the latest courses available about R-454B including the Safety, Storage & Transportation course available. Ventilation is required. Max storage temperature is 125°

FAQ

- Q: What new tools and procedures will be required for the business and its service, maintenance, and installation when technicians when working with R-454B?
- A: Electronic tools will need to be verified to be spark-proof. Contact your tool manufacturer for this information. Saturation temperature visual aids will need to be updated. An inverted thread adaptor will need to be used on refrigerant cylinders only. Required procedures moving forward will be the best practice procedures that are in place for R-410A equipment. Refer to Launch Kit for a full list.

- Q: How will repairs be made to the current R-410A equipment with the changeover to R 454B?
- A: All R-410A equipment that is available today will have replacement parts available through Replacement Components for the intended service life of that product.

- Q: What are the requirements concerning refrigerant line sets when replacing an existing residential or commercial central five-ton split system that relies on R-454B?
- A: Local building codes will regulate what will be needed for refrigerant runs. For high-rise buildings fire breaks will be required. From a system standpoint, you will not need to replace linesets with R-454B as it uses the same POE oil as R-410A as long as the line set meets the current building code.

FAQ

- Q: How are you supposed to effect repairs, say a compressor replacement, when there is potential residual refrigerant left in the unit/oil and this stuff is explosive/fire hazard?
- A: Puron Advance™ is not explosive, it is mildly flammable. The refrigerant is only capable of igniting when the concentrations in air are between the LFL of 11.3% and upper flammability limit of 23.6%. The refrigerant absorbed in the oil is not capable of reaching these limits. Proper safety procedures will be to reclaim the refrigerant & evacuate multiple times before service.

- Q: What are the high/low side operating pressures as an average reading you would expect to see compared to the past refrigerants?
- A: The operating pressures of R-454B are slightly lower than those of R-410A (roughly 7%).

- Q: Is R-454B expected to be a more efficient SEER2 rating?
- A: SEER2 ratings will be similar to those of R-410A.

FAQ

- Q: If R-410A has always had a high Global Warming Potential and accelerated leakage rates with higher pressure, then why use the same refrigerant (R-32) that is already a large component of R-410A?
- A: R-410A was selected for use because it had zero ozone-depleting potential. After its introduction, Global Warming Potential became more readily understood. The driving factor of R-410A's high GWP is the R-125 constituent. R-454B replaces that with R-1234yf, which has a very small GWP.

- Q: When is the last date that I can install new residential split systems containing R-410A equipment?
- A: December 31, 2025 will be the last day that a new system containing R-410A can be installed, however the indoor and outdoor units must be manufactured or imported prior to January 1, 2025.

FAQ

- Q: Can all components of an R-410A system be replaced at one time after January 1, 2026?
- A: No. If all the components of a R-410A system need to be replaced at one time, then the system is considered a new installation and must contain a low GWP refrigerant.

- Q: Can the capacity of an R-410A system be increased via service after January 1, 2025?
- A: Any service that would increase the capacity of the system greater than the original design would be considered changing the system to a new system and would require the use of low GWP refrigerants.

- Q: Who is responsible for ensuring that new systems will be installed using low GWP refrigerants after January 1, 2025?
- A: The party or parties responsible for the installation and charging of the system will be responsible for ensuring the system is designed with equipment using low GWP refrigerants.

FAQ

- Q: Will I need special certification to work with Puron Advance?
- A: As of today, the existing EPA 608 certification is still the only needed requirement for refrigerant handling, including R-454B. We highly recommend continuous education and training as a best practice for any field work. You can find thorough A2L refrigerant training on MLCtraining.com. And be sure to always check for any local requirements governed by municipalities in your area.

- Q: Will I be required to replace the furnace coil or the fan coil, or can I just replace the outdoor unit with a Puron Advance unit?
- A: A new Puron Advance indoor coil will be required when installing a new Puron Advance outdoor unit – due to the required dissipation system, optimized metering device, and coil marking requirement.

- Q: Will charging a system with Puron Advance be different than one with Puron?
- A: Fundamental charging practices will remain the same.

FAQ

- Q: After December 31, 2024, if the existing Puron system has a small evaporator leak, can the evaporator be replaced, or must the whole system (evaporator and outdoor unit) be replaced?
- A: Yes. Entire evaporator coils or their components can be replaced when servicing Puron systems. Evaporator coils manufactured beyond 2024 will ship with a “For Service Only” label.

- Q: Does the refrigerant leak detection sensor need to be replaced after each time it is activated?
- A: No. The sensor that Carrier has chosen is considered a multi-use sensor and will continue to “reset” and function after each detection event.

- Q: What happens if the leak detection sensor fails?
- A: If the dissipation system sensor fails, the control board will “fail safe”. This means that the unit will stay in dissipation mode not allowing the system to operate in heating or cooling until the sensor is replaced.

FAQ

- Q: How can you tell if the leak detection sensor and/or dissipation system is working properly?
- A: The dissipation system performs constant self-tests to determine functionality and displays a light on the board to indicate normal operation. If this self test fails, the unit will display an error LED and activate dissipation.

- Q: Can we pair a new Puron Advance furnace coil with an existing furnace?
- A: Yes. The dissipation control will come with the new coil and it will directly interface with the existing furnace through the Y, W, and G terminals – stopping a call for heating or cooling and activating the blower in the event of a detected leak.

- Q: Will Carrier zoning products need to be replaced or upgraded when a new Puron Advance system is installed?
- A: Carrier Infinity zoning products will meet the requirements to work with a new Puron Advance system. However, Carrier 24V zoning will need to be replaced with an updated zoning panel.

FAQ

- Q: Are there any concerns for homeowner safety with Puron Advance?
- A: No. Homeowners should not feel concerned about updating to a Puron Advance system. Carrier is committed to safety and reliability as evidenced by our rigorous testing protocols on all products. Plus, we have built a leak detection/dissipation system into each Puron Advance system* for added safety.

- Q: Is it safe to breathe in Puron Advance?
- A: The ASHRAE classification of A in A2L means it's non-toxic, same as the A in R-410A that is an A1. Additionally, per the material safety data sheet, respiratory protection is not required. Link for legal reference https://nationalref.com/wp-content/uploads/2019/05/SDS_R454B_CLP.pdf

PURON ADVANCE

HVAC Partners / Marketing / Sales Tools / Marketing Launch Support / Puron Advance

PURON ADVANCE

Catalog No: LLG-R454B-01

Single-Stage and Two-Stage AC/HP Models
Using R-454B Refrigerant

Residential Piping and Long Line Guideline

Table of contents

Safety Considerations

Only trained service technicians familiar with standard service instructions and training materials should attempt installation, service, and repair of these units. Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory--authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Use quenching cloth for brazing operations. Have a dry powder or CO_2 fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit.

Consult local building codes and National Electrical Code (NEC) for special requirements. in Canada, refer to current editions of the Canadian electrical code CSA 22.1.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words; DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies hazards which could result in personal injury or death. CAUTION is used to identify unsafe practices which may result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which will result in enhanced installation, reliability, or operation.

⚠ WARNING

FIRE HAZARD
Failure to follow this warning could result in personal injury or death.
Flammable Refrigerant Used.
To be repaired by trained service personnel ONLY.
Do not puncture refrigerant tubing.

⚠ WARNING

ELECTRICAL SHOCK HAZARD
Failure to follow this warning could result in personal injury or death.
All equipment should be installed in accordance with accepted practices and unit Installation Instructions, and in compliance with all national and local codes. Power should be turned off when servicing or repairing electrical components. Extreme caution should be observed when troubleshooting electrical components with power on. Observe all warning notices posted on equipment and in instructions or manuals.