

## R-454B – A New Refrigerant for a New Standard



**R-454B refrigerant will deliver comfort, efficiency and a dramatically reduced Global Warming Potential (GWP) to meet regulations expected to take effect in 2023.**

### Ready for 2023... and Beyond

In a worldwide effort to address climate change concerns, global leaders have proposed a phase down of high Global Warming Potential (GWP) refrigerants as a part of the Kigali Amendment to the United Nations' Montreal Protocol. Although the United States as a whole has not yet ratified this agreement, states involved in the U.S. Climate Alliance\* are embracing the reductions. Based on proposed California regulations, it is anticipated that many U.S. states will be limiting the GWP for refrigerants used in HVAC applications at a maximum of 750, possibly as early as 2023.

Our current R-410A refrigerant, while excellent at providing a non-ozone-depleting alternative to R-22, has a GWP of 2088, well above the anticipated future limit. That is why we are in the process of developing new products using R-454B refrigerant. The new R-454B is a blend of R-32 and R-1234yf. It has a much lower GWP – 465 – which easily surpasses the proposed 2023 requirement. We have carefully considered many available options, but R-454B offers the lowest GWP for practical and reliable applications. And, it will continue to meet the anticipated future Kigali phase down requirements well into the 2030s.

### What Does This Mean for Our Service Technicians?

Because it operates at temperatures and pressures similar to those of our current R-410A refrigerant, switching to R-454B should be a relatively easy transition. While final details and state adoptions are still being worked out, new safety standards have been established and are pending for adoption into future building codes. The Air-Conditioning, Heating and Refrigeration Institute (AHRI) is leading a Safe Refrigerant Transition Task Force to work with code bodies to develop requirements for:

- Installation, operation and maintenance
- Bulk storage/manufacturing facilities
- DOT, shipping, packaging, handling, and warehousing
- Communications
- Safety training

\* <https://www.usclimatealliance.org/>

### What's the Big Difference?

R-454B falls into a new classification on the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 34 flammability and toxicity matrix – A2L. A2L refrigerants are classified by ASHRAE as having lower toxicity and lower flammability. Our current R-410A refrigerant falls into the A1 category for refrigerants with no ignition at or below 60° C. And while that makes A2Ls more flammable than A1s, such as R-410A, they are still much less flammable than natural gas or propane. According to AHRI research studies, the risk of fire remains low. Here's why:

- A2Ls, like R-454B, are hard to ignite (they require significant ignition energy) so they will not be ignited by static electricity or a water heater pilot
- A significant leak of an A2L, such as R-454B, would be required to reach a flammable concentration of 11.8% lower flame limit (LFL)
- Concentrations of A2Ls, like R-454B, below the LFL will only burn while passing through a flame and will not ignite and sustain a flame
- If an unlikely ignition does occur, the resulting energy is very low with a burning velocity of about 2.0 inches per second

As an added precaution, Airquest will add safety features in all systems containing R-454B which could include leak detection sensors and mitigation procedures.

### Moving Forward with R-454B Refrigerant

As a leader in the HVAC industry, Airquest has been working towards creating a more GWP-friendly refrigerant since before 2010. Now, to meet expected regulatory standards for 2023, which include both lower GWP refrigerants and new minimum efficiency requirements, we are ramping up development of a full product line using R-454B. Over the next three years, AHRI and Airquest will continue leading the effort to finalize guidelines on handling, transporting and storing the new refrigerant. We will keep you up to date as details become available.

Thank you for your continued confidence in Airquest® products. We look forward to working with you in making the transition to R-454B as smooth as possible!



**ASHRAE Standard 34 Safety Classes**

Higher Flammability	<b>A3</b> Propane, Butane	<b>B3</b>
Flammable	<b>A2</b> Methylene Fluoride	<b>B2</b> Methyl Chloride
Lower Flammability	<b>A2L</b> R-454B	<b>B2L</b> Ammonia
No Flame Propagation at 60° C	<b>A1</b> R-410A	<b>B1</b> Sulfur Dioxide
	Lower Toxicity (OEL of 400 ppm or greater)	Higher Toxicity (OEL of less than 400 ppm)

Increasing Toxicity →

↑ Increasing Flammability