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Refrigerants R-454B and R-32

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As the HVAC industry evolves, so do the systems that keep our homes comfortable. One significant change on the horizon is the phase-out of R-410A due to ozone layer and environmental concerns, which is a commonly used refrigerant in air conditioning systems and heat pumps. In its place, new refrigerants like R-454B and R-32 are taking center stage.

Robinson Heating and Air Conditioning, Inc. shares more information about these **refrigerants**, their advantages, and what this shift means for homeowners and businesses alike.

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The Shift Away from R-410A

R-410A has been a popular refrigerant in air conditioning systems for many years, especially since the phase-out of R-22 Freon due to ozone layer concerns. It is classified as a hydrofluorocarbon (HFC), which has zero ozone depletion potential. Unfortunately, this common **air conditioning refrigerant** does have a high global warming potential (GWP).

As concerns about climate change mount, regulatory bodies are pushing for a reduction in the use of high-GWP refrigerants. Under the AIM Act, the Environmental Protection Agency (EPA) is phasing out the production of HFC refrigerants and restricting their use in certain markets to transition toward more environmentally friendly alternatives.

Starting in 2025, manufacturers can no longer use R-410A refrigerant in new air conditioners and heat pump systems. Other HFCs are being phased out and restricted for automotive air conditioning as well as residential and commercial refrigeration systems.

Why Are HVAC Refrigerants a Concern?

Refrigerant leaks from [air conditioners](#) and heat pump systems can have a significant negative impact on the environment. When refrigerants like R-410A leak into the atmosphere, they contribute to global warming because of their high global warming potential (GWP). These chemicals, along with carbon dioxide and greenhouse gasses, can trap heat in the earth's atmosphere, intensifying the greenhouse effect and accelerating climate change.

Refrigerants that are improperly handled during servicing or disposal also contribute to this issue. The Clean Air Act has laid out regulations for safe [handling and disposal](#) for anyone working with refrigerant.

This environmental harm underscores the need for better refrigerants like R-454B and R-32, which have lower GWPs and are designed to be more eco-friendly, reducing the overall environmental footprint of HVAC systems. Using these advanced refrigerants can help mitigate climate impact while still providing effective cooling for homes and businesses.

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Introducing R-454B

R-454B is one of the primary successors to R-410A for heat pump and air conditioner manufacturers. It has a significantly lower GWP compared to R-410A. This means that R-454B has a reduced impact on global warming, making it a more sustainable choice for HVAC systems.

Key Benefits of R-454B:

- **Lower Environmental Impact:** As mentioned, R-454B has a much lower GWP, which means it contributes less to climate change.
- **Efficiency:** R-454B maintains a high level of efficiency, ensuring that air conditioning systems can operate effectively to produce cool air while reducing energy consumption.
- **Safety:** Unlike some refrigerants, R-454B has a lower flammability risk, making it safer for use in residential and commercial settings.

Exploring R-32

Another **refrigerant** gaining traction is R-32, which is already being used in many new heat pumps and air conditioning systems. R-32 is also an HFC, but it has a much lower GWP



of about 675, making it a more environmentally friendly alternative to R-410A.

Advantages of R-32:

- **Efficient Performance:** R-32 offers excellent cooling performance and can improve the overall efficiency of HVAC systems.
- **Lower GWP:** With a GWP that is significantly lower than R-410A, R-32 aligns with global efforts to combat climate change.
- **Easier to Charge:** R-32 is easier to charge than R-410A, as it can be charged as a refrigerant gas or liquid refrigerant.



Can You Retrofit an R-410A System With a New Refrigerant?

No, you cannot simply retrofit an R-410A system to use one of the newer refrigerants like R-454B or R-32. Each refrigerant has unique chemical properties, including different pressure levels and system requirements.

HVAC systems like air conditioners or [heat pumps](#) are specifically designed to work with a particular **refrigerant**, and switching to a new type would require significant modifications to the system's components, such as the compressor and expansion valve. These alterations are often not feasible or cost-effective. Attempting to use a new refrigerant in an R-410A system without proper modifications can lead to poor performance, damage to the equipment, and safety hazards.

If you're interested in switching to a more environmentally friendly refrigerant, it's recommended to invest in a new air conditioner or heat pump that is specifically designed for R-454B or R-32. This ensures the system operates efficiently and safely with the newer refrigerants, helping to reduce environmental impact and improve overall performance.

The Future of Refrigerants

As the HVAC industry adapts to new environmental regulations, the move away from R-410A towards **refrigerants** like R-454B and R-32 marks an important step forward. These refrigerants not only provide effective cooling solutions but also represent a commitment to reducing our carbon footprint and promoting sustainability.

At Robinson Heating and Air Conditioning, Inc., we are dedicated to staying at the forefront of these changes in the HVAC industry. Our team is ready to assist you with any questions about the new refrigerants and how they can benefit your home or business. Feel free to reach out to us today to learn more about how these refrigerants can benefit you and your HVAC system.

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