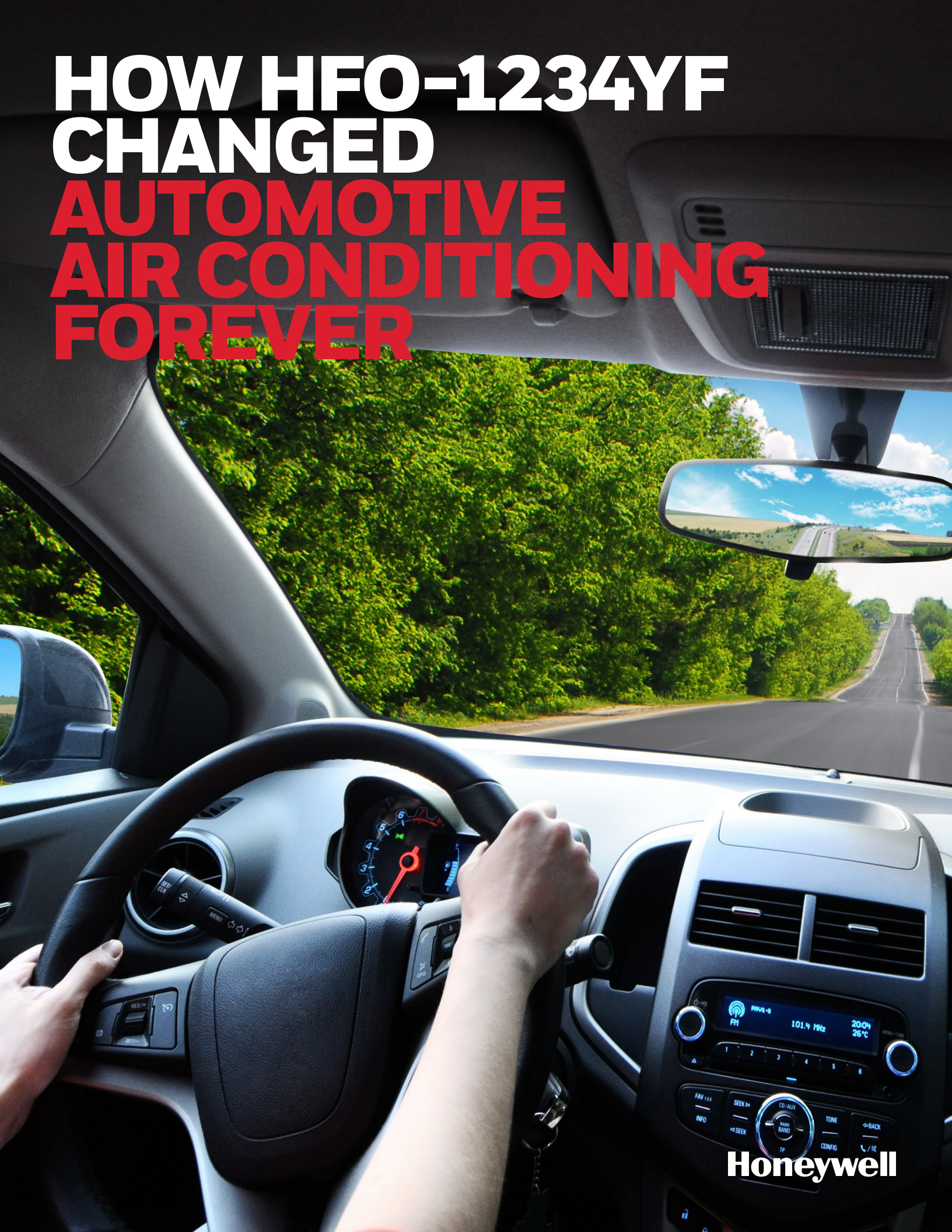


HOW HFO-1234YF CHANGED AUTOMOTIVE AIR CONDITIONING FOREVER



Honeywell

USE OF HFO REFRIGERANT FOR CAR AIR CONDITIONERS HAS GONE FROM ZERO TO 150 MILLION IN JUST A DECADE

2022 marks the 10th anniversary of the first adoption of HFO-1234yf in serial car production.

Ten years and more than 150 million vehicles later, planet Earth has been the greatest beneficiary. So far, the use of ready-now HFO-1234yf refrigerant has provided a warming reduction equal to retiring 10 million older, higher polluting vehicles. Car makers around the globe are using the new refrigerant and agree that no other technical innovation in the car industry has shown a positive climate impact this quickly.

The environmental effect of mobile air conditioning systems hit the public's radar several decades ago. With the encouragement of government regulators, automakers began to look for lower global warming potential (GWP) refrigerants to replace the industry-standard HFC-134a. For help, they enlisted leading chemical and advanced materials companies like Honeywell to join them in their quest.

In the early 2000s, manufacturers started evaluating alternative refrigerants including CO₂, R-152a, HFO-1234yf and others. Following years of technical and safety evaluations, the industry decided that HFO-1234yf was the best choice to provide safe,

efficient mobile air conditioning with minimal changes required under the hood. HFO-1234yf boasts a GWP of less than 1, which make it much more environmentally preferable than most HFO Blends and natural refrigerants.

Honeywell was one of the first companies to make HFO-1234yf available to automobile manufacturers. Our Solstice[®] yf product was the first to be used in a production automobile, the Cadillac XTS.

As the world became more aware of the imminent danger of global warming, government regulators helped drive the adoption of lower GWP refrigerant solutions in Europe, the United States, Canada, Japan and elsewhere. Demand for the new HFO-1234yf refrigerant has grown over the past decade and so has production capacity. Honeywell has expanded its manufacturing facilities in the U.S. and Asia to support the rapid market growth.

First used only in new vehicles, HFO-1234yf is also now being used by thousands of aftermarket providers, including technicians who service motorists' air conditioning systems. As demand grows, more distributors are stocking the product in more places and in more package types. In the U.S., for example, HFO-1234yf aftermarket products are available at more than 14,000 auto parts retail stores across the country.

This year, more than 98% of new vehicles sold in the United States and 99% of new vehicles sold in Europe will use HFO-1234yf refrigerant. Canada phased out high-GWP refrigerants in light-duty autos starting in 2021, so 100% of the new cars on Canadian roads as of 2021 use HFO-1234yf. By the end of 2022, nearly 100% of the new cars sold in South Korea will use HFO-1234yf. Japan took a voluntary phase-out approach for HFC-134a in car production, and it's expected that all Japanese automakers will stop using HFC-134a no later than 2023.

Over the past decade, HFO-1234yf has proven to be a reliable and safe new refrigerant. It's used around the world by nearly every major automaker. It has provided efficient and effective cooling and heating for internal combustion, hybrid and electric cars. Its performance envelope allows it to be used in conventional air conditioning systems and also in newer electric-vehicle heat pump systems. HFO-1234yf has surpassed all industry expectations related to its reliability and ease of adoption and is now universally regarded by the car industry as the preferred vehicle comfort solution.

HFOs ARE SAFE FOR HUMAN HEALTH AND THE ENVIRONMENT THROUGHOUT ALL POINTS OF THEIR LIFECYCLE.

HFOs decompose quickly in the atmosphere and therefore have a low global warming potential.



HFOs ENABLE SMART EQUIPMENT DESIGN TO MINIMIZE ANY LEAKS TO THE ENVIRONMENT.

HFOs are much better contained within systems and have a low to no-leak rate under normal conditions, which means with proper leak checks and maintenance, they are much less likely to release into the environment.



For more information

<https://hwl.co/yf>

Honeywell Advanced Materials

115 Tabor Road
Morris Plains, NJ 07950
www.honeywell.com

NOTICE: All statements, information and data given herein are believed to be accurate and reliable, but are presented without guarantee, warranty or responsibility of any kind, expressed or implied. Statements or suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. The user should not assume that all safety measures are indicated, or that measures may not be required. The values presented in this data sheet are typical values and are not to be interpreted as product specifications.

BRO-22-55-EN | Rev. 1 | 07/22
© 2022 Honeywell International Inc.

**THE
FUTURE
IS
WHAT
WE
MAKE IT**

Honeywell