

THE SHOP OWNERS' GUIDE TO

# GETTING STARTED WITH R-1234yf

How to efficiently service automotive A/C systems with R-1234yf

 **Opteon™ YF**  
Automotive Refrigerant  
R-1234yf



## Introduction

The transition from R-134a to R-1234yf is the most significant change to hit the mobile air conditioning industry since R-12 was replaced in the 1990s.

This guide will walk you through everything you need to know about getting started with Opteon™ YF, including how to make a profit servicing multiple vehicles.





## What is Opteon™ YF?

In 2006, the Mobile Air Conditioning, or **MAC Directive** was introduced in Europe that required the use of refrigerants with a global warming potential (GWP) of less than 150. With a GWP of 1,300 ( IPCC AR5), R-134a was on the list of products to be phased down. In response, a new generation refrigerant named Opteon™ YF (R-1234yf) was developed. With a GWP < 1 ( IPCC AR5), Opteon™ YF exceeds the requirements mandated by the MAC Directive with no compromise in cooling performance.



of cars sold in the US use R-1234YF.



cars on the road in the US use R-1234yf.



cars with R-1234yf exit factory warranty each year (approximately)

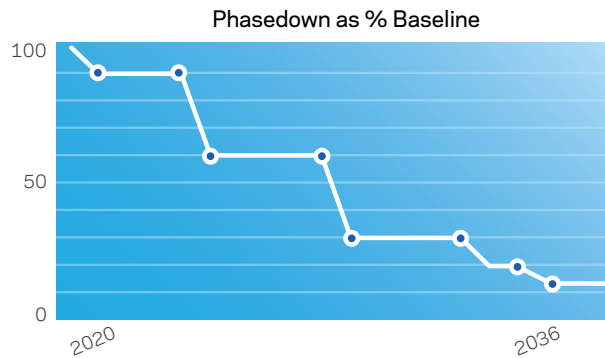
Opteon™ YF is now the preferred refrigerant of several global car manufacturers. Over 90% of vehicles manufactured for sale in the US in 2021 use R-1234yf. Over 80 million cars on the road in the US use R-1234yf. And, approximately 15 million cars using R-1234yf exit factory warranty each year. Considering that cars factory-filled with Opteon™ YF started rolling off assembly lines as early as 2013, more of them become out-of-warranty and rely on garages for AC service every year.

## How Legislation Impacts Shop Owners

### The AIM Act

R-134a will continue to be produced and sold to service older vehicles, however, the [American Innovation and Manufacturing \(AIM\) Act](#) signed in 2020 has given the EPA authority to phase down HFCs, including R-134a. AIM specifies a phasedown schedule which starts with a 10% reduction in 2022, and increases to 85% by 2036.

The AIM Act will phase down the production and use of hydrofluorocarbons (HFCs), including R-134a, by 85% by the year 2036.



### The Clean Air Act

R-1234yf vehicles cannot be filled with R-134a because it's against the law. Cars filled with R-1234yf fall under the US EPA [Clean Air Act](#), so they cannot be filled with any refrigerant other than R-1234yf. Violators are subject to civil [penalties](#) up to \$45,268 per non-compliant vehicle or engine. You can tell if a car uses R-1234yf by checking the label under the hood indicating which type of refrigerant the vehicle uses. You can also find this information in the owner's manual.

### Usage that Requires Certification

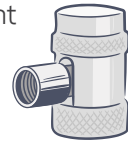
If you are buying less than 2 lbs. of Opteon YF (12 oz. or 28 oz. cans), you are not required to be certified under EPA 609A. If you want to buy a 10 lb. cylinder or 25 lb. cylinder, you will need to complete your [609 certification](#), which can be done online for \$20. Section 609 Certification allows the purchase of any refrigerant in any size container from an auto supply house for cabin cooling applications. Considering that the EPA requires anyone who maintains, services, or repairs motor vehicle air conditioners for compensation must be Section 609 certified, you probably are already good to go.



## Required Equipment

### Basic Tools Needed

R-1234yf requires left-hand threaded fittings vs. R-134a which uses all right hand threads for fittings. You will also notice the differences in service cylinders (DACS/cans) and Recover/Recycle/Recharge (R/R/R) machines.



### Self-Seal Cans

Pierce top cans are no longer allowed by the EPA and have been replaced by convenient self-seal cans, which require a new fitting. An incorrect fitting will damage the can, making it inoperable. If the refrigerant is not used completely, the remaining content can be stored for later use. Opteon™ YF has a long shelf life stability, however it is good practice to store cans in a cool, dry place (temp <125F) and use the remaining amount of refrigerant within three years. Opteon™ YF is sold in 12 oz. and 28 oz. self-seal cans.



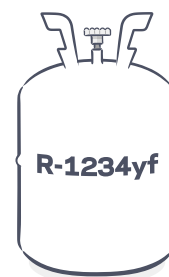
### Equipment Required for Cans

The lowest initial cost to service a car with R-1234yf would be to utilize Opteon™ YF self-seal cans. In addition to the refrigerant, the following equipment will be needed:

- ✓ R-1234yf Manifold Gauge
- ✓ R-1234yf rated vacuum pump
- ✓ Recovery cylinder
- ✓ Scale
- ✓ Lubricant for vehicle

## Cylinders

Opteon™ YF is also sold in 10 lb. and 25 lb. cylinders. Utilizing cylinders with an R/R/R machine is recommended if you plan on servicing ten or more vehicles. Using cylinders will require an R/R/R machine that meets SAE J2843, J2851, and J3030 standards (EPA 609).



**UTILIZING CYLINDERS AND AN R/R/R MACHINE IS RECOMMENDED IF YOU PLAN ON SERVICING TEN OR MORE VEHICLES.**

### Equipment Required for Cylinders

In addition to the refrigerant, the following equipment will be needed:

- ✓ R/R/R machine
- ✓ Ultrasonic leak detector

## Get Ahead of the Game

Not many independent service shops are up to speed on servicing R-1234yf vehicles efficiently. If you're one of the shops that's prepared, you're in a great spot to earn a larger share of the local business from customers in need of AC service on their R-1234yf vehicles. And if you're not up to speed yet, now's the time to do it so your shop doesn't fall behind.

### Consider Investing in an R/R/R Machine

The cost to repair an air conditioning system can vary greatly. Your problem may be as minor as a failing o-ring or as major as a blown compressor.

As a general estimate, a typical shop can recoup the initial cost of the 1234yf R/R/R machine by servicing roughly 15-20 vehicles. Based on the growing number of 1234yf vehicles on the road today, this could take as little as 16 months depending on the types of vehicles coming into your shop. Investing in an R-1234yf R/R/R machine now gives you the opportunity to service these vehicles and gain new customers who will potentially come back for future auto repair needs.



### **R/R/R Machine Maintenance**

If you're considering investing in a machine, you may be wondering what the frequency of maintenance would be. The answer is that it depends on how much it's used for recovery. An older model should be about once a year. One shop owner we spoke to purchased his in 2018 and no maintenance was required until January 2022. That was for a routine filter replacement.

You may opt for annual preventive maintenance checks, where the machines are run to check operation prior to the season. There are companies that will come to perform these preventative maintenance checks in-house.

### **Flammability**

R-1234yf has an A2L ASHRAE classification. A2L refrigerants are described as low or mildly flammable in simplistic terms; however, they are difficult to ignite. Assessment of properties, such as minimum ignition energy, heat of combustion, and burning velocity, indicates that a typical status discharge will not have sufficient energy to ignite R-1234yf.

### **Conclusion**

Currently, there are over 80 million R-1234yf vehicles on the road. Your shop is sure to see some of them come in for AC service soon, if you haven't already. Working with R-1234yf is not very different from working with R-134a, but it's imperative for shops to understand how to use it safely. And there's a great opportunity to be profitable working with R-1234yf for those willing to invest in some additional equipment now.

# Opteon™ YF is Available in Cans or Cylinders to Meet the Needs of Shops, Big and Small

Trying Opteon™ YF for the first time? Great. Upgrading from cans to cylinders so you can service more vehicles? No problem. Whether you're servicing one vehicle or multiple, Opteon™ YF is available in sizes that make sense for the job.



FROM THE MAKERS OF  Freon™