



Freon™ 134a UV Mobile

Automotive Refrigerant (R-134a)
Plus UV Leak Detect

Product Information

Introduction

Over the past few years, UV dyes to locate hard-to-find R-134a leaks have become a critical tool for the mobile AC professional. This time-saving technology has developed rapidly with the creation of bright, long-lasting, stable, and durable UV dyes and the introduction of portable state-of-the-art UV lamps that can withstand the abuse in a service shop environment.

Freon™ 134a UV contains a high-technology dye formulation that meets or exceeds the stringent requirements of SAE J2297. The dye has been approved and used by OEMs, dealer service networks, and independent service shops for years.

Features

- Available throughout the U.S.
- Available in 30-lb disposable cylinders and 12-oz cans
- Superior brightness
- Meets or exceeds SAE J2297
 - Long-term chemical stability
 - Compatible with AC system materials
 - Maintains brightness and detects leaks for years
- Proven in use in hundreds of millions of vehicles worldwide
- Easy to use
- Contains no solvents
- Fast acting – Quickly mixes with oil and is distributed throughout the AC system
- Works with all existing blue light lamps, UV/blue light lamps, and UV lamps

- Minimizes mess and waste
- R-134a manufactured in the U.S., plus UV dye

Benefits

- Cost-effective – Saves valuable man-hours compared to searching for small hard-to-find leaks with expensive electronic leak detectors
- The dye is pre-mixed with Freon™ 134a. The separate purchase, storage, and handling of dye in bottles, tubes, and cartridges is no longer necessary.
- No messy dye injection
- Saves time! Application of dye and refrigerant in one step
- Pinpoints small and large leaks alike – eliminates “callbacks”
- Increases customer confidence – you can show them the leak!

Product Description

Freon™ 134a UV in the 30-lb cylinder has been formulated to provide a sufficient amount of dye for a “typical” mobile AC system, when the entire AC system charge is added from the cylinder. A “typical” system is defined as a system that contains about 2 lb of R-134a and 8 oz of lubricant.

Mobile AC systems vary in the amount of refrigerant and lubricant they contain. Normally, larger systems will contain more refrigerant and more lubricant. Smaller systems will contain less refrigerant, but also less lubricant. As the refrigerant charge size varies, the amount of dye put into the system will vary. The UV dye dissolves in the lubricant and is carried throughout the system with the lubricant.



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The type and concentration of dye in the lubricant determine the ultimate “brightness” of the dye at the leak point. The dye in Freon™ 134a UV is designed to work well over a range of lubricant/dye concentrations.

Freon™ 134a UV in the 12-oz can is formulated to provide a sufficient amount of dye for a “typical” system when only one can is added to the system. In larger systems, or systems with dual evaporators, it may be necessary to add an additional can.

Simply add Freon™ 134a UV to an AC system that does not contain any dye, start up the compressor, and let the dye do the work for you. The dye mixes with the lubricant and is quickly distributed through the system. The time required to pinpoint the leak location will depend on the size of the leak as well as the system design.

After the UV dye has been added to the system and allowed to circulate, the fluorescence can be checked by removing a small amount of oil from one of the service ports.

Chemours encourages all service shops to use UV dye to quickly locate and repair leaks. It is the right thing for your business and your customer, and the right thing for the environment.

Guidelines for Charging Freon™ 134a UV Into the AC System

Freon™ 134a UV in 30-lb cylinders is designed to be added directly to the vehicle’s AC system and should not be used to re-fill the refrigerant tank mounted on a recovery/recycle/recharge (RRR) machine. In most machines, if the Freon™ 134a UV is transferred from the refrigerant cylinder to the tank on the recovery/recycle machine, the dye will be removed from the refrigerant by the machine’s suction accumulator/oil separator.

Freon™ 134a UV in 30-lb cylinders can be charged directly into the AC system using weigh scales and charging-only machines. The product must be removed from the cylinder in the liquid phase. These are commonly used practices employed by many AC service shops.

Note: This restriction does **not** apply to the Freon™ 134a UV sold in 12-oz cans, as it can’t be transferred into a recovery/recycle machine and is added directly into the AC system.

ATTENTION: Do not connect the cylinder or can to the high pressure (discharge) side of any system or any system with

a higher pressure than 170 psig. This will cause the cylinder or can to explode and could result in serious injury.

Before charging the system, protect any surface that might be exposed to overspray of the dye. If the dye accidentally sprays onto any surface, immediately clean up with an approved, commercially available UV dye cleaner.

Do not add Freon™ 134a UV to an AC system that already contains UV dye. To determine that the AC system does not already contain a UV dye:

- Look for a label indicating that UV dye has already been added.
- If no label is present, you may want to check further for the presence of a dye. This can be done by simply removing the protective cap from the low pressure service fitting and slightly depressing the valve stem while shining the UV lamp at the fitting.

If no dye is present, proceed with the charging procedure.

NOTE: Although it is not recommended to add UV dye to a system already containing dye, Freon™ 134a UV meets the SAE J2297 standard that requires testing the product at **double the recommended dye concentration.**

When using the 30-lb cylinder, use only if the temperature of the refrigerant is above 0°F (-18°C). If the cylinder has been stored below 0°F (-18°C), allow it to warm to room temperature before using. Do not apply direct heat to the cylinder.

The dye in the 12-oz can is in a more concentrated form and designed to be used when the temperature of the refrigerant in the can is above 50°F (10°C). If the can has been exposed to lower temperatures, store the can at room temperature for 24 hr before using.

Attach the charging hose to the cylinder or can fitting in accordance with device manufacturer’s instructions. Follow vehicle manufacturer’s instructions for connection to the AC system.

Freon™ 134a UV must be removed from the cylinder or can in liquid phase—position the container with the valve end facing down (see arrows on the container).

With the AC compressor off, open the valve on the container and allow the Freon™ 134a UV to flow into the AC system.

- Follow the vehicle manufacturer's recommended procedure.
- Use a throttling device to prevent liquid refrigerant from entering the compressor. Liquid refrigerant can damage the compressor.
- It might be necessary to start the compressor to lower the suction side pressure and aid in removing Freon™ 134a UV from the container.

When the container is disconnected from the system, there may be a slight amount of pressure in the charging hose and container. A shop towel or rag should be placed around the service fitting to prevent any leakage. If there is a small amount of leakage, it should be wiped clean with a dye cleaner.

As the AC system is operated, the dye will be distributed throughout the system. The time required to find the leak will depend on the AC system design and size of the leak. For a large leak, this might be only 10 or 15 min operating time. For a small leak, it might require several hours or even days. Use a high quality UV lamp to pinpoint the bright green glow of the dye. Follow instructions provided by the UV lamp manufacturer.

CAUTION: UV light can damage the eyes or skin if exposed for an extended period. Always wear proper UV blocking eyewear, and protect the skin from direct, extended exposure.

After Freon™ 134a UV has been added to the system, attach an identification label in a highly visible location.

Cooling Performance with Freon™ 134a UV

Because Freon™ 134a UV is essentially pure Freon™ 134a with a small amount of UV dye, you can expect the same AC cooling performance as you would with pure 134a. The pressure-temperature relationship is the same; refer to the chart at the end of this bulletin.

Brightness of Freon™ 134a UV at the Leak Point

Figure 1 compares the fluorescence intensity (brightness) of dye in an AC system that has been charged with 2 lb of Freon™ 134a UV from a 30-lb cylinder to a system with a competitive product charged in a similar manner. The dye in the system charged with Freon™ 134a UV is approximately 35% brighter. This increased brightness will help pinpoint leaks, particularly small leaks, more quickly.

Figure 1. Fluorescence Intensity Comparison—Using a 30-lb Cylinder (AC system has 2 lb of R-134a)

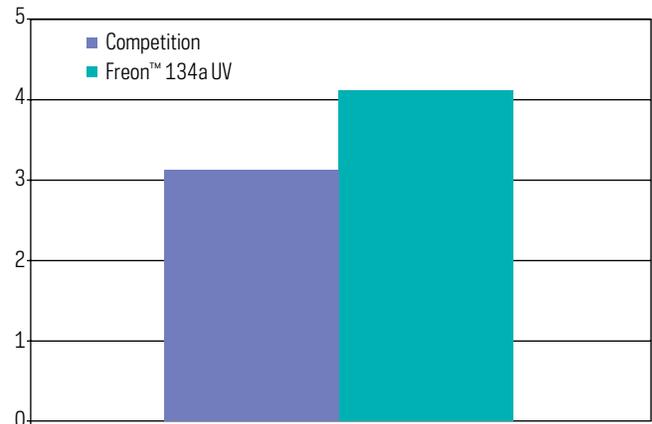
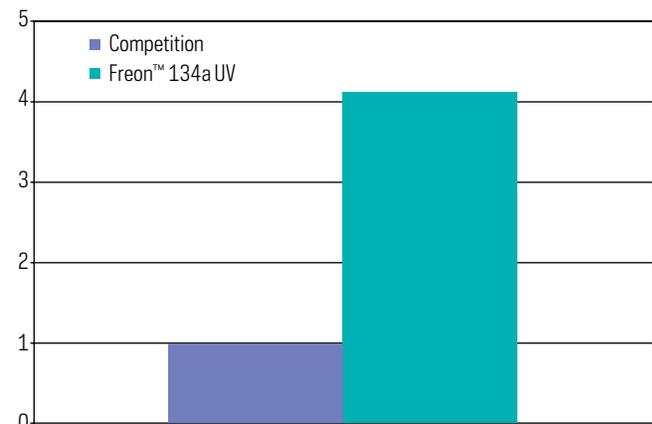


Figure 2 compares the fluorescence intensity of dye in an AC system that has been charged with one 12-oz can of Freon™ 134a UV to a system that has been charged with a competitive 12-oz can. The dye in the system charged with Freon™ 134a UV will have four times the intensity as the system charged with the competitive product. This comparison assumes the remaining R-134a is charged from a container of pure R-134a.

Keep in mind that the dye contained in Freon™ 134a UV has been tested to the stringent standards of SAE J2297 and meets or exceeds all the criteria established by this standard.

Figure 2. Fluorescence Intensity Comparison—Using One 12-oz Can per AC System (AC system has 2 lb of R-134a)



Impact of Recycle/Recovery

When Freon™ 134a UV is added to the AC system, the UV dye is quickly dissolved in the lubricant and distributed throughout the system. The dye itself is an “oil-like” substance that does not evaporate like R-134a. When there is a leak in the system, a small amount of lubricant (with UV dye) is carried with the refrigerant to the leak point. When the refrigerant evaporates, the lubricant (and UV dye) remains and is an indication of the leak point.

During recovery, the R-134a evaporates and is removed from the system by the recovery machine. The vast majority of the lubricant (and UV dye) remains in the system. In some cases, where recovery takes place very quickly, some lubricant might be “pulled along,” with rapidly flowing refrigerant vapor, and also removed. This lubricant is then separated from the refrigerant by the oil separation device on the R/R machine. In these situations, a small amount of UV dye would also be removed from the AC system. Due to the superior “brightness” of Freon™ 134a UV, removing a small amount of oil should not affect the ability to detect future leaks. However, in cases where a larger amount of oil is removed (a few ounces, for example), additional dye may be required.

Safety and Handling

WARNING! Inhalation of high concentrations of Freon™ 134a UV vapor is harmful and may cause heart irregularities, dizziness, central nervous system effects, unconsciousness, or death. Intentional misuse or deliberate inhalation may cause death without warning. R134a vapor reduces oxygen available for breathing and is heavier than air. Decomposition products are hazardous. Liquid contact can cause frostbite. Liquid and gas are under pressure.

Read and understand the Safety Data Sheet before using.

- Avoid breathing high concentrations of vapor.
- Use with sufficient ventilation to keep employee exposure below recommended limits, especially for enclosed and low spaces.
- Avoid contact of liquid with eyes and skin.
- Wear goggles and protective gloves.
- Do not apply open flame or heat containers above 125°F (52°C).

- Do not store in locations that could exceed 125°F (52°C), such as the vehicle interior or trunk.
- Do not allow product to contact open flame or electrical heating elements, because decomposition will occur.
- Do not refill cylinder.

First Aid

If high concentrations are inhaled: Immediately remove persons to fresh air. Keep them calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. Do not give epinephrine or catecholamines, except as a life-saving measure and only with special caution under medical supervision, as this material may sensitize the heart to catecholamines.

Eyes: In case of liquid contact, immediately flush eyes with plenty of water for 15 min. Call a physician.

Skin: Flush with water for 15 min. Treat for frostbite, if necessary, by gently warming affected areas. Washing with warm soap and water will help remove residual dye from the skin.

ATTENTION: Freon™ 134a UV should not be mixed with air for leak testing. In general, it should not be allowed to exist with air above atmospheric pressure or at high temperature, or in an oxygen-enriched environment.

Responsible Use of R-134a

Chemours recommends that all AC service work be done by certified technicians.

Chemours encourages all service shops and car owners to use R-134a in an environmentally responsible manner.

Leaks in mobile AC systems should be identified and repaired as quickly as possible.

The U.S. EPA requires that R-134a be recovered during service of the system. Intentional venting is strictly prohibited.

Disposal

Empty containers of Freon™ 134a UV should be disposed of in accordance with state and local regulations.

Freon™ 134a UV Pressure-Temperature Chart

Pressure, psig	Temperature, °F	Pressure, kPa (g)	Temperature, °C
0	-15	0	-26
2	-10	20	-22
4	-5	40	-19
6	-1	60	-16
8	3	80	-13
10	7	100	-10
12	10	120	-8
14	13	140	-5
16	16	160	-3
18	19	180	-1
20	22	200	1
22	25	220	2
24	27	240	4
26	30	260	6
28	32	280	7
30	35	300	9
32	37	320	10
34	39	340	11
36	41	360	12
38	43	380	14
40	45	400	16
42	47	420	17
44	49	440	18
46	51	460	19
48	52	480	20
50	54	500	22
60	62	550	24
70	69	600	27
80	76	700	31
90	82	800	36
100	88	900	39
110	93	1000	43
120	98	1100	46
130	103	1200	49
140	107	1300	52
150	112	1400	55
160	116	1500	58
170	120	1600	60
180	123	1700	63
200	130	1800	65
250	146	1900	67
300	160	2000	70

For more information on Freon™ refrigerants, visit freon.com

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