

EPA 40 CFR Part 82; Refrigerant Management



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Refrigerant Rules

- Code of Federal Regulations 40 CFR Part 82, Subpart F
- California Air Resources Board and South Coast Air Quality Management District (SCAQMD) Regulation XIV, Rule 1415
- Environment Canada Requirements

Technician Certification Requirements

- Effective November 14, 1994, technicians, except technicians who successfully completed voluntary certification programs that apply for approval by December 9, 1994, must be certified by an approved technician certification program. Effective May 15, 1995, all technicians must be certified by an approved technician certification program.
- (1) Type I Technicians are defined as someone who maintains, services, or repairs small appliances.
- (2) Type II Technicians maintain, service, or repair medium-, high-, or very high-pressure appliances, except small appliances, MVACs, and MVAC-like appliances, or dispose of medium-, high-, or very high-pressure appliances, except small appliances, MVACs, and MVAC-like appliances.
- (3) Type III Technicians maintain, service, or repair low-pressure appliances or dispose of low-pressure appliances.
- (4) Universal Technicians maintain, service, or repair low- and high-pressure equipment.
 - **Apprentices** are exempt from this requirement provided the apprentice is closely and continually supervised by a certified technician while performing any maintenance, service, repair, or disposal that could reasonably be expected to release refrigerant from appliances into the environment.

When a Certified Tech is required

Activity	Certified Technician Required	
	YES	NO
Evacuating Refrigerant	X	
Adding Refrigerant	X	
Adding or Changing Oil	X	
Replacing Gages	X	
Changing or Calibrating a DP Cell	X	
Changing a Pressure Relief Valve	X	
Sampling Refrigerant or Oil	X	
System Dismantle, if Release Possible	X	
Any of above, Performed under Direct Supervision of a Certified Technician	X	
Fixing Leaks by Tightening Nuts or Bolts		X
Activities on Evacuated Systems		X

Card Recordkeeping and Other

- Continuing Education is not required, but recommended
- Technicians should carry their card
- Keep copies at the JCI office or if you are assigned full time to a site, account manager should keep

Venting Restrictions

- Venting of CFCs, HCFCs, HFCs and PFCs is **prohibited**
- De minimis releases allowed
 - Small releases that occur during recapture and recycling
 - Small releases from purging hoses or from connecting and disconnecting

Venting Exceptions

- ammonia in industrial process or commercial refrigeration
- chlorine in industrial process refrigeration
- carbon dioxide in any application
- nitrogen in any application
- water in any application
- hydrocarbons in industrial process refrigeration

Recovery Unit Labeling

- Recovery units manufactured before Nov. 15, 1993 will be considered certified if it is capable of achieving the level of evacuation specified in the regulation (table 3) when tested using a properly calibrated pressure gauge.

[in other words, a unit can be self certified]

Recovery Unit Labeling - Continued

- Recovery units manufactured on or after Nov. 15, 1993 and before Sept. 22, 2003 must be certified by an approved testing organization to meet ARI Standard 740 – 1993.

[Manufacturers are required to label units to prove certification was completed by a 3rd party like UL, ARI,]

THIS EQUIPMENT HAS BEEN CERTIFIED BY [APPROVED EQUIPMENT TESTING ORGANIZATION] TO MEET EPA'S MINIMUM REQUIREMENTS FOR RECYCLING OR RECOVERY EQUIPMENT INTENDED FOR USE WITH [APPROPRIATE CATEGORY OF APPLIANCE].

- Recovery units manufactured on or after September 22, 2003 must be certified by an approved testing organization to meet ARI Standard 740 – 1995.

Recovery Unit Registration

- EPA requires submission of Recovery Unit Acquisition Form OMB #2060-0256 to the appropriate EPA Regional Office.
 - one submission per company
 - it is NOT required to submit another form with each new purchase of recovery equipment

Recovery Unit Recordkeeping

- Keep records of all recovery unit purchases.
 - Date of purchase (copy of P.O)
 - Manufacturer
 - Model #
 - name of Mechanic unit assigned to or truck #

“Home Made” Recovery Unit Requirements

- “Home Made” recovery units are acceptable as long as the units are certified by an EPA approved 3rd party organization like UL or ARI, to meet the EPA Standards specified in 40 CFR 82.158(a)

[Keep records of 3rd Party Certification Tests]

Maintenance Requirements

- EPA does not specify the frequency that recovery units need to be tested.
- However, the regulations require units must be maintained in order to meet the vacuum levels required for the type of equipment being evacuated.
- If units are repaired or tested you must keep those records.

Required levels of evacuation

Type of Appliance	Inches of Mercury Vacuum* Using:	
	Equipment Manufactured Before Nov. 15, 1993	Equipment Manufactured On or After Nov. 15, 1993
HCFC-22 appliance** normally containing less than 200 pounds of refrigerant	0	0
HCFC-22 appliance** normally containing 200 pounds or more of refrigerant	4	10
Other high pressure appliances** normally containing less than 200 pounds of refrigerant (CFC-12, -500, -502, -114)	4	10
Other high pressure appliances** normally containing 200 pounds or more of refrigerant (CFC-12, -500, -502, -114)	4	15
Very High Pressure Systems (CFC-13, -503)	0	0
Low Pressure Systems (CFC-11, HCFC-123)	25	25 mm Hg absolute

Returning Refrigerant To Units

Refrigerant may be returned to the appliance from which it is recovered or to another appliance owned by the same person without being recycled or reclaimed.

If recovered refrigerant will be used in another customers unit, the refrigerant must be reprocessed to meet the specifications of ARI Standard 700-1995 – *Specification For Fluorocarbons and Other Refrigerants*.

Leak Rate Calculation Change

- Effective March 15, 2005 the EPA modified the leak rate calculation
- If unit contains for than 50 pounds of refrigerant, a leak rate calculation must be done whenever refrigerant is added.

Who has been the Responsible Party if Leak Rate Data is not being kept?

- Up to this point EPA has been holding Building Owners/Operators responsible for keeping records of leak rate data.
- Baking industry received record fines.
- Chicago area food stores received fines.

Leak Rate Formula - Annualized

$$\text{Leak rate\%} = \frac{\text{lbs of refrigerant added}}{\text{lbs of refig. in full charge}} \times \frac{365 \text{ days}}{\text{shorter of: \# days since refrigerant last added or 365 days}} \times 100$$

OR

$$\text{Leak rate \%} = \text{lbs added} \div \text{lbs in full charge} \times 365 \text{ days} \div \text{\# of days} \times 100$$

Leak Rate Sample Calculation

$$\text{Leak rate\%} = \frac{25 \text{ lbs added}}{100 \text{ lbs full charge}} \times \frac{365 \text{ days}}{130 \text{ days since refrigerant last added or 365 days}} \times 100 = \mathbf{70 \%}$$

OR

$$\text{Leak rate \%} = 25 \text{ lbs added} \div 100 \text{ lbs in full charge} \times 365 \text{ days} \div 130 \text{ days} \times 100 = \mathbf{70 \%}$$

What if I don't know when refrigerant was last added?

- **Answer: use 365 days**

1. Records from previous service company working on the equipment may not exist.
2. Customer may have their maintenance people working on the unit in addition to JCI.

Leak Rate Triggers

- For equipment containing > 50 pounds, additional action required if leak rate exceeds trigger

Equipment	Trigger Leak Rate
Industrial Process Refrigeration	35%
Commercial Process Refrigeration	35%
Comfort Cooling	15%
All other appliances >50 pounds	15%

Required Leak Repair

- If Leak Rate Trigger is exceeded
 - Leaks must be repaired within 30 days with mandatory initial verification check (extensions possible in certain cases)
 - California requires repair within 14 days with verification check, for Industrial Process and Commercial Refrigeration Equipment
 - In Canada all leaks must be repaired within 7 days with mandatory verification test
 - In repair not possible, a retrofit/retirement plan must be prepared. Plan must be developed within 30 days and implemented within a year

Types of Initial Verification Test Methods

- Soap bubble test
- Electronic leak detectors
- Ultrasonic leak detectors
- Pressure test
- Vacuum test
- Fluorescent dye or black light test
- Infrared test
- Near infrared test

Follow-up Verification Testing

- For Industrial Process Refrigeration a “Follow-Up Verification Test must be done.
- For Federally owned equipment a “Follow-up” Verification Test must be done.
- Follow-Up Verification Test must be done within 30 days from the day the unit was brought back to normal operating conditions.

Disposal of Equipment

- Persons who take the final step in the disposal process (including but not limited to scrap recyclers and landfill operators) of a small appliance or room air conditioning must either:
 - 1.Recover any remaining refrigerant from the appliance
 - or
 - 2.Verify that the refrigerant has been evacuated from the appliance or shipment of appliances previously. (e.g. a signed statement)

Recordkeeping Options

- NxGen

Questions?



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