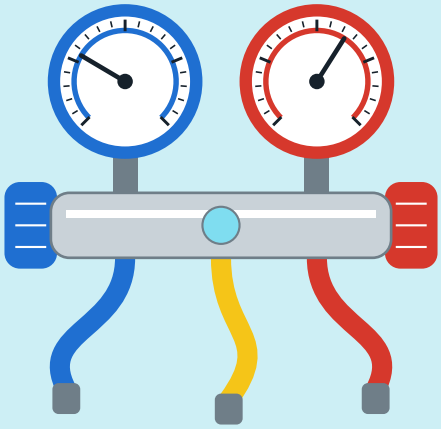
vifalio

FREE GUIDE · HVAC CAREER



EPA 608 BECOME AN HVAC TECHNICIAN IN THE US

The full path from zero to your first job: school or apprenticeship, EPA 608, state license, tools and English for the job. Plus a study guide and a 40-question practice test.

- The 5-step path + 8-month plan
- School vs. apprenticeship vs. helper
- EPA 608 study: Core, I, II and III
- 40-question practice test + answers
- 30-term glossary + job messages



HOW TO USE THIS GUIDE

Read it in order the first time. Then come back to the study pages until you pass.

1 FIND YOUR ROUTE

Pages 4-6: the 5 steps, which route fits your life and what your state asks for.

2 GET READY TO WORK

Pages 7-8: tools for year one and 30 English terms you will hear every day.

3 STUDY EPA 608

Pages 9-14: how the test works, then Core, Type I, Type II and Type III.

4 TEST YOURSELF

Pages 15-18: 40 original questions. Check page 19 only after each section.

5 GET HIRED

Page 20: a helper resume, where to look, what to ask and ready messages.

6 FOLLOW THE PLAN

Page 21: 8 months, month by month. Tick each step as you go.

WHAT'S INSIDE

3 What a tech does + pay
4 The path in 5 steps
5 School, apprenticeship or helper
6 State licenses
7 First-year tools and costs
8 Glossary: 30 terms EN / ES
9 The EPA 608 test explained
10 Study: Core (1 of 2)
11 Study: Core (2 of 2)
12 Study: Type I
13 Study: Type II
14 Study: Type III
15 Practice test: Core
16 Practice test: Type I
17 Practice test: Type II
18 Practice test: Type III
19 Answer key with explanations
20 First job: resume + messages
21 Your 8-month plan

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

WHAT AN HVAC TECHNICIAN DOES

You install, maintain and repair heating, air conditioning and refrigeration in homes and businesses.

$61,010	< $40,050	> $95,210	+11%
Median pay per year	Lowest 10% earn less than	Highest 10% earn more than	Job growth, 2025-2035
$29.33 per hour · May 2025	Annual pay · May 2025	Annual pay · May 2025	Much faster than average

440,900 jobs in 2025 · about 40,600 openings per year over the decade

A NORMAL WEEK ON THE JOB

- Install new AC units, heat pumps and furnaces
- Seasonal maintenance: filters, coils, drains
- Find and fix problems: no cooling, no heat, noise
- Test electrical parts: capacitors, contactors, motors
- Recover, vacuum and charge refrigerant (EPA 608)
- Explain the problem and the price to the customer

WHY THERE IS DEMAND

- Every home and business needs heating and cooling, and systems wear out.
- New, more efficient systems and new refrigerants need trained techs.
- Each year many techs retire or change jobs and must be replaced.

WHERE TECHS WORK

HVAC contractors · Supply houses · Building maintenance · Schools and hospitals · Supermarkets · Your own company, later

HOW YOU GROW

Helper — Carry, hold, learn

→ **Apprentice** — Paid training + classes

→ **Technician** — Runs service calls

→ **Lead tech** — Hard diagnostics, trains others

→ **Contractor** — Own business (license where required)

Source: U.S. Bureau of Labor Statistics, Occupational Outlook Handbook, Heating, Air Conditioning, and Refrigeration Mechanics and Installers (pay for May 2025). National figures; pay varies by state, experience and employer. Not a promise of income.

THE PATH IN 5 STEPS

Most techs follow this order. Some steps overlap: you can work as a helper while you study.

1

SCHOOL OR APPRENTICESHIP

6 months to 2 years (school) · several years (apprenticeship)

A trade school or community college certificate, or a paid apprenticeship with classes. Both teach electricity, refrigeration, heating and safety.

2

EPA 608 CERTIFICATION

A few weeks of study (estimate) · test in one session

Federal, and required to work with refrigerant and to buy it. Many schools include the test. You can also study on your own with pages 10-19.

3

HOURS OF EXPERIENCE

Varies by state and license level

Work as a helper, apprentice or tech I. Keep proof of your hours: pay stubs, W-2s and letters from your employer. Many state licenses ask for it.

4

STATE OR LOCAL LICENSE

Only where required

Some states license technicians or contractors; others leave it to the city or county. See page 6 and check with your state agency.

5

SPECIALIZE

After your first years

Commercial refrigeration, heat pumps, chillers, controls or your own business. Extra industry certifications help you stand out.

School and apprenticeship length: BLS. Your path can be shorter or longer.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

SCHOOL, APPRENTICESHIP OR HELPER?

Three ways in. Pick by your time, your money and how you learn best.

TRADE SCHOOL

TIME
6 months to 2 years

COST (ESTIMATE)
$1,500 - $20,000+

PAID WHILE YOU LEARN?
No (night or weekend classes let you work)

PROS
- Organized classes and hands-on labs
- EPA 608 test often included
- Help finding a job

CONS
- You pay tuition and tools
- Quality varies: visit first

APPRENTICESHIP

TIME
Several years

COST (ESTIMATE)
Low or none

PAID WHILE YOU LEARN?
Yes, paid on-the-job training

PROS
- Earn while you learn
- Classes + real jobs with a mentor
- Raises as you advance

CONS
- Few spots, maybe a waitlist
- Long commitment

HELPER (ON THE JOB)

TIME
Start now

COST (ESTIMATE)
$0 (basic tools)

PAID WHILE YOU LEARN?
Yes, from day one

PROS
- Fastest way to get paid
- You learn on real calls
- Good door to a tech job

CONS
- Learning depends on your boss
- Study EPA 608 on your own

WHICH ONE FITS YOU?

Need money now?
Start as a helper and study EPA 608 at night.

Can you study full time?
Trade school: a structured route with labs.

Want a long, paid path?
Apply to an apprenticeship.

A mix that works for many:
Helper by day + classes at night.

BEFORE YOU PAY A SCHOOL, ASK:

1. What is the total cost with books, tools and test fees?
2. Is the EPA 608 test included? Which types?
3. How many hours are hands-on lab time?
4. What % of graduates get HVAC jobs, and where?
5. Are there night, weekend or Spanish classes?
6. Is it accredited? Is financial aid available?

School and apprenticeship length: BLS. Costs are estimates and change a lot by state and school.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

LICENSES: EACH STATE IS DIFFERENT

EPA 608 is federal and valid in every state. Licenses are not: some states license techs or contractors, others leave it to the city or county.

EXAMPLES: STATE-LEVEL LICENSING

Texas

TDLR licenses air conditioning and refrigeration contractors and registers or certifies technicians.

California

CSLB issues the C-20 license for HVAC contractors (heating, ventilation and air conditioning).

Florida, Georgia, North Carolina, Arizona

Listed with state HVAC licensing for contractors in industry guides.

EXAMPLES: NO STATEWIDE HVAC LICENSE

Industry guides list these states without a statewide HVAC license. Cities and counties there may still require one:

- Pennsylvania
- New York
- Illinois
- Kansas
- Missouri
- Colorado

Rules change and this page is not legal advice. Always confirm with your state's licensing agency and with your city or county building department.

HOW TO CHECK YOUR STATE IN 4 STEPS

1. Search "[your state] HVAC license" and open only .gov websites.
2. Find the license that fits you: helper, technician, journeyman or contractor.
3. Read the requirements: experience hours, exam, insurance and fees.
4. Call your city or county building department about local permits and licenses.

KEEP PROOF OF YOUR HOURS FROM DAY ONE

Save pay stubs and W-2 or 1099 forms, and ask each employer for a signed letter with your dates and duties. Many states ask for documented experience.

Sources: TDLR (tdlr.texas.gov), CSLB (cslb.ca.gov), FieldEdge state-by-state HVAC license guide (industry guide, 2022), EPA. Check each state agency for current rules.

TOOLS FOR YOUR FIRST YEAR

Buy in stages. Ask your employer first: many companies supply the big, expensive equipment.

Tool	Estimated cost	When
Hand tools: screwdrivers, nut drivers, pliers, adjustable wrench	$100 - $250	Day 1
Safety glasses, work gloves, ear protection	$30 - $80	Day 1
Non-contact voltage tester	$15 - $35	Day 1
Clamp meter / multimeter (capacitance and temperature)	$50 - $200	Day 1
Cordless drill / impact driver	$120 - $300	Month 1
Tool bag or backpack	$40 - $120	Month 1
Thermometer and temperature clamps	$25 - $120	Month 2
Manifold gauge set (analog or digital)	$70 - $400	Month 2-3
Tubing cutter, deburring tool, flaring / swaging kit	$40 - $150	Month 3
Refrigeration service wrench + valve core tool	$20 - $60	Month 3
Micron gauge	$80 - $200	Month 4-6
Vacuum pump	$150 - $450	Often supplied
Refrigerant scale	$80 - $200	Often supplied
Electronic leak detector	$60 - $300	Often supplied
Recovery machine + recovery cylinder	$700 - $1,700	Usually supplied
TOTAL YEAR ONE (everything except the recovery machine)	**$880 - $2,865**	

- Buy good basics first; borrow or rent the big items until you know what you use.
- No EPA 608, no refrigerant: sellers can only sell to certified techs.
- Label your tools and keep the receipts. Ask a tax preparer what you can deduct.

Costs: rough estimates of 2026 US store and online prices. They change by brand and store.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

TECHNICAL ENGLISH: 30 TERMS

The words you will hear on every call. Useful for mixed English and Spanish crews.

English	Español
1. Refrigerant	Refrigerante
2. Compressor	Compresor
3. Condenser (coil)	Condensador (serpentín)
4. Evaporator (coil)	Evaporador (serpentín)
5. Metering device	Dispositivo de expansión
6. Suction line	Línea de succión
7. Liquid line	Línea de líquido
8. Superheat	Sobrecalentamiento
9. Subcooling	Subenfriamiento
10. Manifold gauges	Juego de manómetros
11. Low side / high side	Lado de baja / lado de alta
12. Recovery	Recuperación
13. Recycle	Reciclar
14. Reclaim	Regenerar (reclaim)
15. Vacuum / evacuation	Vacío / evacuación

English	Español
16. Micron gauge	Vacuómetro (micrones)
17. Leak	Fuga
18. Nitrogen	Nitrógeno
19. Brazing	Soldadura fuerte
20. Capacitor	Capacitor
21. Contactor	Contactor
22. Thermostat	Termostato
23. Breaker / disconnect	Breaker / desconectador
24. Air handler	Manejadora de aire
25. Ductwork	Ductos
26. Filter	Filtro
27. Heat pump	Bomba de calor
28. Furnace	Calentador (furnace)
29. Service call	Llamada de servicio
30. Work order	Orden de trabajo

5 PHRASES FOR THE JOB

The unit is not cooling.	El aire no está enfriando.
I need to check the breaker first.	Primero tengo que revisar el breaker.
The system is low on refrigerant. There is a leak.	Al sistema le falta refrigerante. Hay una fuga.
I'm going to pull a vacuum to 500 microns.	Voy a hacer vacío a 500 micrones.
The capacitor is bad. I have one in the van.	El capacitor está malo. Traigo uno en la camioneta.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

THE EPA 608 TEST, EXPLAINED

Federal certification under Section 608 of the Clean Air Act (40 CFR Part 82, Subpart F). You need it to service equipment that can release refrigerant, and to buy refrigerant.

Section	What it covers	Examples
CORE	Required with every type: environment, laws, 3 Rs, recovery, safety, cylinders	Taken with any type
TYPE I	Small appliances: factory-sealed with 5 lb of refrigerant or less	Window AC, home refrigerators, dehumidifiers, vending machines
TYPE II	Medium-, high- and very high-pressure appliances (not small appliances or car AC)	Split AC, heat pumps, commercial refrigeration
TYPE III	Low-pressure appliances	Centrifugal chillers in large buildings
UNIVERSAL	Core + Type I + Type II + Type III	All of the above

25
questions per section, multiple choice (Universal: 100)

70%
to pass each section (18 of 25 correct)

CLOSED
book and proctored: Types II, III and Universal

FOR LIFE
608 credentials do not expire

WHERE AND HOW TO TAKE IT

- Only EPA-approved certifying organizations give the test. EPA's website lists them; many test nationwide.
- Many trade schools include it. Some programs test remotely; Type I can also come in a mail-in format (passing score: 84%).
- Bring photo ID. You pass by section: Core + one type already certifies you in that type.
- EPA does not issue cards: the certifying organization does. Keep a copy at your place of business.

CAN I TAKE IT IN SPANISH?

Often, yes. The federal rule encourages programs to offer tests in other languages, and EPA's list of programs shows several that offer Spanish. Ask before you book, and learn the key terms in English too (page 8).

Test fees vary by program (estimate: $25 - $150).

HOW TO STUDY WITH THIS GUIDE

1. **Read Core, pages 10-11**
2. **Do the Core practice test (page 15)**
3. **Repeat with each type you need**
4. **Book the test when you score 8/10**

Sources: epa.gov (Section 608 Technician Certification, Certification Requirements, Test Topics, Certification Programs); 40 CFR 82.161 and Appendix D to Subpart F.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

STUDY · CORE (1 OF 2): OZONE, LAWS, REFRIGERANTS

Core is on every 608 test. Know these facts by heart.

Date	What happened
1987	Montreal Protocol: international treaty to phase out ozone-depleting substances
July 1, 1992	Venting CFC and HCFC refrigerants during service or disposal becomes illegal
Nov 15, 1995	Venting ban extended to substitute refrigerants (like HFCs)
Jan 1, 1996	US production and import of CFCs ends
Jan 1, 2010	New R-22 only for equipment made before 2010
Jan 1, 2018	Sales restriction extended to non-exempt substitutes (HFCs)
Jan 1, 2020	US production and import of R-22 ends
2030	Production and import of all HCFCs ends

OZONE AND CHLORINE

- The ozone layer in the stratosphere blocks harmful UV rays from the sun.
- Chlorine from CFCs and HCFCs reaches the stratosphere and destroys ozone.
- Less ozone means more skin cancer and cataracts, and harm to crops and sea life.

VENTING AND PENALTIES

- Never knowingly vent refrigerant. Only "de minimis" releases during good-faith recovery are allowed, like connecting or disconnecting hoses.
- Exempt: nitrogen, and certain hydrocarbons in specific uses (ex: R-600a in home refrigerators).
- Clean Air Act fines can reach tens of thousands of dollars per day, per violation (adjusted for inflation).

SUBSTITUTES AND OILS

- There is no true "drop-in" replacement: follow the manufacturer when you retrofit.
- Oils must match: ester (POE) oil with R-134a; mineral or alkylbenzene oil with HCFCs.
- Blends can fractionate: their parts leak at different rates. Charge zeotropic blends as liquid.

REFRIGERANT FAMILIES

- CFC: chlorine, fluorine, carbon. Ex: R-11, R-12. Most ozone damage.
- HCFC: adds hydrogen, less ozone damage. Ex: R-22, R-123.
- HFC: no chlorine, no ozone damage, but a strong warming effect. Ex: R-134a, R-410A.
- Ozone-depletion ranking: CFC > HCFC > HFC.

SALES AND RECORDS

- Refrigerant is sold only to certified techs, with a few exceptions (ex: car AC cans of 2 lb or less with a self-sealing valve).
- Keep a copy of your 608 card at your place of business, until 3 years after you stop working as a tech.
- Since 2018, techs who recover refrigerant to dispose of appliances of more than 5 and less than 50 lb keep records for 3 years.

Sources: 40 CFR Part 82, Subpart F (82.152, 82.154, 82.155, 82.156, 82.157, 82.161); epa.gov Test Topics and ODS phaseout pages. Study summary: always follow the current rule.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

STUDY · CORE (2 OF 2): RECOVERY, SAFETY, CYCLE

How to handle refrigerant the legal and safe way.

Term	What it means
RECOVER	Remove refrigerant in any condition from a system and store it in an external container, without testing or processing it.
RECYCLE	Clean refrigerant for reuse (oil separation, filter-driers), usually in equipment of the same owner.
RECLAIM	Reprocess refrigerant to the AHRI 700 purity standard, verified by lab analysis. Then it can be sold.

RECOVERY EQUIPMENT

- Self-contained (active): has its own compressor.
- System-dependent (passive): uses the appliance's compressor or pressure; only for systems with 15 lb or less.
- Recovery equipment must be certified by an EPA-approved testing organization.
- Never mix refrigerants in one cylinder: a mix may be impossible to reclaim.

CYLINDERS

- Disposable cylinders: never refill them.
- Recovery cylinders: refillable, DOT-approved, gray body with yellow top.
- Fill to 80% max (by weight): liquid expands with heat and can burst it.
- To ship: label with the refrigerant and the DOT classification tag.

CYCLE AND GAUGES

- Compressor: low-pressure vapor in, hot high-pressure vapor out.
- Condenser rejects heat (vapor to liquid); metering device drops the pressure; evaporator absorbs heat (liquid to vapor).
- Gauges: blue = low side (compound, reads vacuum), red = high side, yellow = charging hose.
- psia = psig + 14.7.

FASTER RECOVERY

- Use short, large-diameter hoses and remove the valve cores.
- Speed also depends on the ambient temperature and the size of the system.
- Recover liquid first when you can.

EVACUATION (VACUUM)

- At the end of service, pull a vacuum to remove air and moisture (dehydration).
- Use a vacuum pump and read the level with a micron gauge.
- Moisture left inside forms acids and sludge that kill compressors.

SAFETY

- Refrigerant is heavier than air: in closed spaces it pushes out oxygen and you can suffocate.
- Breathing it can cause heart arrhythmia; liquid causes frostbite.
- Flame or high heat breaks CFCs and HCFCs into toxic gases (like phosgene).
- Wear glasses and gloves. Leak test with nitrogen (regulator and relief valve), never oxygen or compressed air.

Sources: 40 CFR Part 82, Subpart F (82.152, 82.154, 82.155, 82.156, 82.157, 82.161); epa.gov Test Topics and ODS phaseout pages. Study summary: always follow the current rule.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

STUDY · TYPE I: SMALL APPLIANCES

Refrigerators, window units and other factory-sealed systems with 5 lb of refrigerant or less.

Recovery equipment made...	Compressor works	Compressor does not work
Before Nov 15, 1993	80% or 4 in Hg vacuum	80% or 4 in Hg vacuum
On or after Nov 15, 1993	90% or 4 in Hg vacuum	80% or 4 in Hg vacuum

WHAT IS A SMALL APPLIANCE

- Fully manufactured, charged and hermetically sealed in a factory with 5 lb or less of refrigerant.
- Ex: home refrigerators and freezers, window and portable AC, packaged terminal heat pumps, dehumidifiers, vending machines, water coolers, under-counter ice makers.

ACCESS VALVES

- Solderless (piercing) access valves can leak over time: remove them when you finish.

SAFETY AND DISPOSAL

- Flame or high heat can turn refrigerant into toxic gases: ventilate, and never braze on a charged line.
- The last person in the disposal chain (ex: a scrap yard) must recover the refrigerant or get a signed statement that it was recovered: name, address and date.
- Those statements are kept for 3 years.
- Type I can also be tested in a mail-in format: passing score 84%.

PASSIVE RECOVERY

- System-dependent devices use the appliance's own compressor or pressure.
- Compressor works: run it to push refrigerant into the recovery container.
- Compressor dead: install access valves on both the high and low sides, then heat and tap the compressor to free refrigerant from the oil.
- You may use a vacuum pump with an unpressurized recovery container.

IDENTIFY THE REFRIGERANT

- Read the nameplate. Compare pressure with temperature (P/T chart).
- Pressure higher than the chart for that temperature: air or other noncondensables are inside.
- R-134a is the usual substitute for R-12 in older units. Newer units may use flammable R-600a or R-290: no flames, follow the manufacturer.

MEMORIZE

5 lb or less = small appliance

90% / 80% or 4 in Hg (after 11/15/1993)

Mail-in Type I: 84% to pass

Sources: 40 CFR Part 82, Subpart F (82.152, 82.154, 82.155, 82.156, 82.157, 82.161); epa.gov Test Topics and ODS phaseout pages. Study summary: always follow the current rule.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

STUDY · TYPE II: HIGH-PRESSURE APPLIANCES

Split systems, heat pumps and commercial refrigeration. The key section for residential techs.

Required vacuum (40 CFR 82.156)	Equipment before 11/15/1993	Equipment on/after 11/15/1993
Very high-pressure	0 in Hg	0 in Hg
High-pressure, under 200 lb	0 in Hg	0 in Hg
High-pressure, 200 lb or more	4 in Hg	10 in Hg
Medium-pressure, under 200 lb	4 in Hg	10 in Hg
Medium-pressure, 200 lb or more	4 in Hg	15 in Hg

PRESSURE CLASSES (AT 104°F)

- Very high: critical temperature below 104°F.
- High: saturation pressure from 170 to 355 psia. Ex: R-22, R-410A.
- Medium: from 45 to 170 psia. Ex: R-134a.
- Type II covers all three.

RECOVERY TECHNIQUES

- Recover liquid first: it is faster.
- Speed it up by chilling the recovery cylinder or warming the system.
- After reaching the vacuum, wait a few minutes: if pressure rises, refrigerant is still inside.
- Changing refrigerants? Purge the recovery machine and change the filter to avoid mixing.

SAFETY AND PARTS

- Never start a hermetic compressor under deep vacuum: it can damage the motor windings.
- Receiver: stores high-pressure liquid. Accumulator: on the suction side, protects the compressor from liquid.
- Equipment rooms follow ASHRAE 15: oxygen deprivation sensor for all refrigerants.
- Hydrocarbons are not approved for retrofits.

MAJOR REPAIR AND LEAKS

- Major repair = removing the compressor, condenser, evaporator or an auxiliary heat exchange coil.
- If leaks make the table levels impossible, evacuate as low as you can, never above 0 psig.
- System-dependent recovery: only on systems with 15 lb or less.

LEAK DETECTION AND REPAIR

- Signs: oil traces, high superheat (low charge).
- Leak test with pure nitrogen first; nitrogen with a trace of R-22 for electronic detectors.
- Systems with 50 lb or more of CFC/HCFC: repair when the leak rate passes 10% (comfort cooling), 20% (commercial refrigeration) or 30% (industrial process).
- Repair within 30 days (120 if an industrial shutdown is needed), verify with initial and follow-up tests, keep records 3 years.

Sources: 40 CFR Part 82, Subpart F (82.152, 82.154, 82.155, 82.156, 82.157, 82.161); epa.gov Test Topics and ODS phaseout pages. Study summary: always follow the current rule.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

STUDY · TYPE III: LOW-PRESSURE APPLIANCES

Centrifugal chillers. They run below atmospheric pressure, so air leaks in instead of refrigerant leaking out.

Item	Number to remember
Low-pressure definition	Saturation pressure below 45 psia at 104°F (ex: R-11, R-123)
Required vacuum (any equipment)	25 mm Hg absolute (about 29 in Hg vacuum)
Non-major repair, before opening	Pressurize to no more than 0 psig
Removing oil	Heat the oil to 130°F first
Leak test pressure	Usually no more than 10 psig (rupture disc about 15 psig)
Leak repair triggers (50 lb or more)	10% comfort cooling · 20% commercial · 30% industrial process

LEAK DETECTION

- Sign of a leak: the purge unit runs too often (air and moisture are getting in).
- To pressurize for a leak test, first choice: controlled hot water or a built-in heating/pressurization device. Second: nitrogen.
- Systems over the leak rate need leak inspections; chronic leakers (125% or more of the full charge in a year) are reported to EPA by March 1.

RECHARGING

- Charge vapor first: liquid in a deep vacuum boils so cold that the water in the tubes can freeze and burst them.
- Switch to liquid once the pressure is high enough; charge through the evaporator charging valve.

RECOVERY

- Recover the liquid first, then the vapor: a lot of refrigerant is left as vapor.
- Circulate or drain the water in the tubes during evacuation so it does not freeze.
- Heat the oil to 130°F before draining it, to release the refrigerant.

NON-MAJOR REPAIRS

- Before opening, raise the pressure only up to 0 psig.
- Refrigerants that boil at or below 85°F: no methods like nitrogen that need purging later.
- Above 85°F: use heat to raise the pressure as much as possible; then nitrogen may bring it to atmospheric.

PURGE UNIT AND SAFETY

- The purge unit removes the air and noncondensables that leak in.
- ASHRAE 15: equipment-room refrigerant sensor required for R-123, plus an oxygen deprivation sensor.
- The rupture disc on the evaporator protects the chiller from over-pressure.

Sources: 40 CFR Part 82, Subpart F (82.152, 82.154, 82.155, 82.156, 82.157, 82.161); epa.gov Test Topics and ODS phaseout pages. Study summary: always follow the current rule.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

PRACTICE TEST · CORE

10 original questions. Circle one answer for each. Answers and explanations on page 19.

1 **Which refrigerant family has chlorine and the HIGHEST ozone-depletion potential?**

(A) HFC
(B) HCFC
(C) CFC
(D) HFO

2 **R-22 is a:**

(A) HCFC
(B) CFC
(C) HFC
(D) Hydrocarbon

3 **Knowingly venting CFC and HCFC refrigerants during service became illegal on:**

(A) January 1, 1990
(B) July 1, 1992
(C) November 15, 1995
(D) January 1, 2020

4 **The international agreement to phase out ozone-depleting substances is the:**

(A) Kyoto Protocol
(B) Paris Agreement
(C) Clean Water Act
(D) Montreal Protocol

5 **Which one describes RECLAIM?**

(A) Removing refrigerant and storing it in an external container
(B) Cleaning refrigerant on site with oil separation and filter-driers
(C) Reprocessing refrigerant to the AHRI 700 standard, verified by analysis
(D) Releasing a little refrigerant when connecting hoses

6 **A refillable recovery cylinder should be filled to no more than:**

(A) 60%
(B) 80%
(C) 90%
(D) 100%

7 **To pressurize a system for a leak test, use:**

(A) Oxygen
(B) Compressed air
(C) Refrigerant from a disposable cylinder
(D) Dry nitrogen with a regulator and relief valve

8 **A recovery cylinder is usually painted:**

(A) Gray body with a yellow top
(B) All green
(C) All white
(D) Red body with a blue top

9 **Since January 1, 2018, who can buy non-exempt substitute refrigerants such as R-410A?**

(A) Anyone with a photo ID
(B) Certified technicians, with a few exceptions
(C) Only state-licensed contractors
(D) Only refrigerant reclaimers

10 **Which setup makes refrigerant recovery FASTER?**

(A) Long, small-diameter hoses
(B) Leaving the valve cores in place
(C) Mixing two refrigerants in one cylinder
(D) Short, large-diameter hoses

Original practice questions written from EPA's public rules. This is not the official test.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

PRACTICE TEST · TYPE I

10 original questions. Circle one answer for each. Answers and explanations on page 19.

11 **A "small appliance" is factory-sealed with a refrigerant charge of:**

(A) 2 lb or less
(B) 5 lb or less
(C) 15 lb or less
(D) 50 lb or less

12 **With recovery equipment made after Nov 15, 1993 and a WORKING compressor, you must recover:**

(A) 50%
(B) 70%
(C) 80%
(D) 90% (or 4 in Hg vacuum)

13 **Same equipment, but the compressor does NOT work. You must recover:**

(A) 80% (or 4 in Hg vacuum)
(B) 90%
(C) 95%
(D) 100%

14 **Passive recovery from a refrigerator with a dead compressor. What should you do?**

(A) Install an access valve on the low side only
(B) Open the high side to the air
(C) Install access valves on both the high and low sides
(D) Run the compressor anyway

15 **At the end of the job, solderless (piercing) access valves should be:**

(A) Left on for the next technician
(B) Removed, because they can leak over time
(C) Tightened and painted
(D) Replaced with a second piercing valve

16 **System-dependent (passive) recovery equipment:**

(A) Uses the appliance's compressor or internal pressure
(B) Has its own compressor
(C) Can be used on systems of any size
(D) Is the same as a reclaim plant

17 **If a vacuum pump helps a passive recovery, the recovery container must be:**

(A) Pressurized with nitrogen
(B) Filled to 80%
(C) Heated with a torch
(D) Unpressurized (under vacuum)

18 **A unit's pressure is HIGHER than the P/T chart shows for its temperature. This points to:**

(A) A low charge
(B) Too much oil
(C) Air or other noncondensables
(D) Normal operation

19 **An open flame near CFC or HCFC refrigerant can produce:**

(A) Pure oxygen
(B) Toxic gases such as phosgene
(C) Nitrogen
(D) Only water vapor

20 **A scrap yard receives an old refrigerator for disposal. It must:**

(A) Recover the refrigerant or get a signed statement that it was recovered
(B) Do nothing
(C) Vent the refrigerant outdoors
(D) Send the unit back to the manufacturer

Original practice questions written from EPA's public rules. This is not the official test.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

PRACTICE TEST - TYPE II

10 original questions. Circle one answer for each. Answers and explanations on page 19.

21 **Recovery equipment made after Nov 15, 1993; HIGH-pressure appliance with less than 200 lb. Required vacuum:**

(A) 4 in Hg
(B) 10 in Hg
(C) 0 in Hg
(D) 25 mm Hg absolute

22 **Same newer equipment; MEDIUM-pressure appliance with 200 lb or more. Required vacuum:**

(A) 15 in Hg
(B) 10 in Hg
(C) 4 in Hg
(D) 0 in Hg

23 **Which job is a MAJOR repair under the rule?**

(A) Changing a filter-drier
(B) Replacing a valve core
(C) Replacing a thermostat
(D) Removing the compressor

24 **System-dependent recovery equipment may NOT be used on systems with a full charge over:**

(A) 5 lb
(B) 15 lb
(C) 50 lb
(D) 200 lb

25 **Why recover the LIQUID first?**

(A) It is much faster
(B) Liquid is not regulated
(C) It is the only way to measure oil
(D) Vapor cannot be recovered

26 **You reach the required vacuum, wait a few minutes and the pressure RISES. This means:**

(A) The job is done
(B) The gauge is broken
(C) Refrigerant is still in the system
(D) The noncondensables are gone

27 **A comfort cooling system with 50 lb or more of HCFC must be repaired when its leak rate passes:**

(A) 30%
(B) 20%
(C) 15%
(D) 10%

28 **After a leak above the trigger rate, the usual repair deadline is:**

(A) 7 days
(B) 30 days
(C) 90 days
(D) 1 year

29 **Never energize a hermetic compressor when the system is:**

(A) Under a deep vacuum
(B) Fully charged
(C) Being leak tested with soap
(D) Running in cooling mode

30 **To convert psig to psia:**

(A) Subtract 14.7
(B) Multiply by 2
(C) Add 14.7
(D) They are the same number

Original practice questions written from EPA's public rules. This is not the official test.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

PRACTICE TEST - TYPE III

10 original questions. Circle one answer for each. Answers and explanations on page 19.

31 **A low-pressure appliance uses a refrigerant whose saturation pressure at 104°F is below:**

(A) 15 psia
(B) 45 psia
(C) 170 psia
(D) 355 psia

32 **The most common sign of a leak in a low-pressure chiller is:**

(A) High head pressure
(B) Oil on the floor
(C) Frost on the liquid line
(D) The purge unit running too often

33 **The preferred way to raise the pressure for a leak test is:**

(A) Controlled hot water or a built-in heating/pressurization device
(B) Oxygen
(C) Compressed air
(D) Refrigerant from another chiller

34 **Required evacuation level for a low-pressure appliance:**

(A) 0 in Hg
(B) 10 in Hg
(C) 25 mm Hg absolute
(D) 4 in Hg

35 **What does the purge unit do?**

(A) Adds oil to the compressor
(B) Removes air and noncondensables
(C) Cools the motor
(D) Measures the charge

36 **While evacuating a chiller, the water in the tubes should be:**

(A) Left still in the tubes
(B) Heated to 200°F
(C) Mixed with antifreeze
(D) Circulated or drained so it does not freeze

37 **When charging an evacuated low-pressure chiller, first add:**

(A) Vapor
(B) Liquid
(C) Nitrogen
(D) Oil

38 **Before draining oil from a low-pressure system, heat the oil to about:**

(A) 32°F
(B) 85°F
(C) 130°F
(D) 212°F

39 **Under ASHRAE 15, an equipment room with an R-123 chiller needs:**

(A) A floor drain
(B) A refrigerant sensor (monitor)
(C) An open window
(D) A carbon monoxide detector

40 **Non-major repair: before opening a low-pressure appliance, raise the pressure to no more than:**

(A) 10 psig
(B) 15 psig
(C) 5 psig
(D) 0 psig

Original practice questions written from EPA's public rules. This is not the official test.

ANSWER KEY WITH EXPLANATIONS

Score each section. 8 of 10 or more: you are close. Real test: 70% per section (18 of 25).

CORE

1 · C CFCs have chlorine and no hydrogen. Ranking: CFC > HCFC > HFC (HFCs have no chlorine).

2 · A R-22 is an HCFC: it has hydrogen and chlorine. US production and import ended in 2020.

3 · B July 1, 1992. On Nov 15, 1995 the ban was extended to substitutes, like HFCs.

4 · D The Montreal Protocol. In the US it is applied through the Clean Air Act.

5 · C Reclaim = AHRI 700 purity, proven by lab analysis. A is recover, B is recycle, D is de minimis.

6 · B 80% by weight. Liquid expands with heat, and an overfilled cylinder can burst.

7 · D Nitrogen with a regulator and relief valve. Oxygen with oil can explode; air brings moisture.

8 · A Gray body, yellow top, DOT-approved and refillable. Disposable cylinders are never refilled.

9 · B Since 2018 the sales restriction also covers non-exempt substitutes: the buyer must be certified.

10 · D Short, wide hoses without valve cores have less restriction. Never mix refrigerants.

TYPE I

11 · B 5 lb or less, and fully manufactured, charged and hermetically sealed in a factory.

12 · D 90% when the compressor works, or reach a 4 inch Hg vacuum.

13 · A 80% with a dead compressor (or 4 in Hg). With pre-1993 equipment: 80% in both cases.

14 · C Use both sides, then heat and tap the compressor to free refrigerant trapped in the oil.

15 · B Remove them when you finish: over time they can leak.

16 · A It depends on the appliance. Self-contained (active) equipment is the one with its own compressor.

17 · D An unpressurized container lets the refrigerant flow in from the appliance.

18 · C Noncondensables add pressure. Comparing pressure and temperature helps find the problem.

19 · B High heat breaks these refrigerants down into toxic products. Ventilate the area.

20 · A The final processor recovers it or keeps the signed statement (name, address, date) for 3 years.

TYPE II

21 · C Table 1: high-pressure under 200 lb = 0 in Hg with any recovery equipment.

22 · A Medium-pressure with 200 lb or more: 15 in Hg (4 in Hg with pre-1993 equipment).

23 · D Major = removing the compressor, condenser, evaporator or an auxiliary heat exchange coil.

24 · B 15 lb, unless it is a pump-out unit permanently attached to the system.

25 · A Liquid moves much more refrigerant per minute. Then recover the vapor.

26 · C Refrigerant left as liquid or in the oil is boiling off. Keep recovering.

27 · D Comfort cooling 10%, commercial refrigeration 20%, industrial process refrigeration 30%.

28 · B 30 days (120 if an industrial process shutdown is needed), with verification tests.

29 · A Under a deep vacuum the motor windings can be damaged.

30 · C psia = psig + 14.7 (atmospheric pressure at sea level).

TYPE III

31 · B Below 45 psia at 104°F (ex: R-11, R-123). These systems run in a vacuum.

32 · D Air and moisture leak in, so the purge unit works harder to remove them.

33 · A First: controlled hot water or a device like Prevac. Second: nitrogen, at low pressure.

34 · C 25 mm Hg absolute (about 29 in Hg vacuum), with any recovery equipment.

35 · B It removes the air and noncondensables that leak into the system.

36 · D As pressure drops, trapped water can freeze and burst the tubes.

37 · A Vapor first: liquid in a deep vacuum boils very cold and can freeze the water in the tubes.

38 · C At 130°F the refrigerant dissolved in the oil comes out, so less is lost.

39 · B R-123 requires a refrigerant sensor; all refrigerants require an oxygen deprivation sensor.

40 · D 0 psig. Raise it with heat or hot water; the rule limits the use of nitrogen.

Missed a question? Go back to the study page of that section (10-14) and read the card on that topic again.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

FIRST JOB: GET HIRED AS A HELPER

No experience? Start as a helper or apprentice. Show that you are reliable, safe and ready to learn.

HELPER RESUME (FILL IN)

NAME
[Your name] · [City, State] · [Phone] · [Email]

GOAL
HVAC helper / apprentice. Bilingual English-Spanish. EPA 608 [type] (or in progress).

SKILLS
Hand and power tools · ladder safety · basic electrical (multimeter) · lifting · customer service

EXPERIENCE
[Job] · [Company] · [Dates]: [what you did: installed, maintained, always on time]

TRAINING
[HVAC school or online course] · [Year] · EPA 608 [card #]

EXTRAS
Valid driver's license · reliable transportation · own basic tools

Keep it to one page and bring printed copies.

WHERE TO LOOK

- Local HVAC contractors: call or stop by in the morning.
- Supply house counters: owners and techs buy parts there daily. Ask who is hiring.
- Your school's job office and your teachers.
- Apprenticeship programs in your state and trade unions.
- Job sites: "HVAC helper", "HVAC apprentice", "installer helper".
- Property management and building maintenance companies.

WHAT TO ASK IN THE INTERVIEW

- Pay per hour, and when are raises?
- Will I ride with a senior tech? How long?
- Do you pay for EPA 608 or other training?
- Which tools does the company supply?
- Hours, on-call and overtime pay?
- Will you sign letters for my experience hours?

READY-TO-SEND MESSAGES

Asking for a job

Hi, my name is [Name]. I'm looking for work as an HVAC helper. I'm reliable, I have my own basic tools and I speak English and Spanish. Can I stop by to talk?

After applying

Hi [Name], I applied for the helper position on [day]. I'm still very interested and I can start right away. When is a good time to talk?

After the interview

Thank you for your time today, [Name]. I'd love to learn the trade with your team. I can start on [date]. Have a great day!

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.

YOUR 8-MONTH PLAN

An example plan if you study and work as a helper at the same time. Adjust it to your school and your state.

MONTH 1

START

- [ ] Pick your route: visit 2-3 schools or programs
- [ ] Learn the 30 terms on page 8
- [ ] Buy safety gear and basic hand tools

MONTH 2

ELECTRICAL BASICS

- [ ] Multimeter: volts, amps, ohms, capacitance
- [ ] Read simple wiring diagrams
- [ ] Apply for helper jobs (page 20)

MONTH 3

CORE + TYPE I

- [ ] Study pages 10-12
- [ ] Practice test until you score 8/10
- [ ] Book the EPA 608 test

MONTH 4

TYPE II + TUBING

- [ ] Study page 13
- [ ] Cut, flare, braze with nitrogen (supervised)
- [ ] Start a log of your work hours

MONTH 5

TYPE III + EPA TEST

- [ ] Study page 14
- [ ] Practice test: all 40 questions
- [ ] Take Universal or the types you still need

MONTH 6

DIAGNOSTICS

- [ ] Superheat and subcooling
- [ ] Capacitors, contactors, fan motors
- [ ] Customer phrases in English

MONTH 7

HEATING + LICENSE

- [ ] Furnaces and heat pumps, with your lead tech
- [ ] Check your state license rules (page 6)
- [ ] Collect letters and pay stubs for your hours

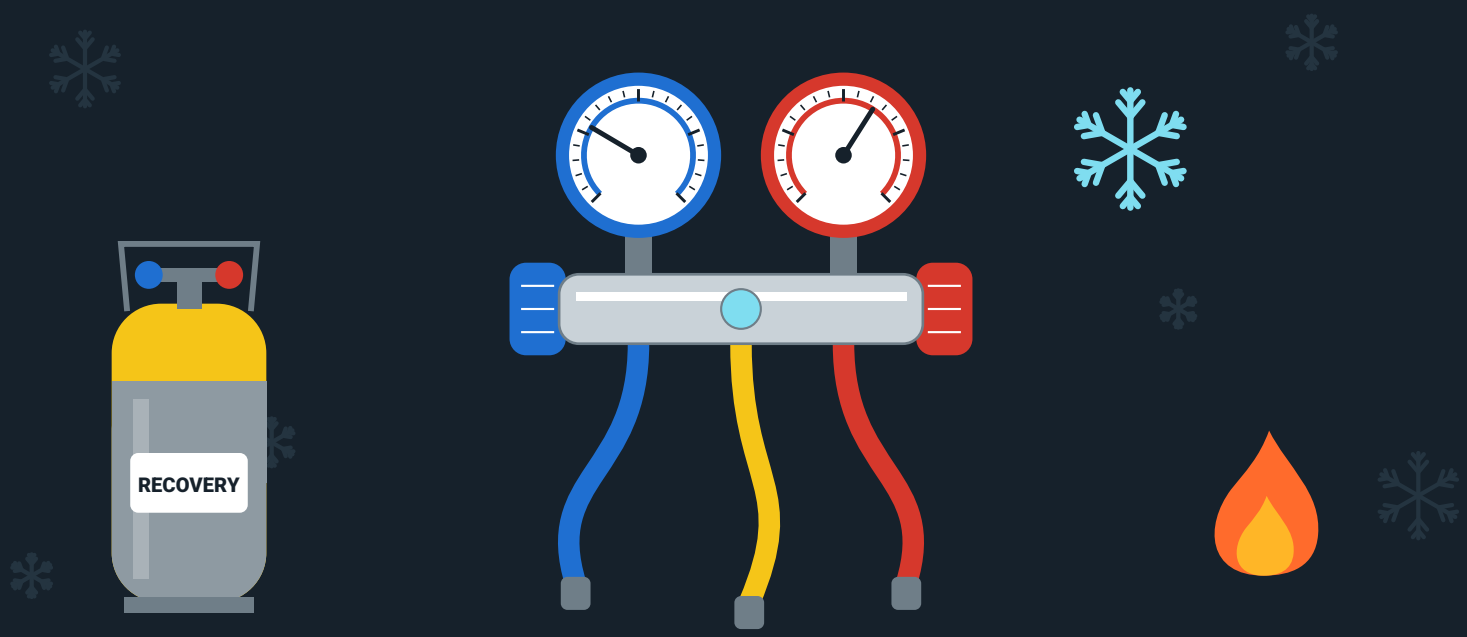
MONTH 8

NEXT LEVEL

- [ ] Add EPA 608 to your resume
- [ ] Ask for a raise or a tech I position
- [ ] Pick your next goal: license or specialty

Example only. Many schools advertise programs of about 8 months; others take longer. No job or income is guaranteed.

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.



FROM HELPER TO TECHNICIAN

One step at a time: study, get your EPA 608, log your hours and keep learning. More free guides for the trades at vifalio.com.

School → EPA 608 → Hours → License → Specialty

Educational guide. Pay and costs are estimates. Rules change: confirm on epa.gov and with your state agency. No job or income is guaranteed.