ISLAND BREEZE TECHNICIAN CERTIFICATION PROGRAM

EPA 608: Core

MODULE C13 | CORE SYSTEMS | PREREQ F5

The scene. You are three weeks from your first solo refrigerant job, and there is a federal law standing between you and the gauges. Not a suggestion, not a company policy: a law. Section 608 of the Clean Air Act says nobody connects to a refrigerant circuit without an EPA certification card, and the only way to get the card is to pass a proctored exam. The Core section is the gate to all of it. This module is built to walk you through that gate on the first attempt. Everything in here is either on the exam, or it explains why the exam asks what it asks, because the questions stick better when the story behind them makes sense.

Short Version

EPA Section 608 certification is the federal license to handle refrigerant in stationary equipment. The exam has four sections of 25 questions each, and you need 70 percent on a section to pass it. Core is mandatory for everyone; pass all four and you are Universal, which is the Island Breeze standard. Core tests the story and the rules: chlorine from CFC and HCFC refrigerants destroys stratospheric ozone, the Montreal Protocol and the Clean Air Act exist to stop that, venting refrigerant is illegal, recovered refrigerant follows strict recover, recycle, and reclaim definitions, recovery cylinders have hard fill and testing rules, and appliances holding 50 pounds or more of ozone-depleting refrigerant trigger leak repair at 30 percent for industrial process, 20 percent for commercial refrigeration, and 10 percent for comfort cooling. Old study guides print 35 and 15 percent: those are pre-2019 legacy numbers and they are wrong answers today. Learn the current numbers, learn the definitions word for word, and the Core exam is very passable.

Key Values

VALUE	NUMBER	WHY IT MATTERS
Questions per exam section	25	Four sections: Core, Type I, Type II, Type III
Passing score	70 percent (18 of 25)	Per section; Universal means passing all four
One chlorine atom destroys	Up to 100,000 ozone molecules	The catalytic cycle, the heart of the ozone story
Chlorine atmospheric lifetime	About 120 years	Why CFC releases keep doing damage for decades
Stratosphere location	Roughly 7 to 30 miles up	Where the ozone layer lives
Montreal Protocol signed	1987	The international ozone treaty

VALUE	NUMBER	WHY IT MATTERS
US CFC production ban	January 1, 1996	CFCs like R-12 no longer manufactured
Sales restriction effective	November 14, 1994	Refrigerant sales limited to certified techs
New R-22 production ended	January 2020	Reclaimed and recovered supply only
All HCFC production ends	2030	Servicing old systems stays legal after
Leak rate, industrial process refrigeration	30 percent	Current rule, appliances with 50 lb or more of ODS refrigerant
Leak rate, commercial refrigeration	20 percent	Current rule, same 50 lb scope
Leak rate, comfort cooling	10 percent	Current rule, same 50 lb scope
Legacy leak rates (pre-2019, WRONG today)	35 percent commercial and IPR, 15 percent other	Flag them if an old practice exam shows them
Leak repair deadline	30 days	Or a 1-year retrofit/retire plan as the exception
Recovery cylinder maximum fill	80 percent of capacity	Liquid expansion needs vapor space
Refillable cylinder hydrostatic retest	Every 5 years	DOT requirement
Recovery equipment certification date	November 15, 1993	Equipment made after this date must be EPA certified to AHRI 740
Evacuation rule charge threshold	200 lb	Splits required recovery vacuum levels (detail in Type II)
Small appliance definition	5 lb or less, factory sealed	The Type I boundary, defined in Core
Dehydration vacuum standard	500 microns	Industry deep vacuum target (also the IB standard)
Reclaimed refrigerant purity standard	AHRI 700	Required before refrigerant can change owners
Recovery equipment standard	AHRI 740	Testing standard for certified recovery machines
Maximum penalty	Adjusted yearly for inflation, in the tens of thousands of dollars per day per violation	Old guides print $27,500 or $44,539; the number only goes up

Field Checklist: Core Compliance on Every Job

- [ ] Card on you, not in the glovebox and not at the office. You must be able to produce proof of certification when handling refrigerant.
- [ ] Identify the refrigerant from the nameplate before connecting anything (your F5 habit, now a legal one too).
- [ ] Low-loss fittings on every hose. Open-ended hoses that bleed refrigerant when disconnected are a venting violation, not a de minimis release.
- [ ] Recover before opening. No system gets cut, unsweat, or de-brazed with a charge in it.
- [ ] Recovery cylinder checks: DOT-approved refillable cylinder, within its 5-year hydrostatic test date, labeled for the refrigerant going in, never past 80 percent fill.
- [ ] One refrigerant per cylinder. A mixed cylinder cannot be reclaimed and becomes a disposal problem.
- [ ] Never pressurize a system with oxygen or compressed air. Nitrogen only, with a regulator.
- [ ] Ventilate before entering closets, crawlspaces, or machinery rooms where refrigerant may have leaked. Refrigerant is heavier than air and displaces oxygen low in the space.
- [ ] Log every recovery: date, refrigerant type, pounds, your name, job ID.

IB STANDARD

EPA 608 Universal certification is an Island Breeze onboarding hard gate. Not Core only, not Core plus Type II: Universal, all four sections. No Island Breeze technician touches a refrigerant circuit on a customer job without the Universal card, and dispatch will not assign refrigerant work to an uncertified tech. The company schedules and proctors the exam during onboarding; your job is to arrive having studied this module. Every recovery event also gets logged in ServiceTitan with date, refrigerant type, quantity to 0.1 lb, tech certification number, and job ID, because complete cylinder and recovery logs are the first thing an EPA inspector asks for.

Full Breakdown

What Section 608 is, and what it is not

In F5 you learned what refrigerants are and why the molecule in the bottle keeps changing. Section 608 is the law that controls who may handle those molecules and how.

The Clean Air Act is the main federal air pollution law in the United States. When Congress amended it in 1990, Section 608 of that act gave the EPA authority over refrigerants in stationary equipment: air conditioners, heat pumps, refrigerators, chillers, anything bolted down. A separate section, 609, covers motor vehicle air conditioning. Remember the split: 608 is buildings, 609 is cars. The exam loves this distinction.

What the 608 card does: it makes it legal for you to buy regulated refrigerant and to open, evacuate, recover from, and charge refrigerant circuits in stationary appliances.

What the 608 card does not do: it does not license you to install or repair equipment. State contractor licensing handles that separately. It also does not transfer: an apprentice cannot work on a refrigerant circuit under

someone else's card. An uncertified helper can do electrical diagnosis, change filters, and wash coils, but the moment gauges connect to a refrigerant circuit, the person connecting them needs their own certification. The one exception is supervised classroom instruction.

The certification itself never expires. There is no renewal exam and no continuing education requirement. The catch the exam wants you to know: you are personally responsible for keeping up with rule changes after you certify. The rules have changed several times since 1994, and "my study guide was older" is not a defense.

Exam structure. Four sections: Core, Type I (small appliances), Type II (high-pressure appliances), Type III (low-pressure appliances). Each section is 25 multiple-choice questions, and you pass a section with 70 percent, which is 18 of 25. Core is the prerequisite: no Type counts unless Core is passed. Passing all four makes you Universal. The exam is closed book and proctored; you are allowed a temperature-pressure chart and a calculator, nothing else. One administrative trap: in a single sitting you must pass Core plus at least one Type, or the whole attempt resets. Retakes after a valid sitting cover only the sections you failed.

The ozone story: how a refrigerator molecule punches holes in the sky

This is the science half of Core, and the exam treats it seriously. Learn the chain of events, not just the vocabulary.

Where the ozone layer is. The stratosphere is the layer of atmosphere from roughly 7 to 30 miles above the surface, and the ozone layer sits inside it. Ozone is a molecule of three oxygen atoms, written O_3. Its job, from our point of view, is absorbing hard ultraviolet (UV) radiation from the sun before it reaches the ground. Less ozone means more UV at the surface, and the documented effects are skin cancer, cataracts, reduced crop yields, and damage to marine organisms at the base of the food chain.

How chlorine gets up there. CFC molecules (recall from F5: chlorine, fluorine, carbon, like R-12) are the most stable molecules the industry ever made. That stability was the selling point and the fatal flaw. Nothing in the lower atmosphere breaks a CFC down, so it drifts intact for years until it rises into the stratosphere. Chlorine from natural sources like volcanoes mostly dissolves in water and rains out long before reaching the stratosphere; CFC chlorine rides up inside a waterproof molecule. That difference is how scientists pinned the damage on refrigerants: measured chlorine and fluorine rising together in the stratosphere matched CFC emissions, and instruments found chlorine monoxide, the smoking-gun molecule from the destruction reaction itself, exactly where ozone was disappearing.

The destruction cycle. Up in the stratosphere, intense UV finally cracks the CFC molecule and breaks a chlorine atom loose. That free chlorine atom is a radical, meaning a fragment hungry to react, and here is the part that makes it catastrophic: the chlorine is not used up by the reaction.

1. Chlorine meets ozone: $Cl + O_3$ becomes ClO (chlorine monoxide) plus ordinary O_2. One ozone molecule destroyed.
2. The ClO then meets a free oxygen atom: $ClO + O$ becomes $Cl + O_2$. The chlorine is released, unchanged, ready to go again.

It is a loop. One chlorine atom cycles through it over and over, destroying up to 100,000 ozone molecules, and a chlorine atom survives in the atmosphere for about 120 years. That is why a pound of R-12 vented in 1985 is still doing damage today, and it is why the law treats venting as seriously as it does.

ODP: scoring the threat. Ozone depletion potential (ODP) is a number that ranks how much ozone a refrigerant destroys, with R-11 set as the reference at 1.0. CFCs score at or near the top. HCFCs like R-22 carry chlorine too, but the added hydrogen makes the molecule fragile enough that most of it breaks down before reaching the stratosphere, so HCFC ODPs are small fractions, around 0.05 for R-22. HFCs like R-410A and R-134a contain no chlorine at all: ODP exactly zero.

GWP: the second scoreboard

The ozone problem has a sibling, and Core expects you to keep them straight. Global warming potential (GWP) measures how much heat one pound of a gas traps in the atmosphere compared to one pound of carbon dioxide, which is defined as 1. Refrigerants score in the hundreds to thousands: R-410A sits at 1,924, R-32 at 675, R-454B at 466. Hydrocarbons like propane score under 10.

The memory hook that sorts every refrigerant question: chlorine drives ozone depletion, fluorine-heavy stability drives global warming potential. A refrigerant can be innocent on one axis and guilty on the other. R-410A is the textbook case: zero ODP, no chlorine, completely clean in the ozone story, and yet it is being phased down anyway because its GWP is high. If an exam question asks why HFCs are being phased down, the answer is global warming potential, never ozone.

The law: Montreal to the AIM Act

The regulation timeline reads like a response to the science, because it is. Dates are exam material; learn the bolded ones cold.

- **1987: the Montreal Protocol.** The international treaty on ozone-depleting substances. It covers CFCs, halons, carbon tetrachloride, and methyl chloroform, not just refrigerants. The United States is a party. Nearly every country on Earth signed, which makes it the most successful environmental treaty ever written.
- **1990: Clean Air Act amendments.** Congress wrote the Montreal commitments into US law and created Section 608.
- **July 1, 1992: the venting prohibition takes effect** for CFCs and HCFCs.
- **November 15, 1993: the recovery equipment line.** Recovery equipment manufactured after this date must be certified by an EPA-approved testing organization to meet AHRI 740 and must have low-loss fittings. This date also splits the required evacuation levels you will memorize in the Type sections, along with the 200 lb charge threshold.
- **November 14, 1994: the sales restriction.** From this date, CFC and HCFC refrigerants could only be sold to certified technicians. In 2018 the restriction was extended to HFC substitutes as well, so today essentially all regulated refrigerant requires a card to purchase.
- **January 1, 1996: US CFC production banned.** No more new R-12.
- **2010: no new R-22 equipment.** The HCFC phasedown bit residential AC.
- **January 1, 2019: leak rate thresholds tightened** from the legacy 35/15 values to the current 30/20/10. More on this below, it gets its own section.
- **January 2020: new R-22 production and import ended.** Existing systems run on recovered and reclaimed supply. Servicing them stays legal indefinitely; the ban is on making new gas, not on using the old equipment.

- **2030: all HCFC production ends.**
- **December 2020: the AIM Act.** The American Innovation and Manufacturing Act started the HFC era phasedown: production allowances stepping down 85 percent over 15 years, driven by GWP, not ozone.
- **January 1, 2025: no new residential equipment over 700 GWP** may be manufactured or imported, which ended R-410A in new units and brought in the A2Ls you met in F5.

The pattern: Montreal and Section 608 solved the ozone problem with chlorine-free refrigerants, then the AIM Act picked up the GWP problem those replacements created. Two problems, one timeline.

Venting: the prohibition and the fine print

The core rule of Core: it is illegal to knowingly vent or release refrigerant while maintaining, servicing, repairing, or disposing of an appliance. That covers CFCs, HCFCs, and the substitute refrigerants, HFCs and HFOs included. The exam will test the boundaries, so learn what is and is not a violation.

Allowed releases (not venting):

- **De minimis releases**: the trace amounts that escape despite a good-faith recovery effort, like the wisp lost in a low-loss fitting when you disconnect a hose. The phrase "good-faith" is load bearing. The same wisp from an open-ended hose with no low-loss fitting is a violation, because no good-faith effort was made to contain it.
- **Refrigerant released as part of normal operation**, such as a purge unit discharging non-condensables on a low-pressure chiller.
- **Mixtures of nitrogen and a holding charge.** A factory ships a coil with a small refrigerant trace in nitrogen; releasing that is legal. The trap question: you may NOT add nitrogen on top of a full refrigerant charge and call the release a holding charge. That is venting with extra steps.
- **A small amount of refrigerant used as trace gas mixed with nitrogen for leak testing** is acceptable.
- **Exempt substitutes** may be released outright: carbon dioxide, nitrogen, and water are the named examples, and hydrocarbons like propane are federally exempt in most applications. Legality and safety are different questions: propane is exempt from the venting rule and still flammable, so field practice does not change.

What this means with tools in hand: every hose has a low-loss fitting, every system gets recovered before it is opened, and pressure testing uses nitrogen through a regulator. Never oxygen, never compressed air: both can detonate when mixed with compressor oil under pressure. That last sentence is simultaneously a Core exam answer and a rule that keeps your face attached.

The three Rs: recover, recycle, reclaim

These three words have exact legal definitions, and the exam tests them word for word. Do not blur them.

- **Recover**: remove refrigerant from a system and put it in an external container, with no testing and no processing of any kind. This is what you do on every job with a recovery machine and a cylinder. Recovery comes in two flavors: active (self-contained), using a certified recovery machine with its own compressor, and passive (system-dependent), using the appliance's own compressor or pressure, which is only permitted on appliances holding 15 lb of refrigerant or less.

- **Recycle**: clean recovered refrigerant for reuse using oil separation and single or multiple passes through filter-driers, usually with machinery at the job site or shop. Recycling reduces moisture, acid, and particulates but does not certify purity. In practice, field recycling is mostly an automotive (Section 609) workflow.
- **Reclaim**: reprocess refrigerant to the AHRI 700 purity standard, verified by chemical analysis, at an EPA-certified reclaimer. Reclamation is the only path that lets refrigerant be sold to a new owner.

The ownership rule, because it decides what happens to every cylinder you fill: recovered refrigerant may be returned to the same appliance it came from, or charged into another appliance owned by the same equipment owner, without any processing. The moment the refrigerant would change owners, it must be reclaimed to AHRI 700 first. You cannot sell it, trade it, or give it away as-is. So the recovery cylinder from a customer's old condenser goes one of three places: back into that customer's equipment, or to an EPA-certified reclaimer, or to proper disposal. It never becomes your personal stash and it never tops off a different customer's system.

One scope note the exam likes: desiccant dehumidifiers contain no refrigerant and are outside Section 608 entirely.

Recovery cylinders: the rules that prevent shrapnel

A recovery cylinder is a pressure vessel that rides in a hot truck, so the rules are strict and the exam tests all of them.

- **Use only DOT-approved refillable recovery cylinders.** DOT is the Department of Transportation, which regulates pressure vessels in transit. Refillable recovery cylinders are built to DOT specifications (4BA and 4BW are the common ones) and are marked accordingly.
- **Never refill a disposable cylinder.** The white DOT Spec 39 cylinders that virgin refrigerant ships in are single-trip containers. Refilling one is illegal and dangerous. When a disposable is empty: recover any remaining vapor down to 0 psig, render the cylinder useless, and recycle the metal.
- **Fill limit: 80 percent of capacity, never more.** Liquid refrigerant expands as it warms. A cylinder filled past 80 percent can go hydrostatically full, meaning no vapor space remains, and from there a few degrees of warming builds hydraulic pressure that can rupture steel. Recovery machines and scales exist so you never guess at this.
- **Hydrostatic retest every 5 years.** Refillable cylinders must be pressure tested on a 5-year cycle, and the test date is stamped into the cylinder. Out-of-date cylinder, no fill.
- **Color convention: recovery cylinders are gray with a yellow top.** That is the industry signal for "used refrigerant inside." Recall from F5 that virgin refrigerant cylinders are now one uniform light gray-green color, and A2L cylinders add a red band and left-hand threads. On every cylinder, recovery or virgin, the printed label is the identification; paint is just paint.
- **Label everything, ship upright, DOT class 2.2.** Refrigerants ship as class 2.2 non-flammable gas (A2Ls carry their own flammability marking). The cylinder must be labeled with the refrigerant it contains.
- **Never mix refrigerants in a cylinder.** A mixed cylinder cannot be separated economically and cannot be reclaimed; it becomes hazardous waste with a disposal bill. One cylinder, one refrigerant, every time.
- **Check for non-condensables before reusing recovered gas:** let the cylinder rest until it reaches room temperature, then compare its pressure to the PT chart value for that temperature, exactly the F5 cylinder

check. Pressure above chart means air or other non-condensable gas is in there.

PHOENIX FIELD NOTE

Every cylinder rule above gets stress-tested by a Phoenix summer. The 80 percent fill limit assumes the cylinder might warm to ordinary temperatures; a recovery cylinder riding in a closed van through a 115 F afternoon is not an ordinary temperature, it is a saturated vessel climbing the PT curve past 445 psig. Shade your cylinders, secure them upright and low in the truck, and never leave a freshly filled recovery cylinder baking on the roof deck or behind the windshield. The 5-year hydro test also matters more here: heat cycles age steel, and Phoenix cylinders live a harder life than the national average.

Safety: the three ways refrigerant hurts you

Core has a safety block, and it maps to three hazards.

Asphyxiation. Refrigerant vapor is heavier than air and displaces oxygen, and most refrigerants are odorless. A major leak in a closet, basement, crawlspace, or machinery room fills the space from the floor up with gas you cannot smell. People die this way, usually in confined spaces, and would-be rescuers become second victims. Rules: ventilate before entering any space where refrigerant may have collected, never work a major leak in a confined space without forced ventilation, and machinery rooms are required by ASHRAE 15 to carry refrigerant sensors, alarms, and mechanical ventilation. Self-contained breathing apparatus (SCBA) is the equipment for entering a space with a known large release; a dust mask does nothing against an oxygen-displacing gas.

Frostbite. Liquid refrigerant boils at well below freezing at atmospheric pressure, and it will flash-boil on your skin and freeze the tissue. Gloves and safety glasses whenever liquid refrigerant is moving: charging, recovering, connecting and disconnecting hoses. An eye splash is an emergency.

Decomposition products. When refrigerant vapor meets a flame or a glowing-hot surface, the molecule breaks apart into genuinely nasty products: hydrochloric acid, hydrofluoric acid, and potentially phosgene gas. The field encounter is real: brazing on a system that still has refrigerant in it, or a leak drawn into an open-flame furnace or a torch. The sharp acrid smell during hot work is your signal to stop, ventilate, and find the refrigerant. This is one more reason recovery comes before any torch touches the system, and why you never leak-test with a flame on today's refrigerants.

The sales restriction

Since November 14, 1994, regulated refrigerant can only be sold to certified technicians, and since 2018 that includes HFC substitutes. The supply house will keep your certification number on file and will ask for it. The exam wants two more details: the purchase must be consistent with the certification held (a Type I card does not buy a pallet of R-410A for split system work), and there is one carve-out: small cans of substitute refrigerant under 2 lb with a self-sealing valve, intended for motor vehicle AC top-offs, may be sold to anyone. That is the can on the auto parts store shelf, and it is a 609-world exception, not a loophole for stationary work.

Leak rates: the current rules, and the history that confuses everyone

This is the topic where outdated study material actively damages exam scores, so here is the clean version first, then the history.

The current thresholds. For appliances containing 50 lb or more of ozone-depleting refrigerant, leak repair is triggered when the annualized leak rate exceeds:

- **30 percent** for industrial process refrigeration (IPR)
- **20 percent** for commercial refrigeration
- **10 percent** for comfort cooling and all other appliances

Annualized leak rate means the leak expressed as a percentage of the full charge per year, calculated whenever refrigerant is added. Below 50 lb of charge there is no federal leak rate requirement under Section 608, which is why most residential splits, carrying roughly 6 to 13 lb, never trigger it, while rooftop equipment and rack refrigeration do.

What happens when the threshold trips. The owner must have the leak repaired within 30 days, or develop a 1-year retrofit or retirement plan for the appliance as the exception path. The repair gets an initial verification test before refrigerant goes back in, and a follow-up verification test after the appliance returns to normal operating conditions. Once an appliance exceeds its threshold, it goes on a leak inspection schedule: appliances of 500 lb or more in commercial refrigeration or IPR get inspected every 3 months until they hold below threshold for four consecutive quarters; 50 to 500 lb appliances in those categories, and all comfort cooling appliances of 50 lb or more, get inspected annually until they hold below threshold for a year. Technicians must give the owner the service invoices and inspection and verification records, and records are retained for 3 years.

The legacy numbers, flagged loudly. Before January 1, 2019, the thresholds were 35 percent for commercial refrigeration and IPR, and 15 percent for everything else including comfort cooling. Those numbers are still printed in thousands of circulating study guides and old practice exams. If you see 35 or 15 on a practice question, you are holding pre-2019 material. On the real exam today, the answers are 30, 20, and 10. Burn that in.

The leak rule's strange decade: a short history so old questions do not rattle you

One short subsection of history, because you will eventually meet a practice question or an older tech whose facts froze at a different year, and you should know which era they are quoting.

In 2016 the EPA extended the Section 608 leak repair rules to HFC appliances, not just ozone-depleting ones, with the tightened 30/20/10 thresholds taking effect January 1, 2019. Then on February 26, 2020, the EPA rescinded the HFC extension: from that date, the Section 608 leak repair provisions applied only to appliances containing ozone-depleting refrigerant, and an appliance running purely on HFCs like R-410A had no federal leak repair obligation. Then the AIM Act era reversed the direction again: under the AIM Act's refrigerant management rules, leak repair obligations returned for HFC appliances, now with a 15 lb charge threshold taking effect at the start of 2026, using the same 10/20/30 percentage triggers.

What is enforceable now, in plain terms: ozone-depleting appliances of 50 lb or more follow the Section 608 rules above, and HFC appliances of 15 lb or more follow the parallel AIM Act rules with the same percentages. What the 608 Core exam tests: the Section 608 framework and the 30/20/10 thresholds at the 50 lb line. Answer the exam from Section 608; run your jobs knowing both rules exist.

Penalties, enforcement, and why the paperwork protects you

Violating Section 608, including knowingly venting, can cost up to tens of thousands of dollars per day per violation, with the exact maximum adjusted upward for inflation every year. Older guides print $27,500 per day; 2020-era material prints $44,539; the current figure is higher still. The exam cares that you know the penalty is per day, per violation, and that the EPA pays awards, historically up to $10,000, to people who report violations that lead to enforcement. That last part is worth absorbing: the person most likely to report a venting contractor is a competitor, an ex-employee, or the customer standing right there. Violators can also lose their certification entirely.

PHOENIX FIELD NOTE

EPA enforcement is not an abstraction in this market. EPA Region 9, which covers Arizona, brings refrigerant cases regularly, including a six-figure settlement against an ice plant right here in Phoenix. Treat your recovery logs and cylinder records as armor: a tech with complete records has nothing to fear from an inspector, and a company with complete records can prove every pound of refrigerant went where the law says it should.

Taking the exam: logistics and strategy

The mechanics: the exam is administered by EPA-approved certifying organizations (ESCO Institute and Mainstream Engineering are the big national ones). Registration requires personal identification, and the proctor checks it. Sessions are closed book, in person or by live video proctor, with a PT chart and a calculator allowed and phones banned. Questions are drawn from a large pool, roughly two thousand questions deep, so memorizing a leaked answer key is a losing strategy and is also reported to the EPA. Certifying organizations maintain an online registry that employers use to verify cards; you can opt out of the public listing. Lost cards are replaced by the certifying organization, not by the EPA. Keep a copy of your certificate at your place of business, and the records stay retained for 3 years after a technician leaves the trade.

Strategy that actually moves scores: the Core section is definitions and numbers, so it rewards exact memorization in a way diagnosis never does. Make flashcard pairs of every value in the Key Values table. Read each exam question for its operative word: "recover" versus "recycle" versus "reclaim" questions are usually answerable from the single defining feature (no processing, cleaned on site, AHRI 700 with chemical analysis). Date questions cluster on 1987, 1993, 1994, 1996, and 2020. And when two answers look right, pick the one that matches the current rule, not the rule your older practice test taught: 30/20/10, not 35/15.

The v2 video for this module is a full exam-strategy walkthrough of the hardest Core concepts. Watch it after reading this article and before your first practice exam.

Common Mistakes

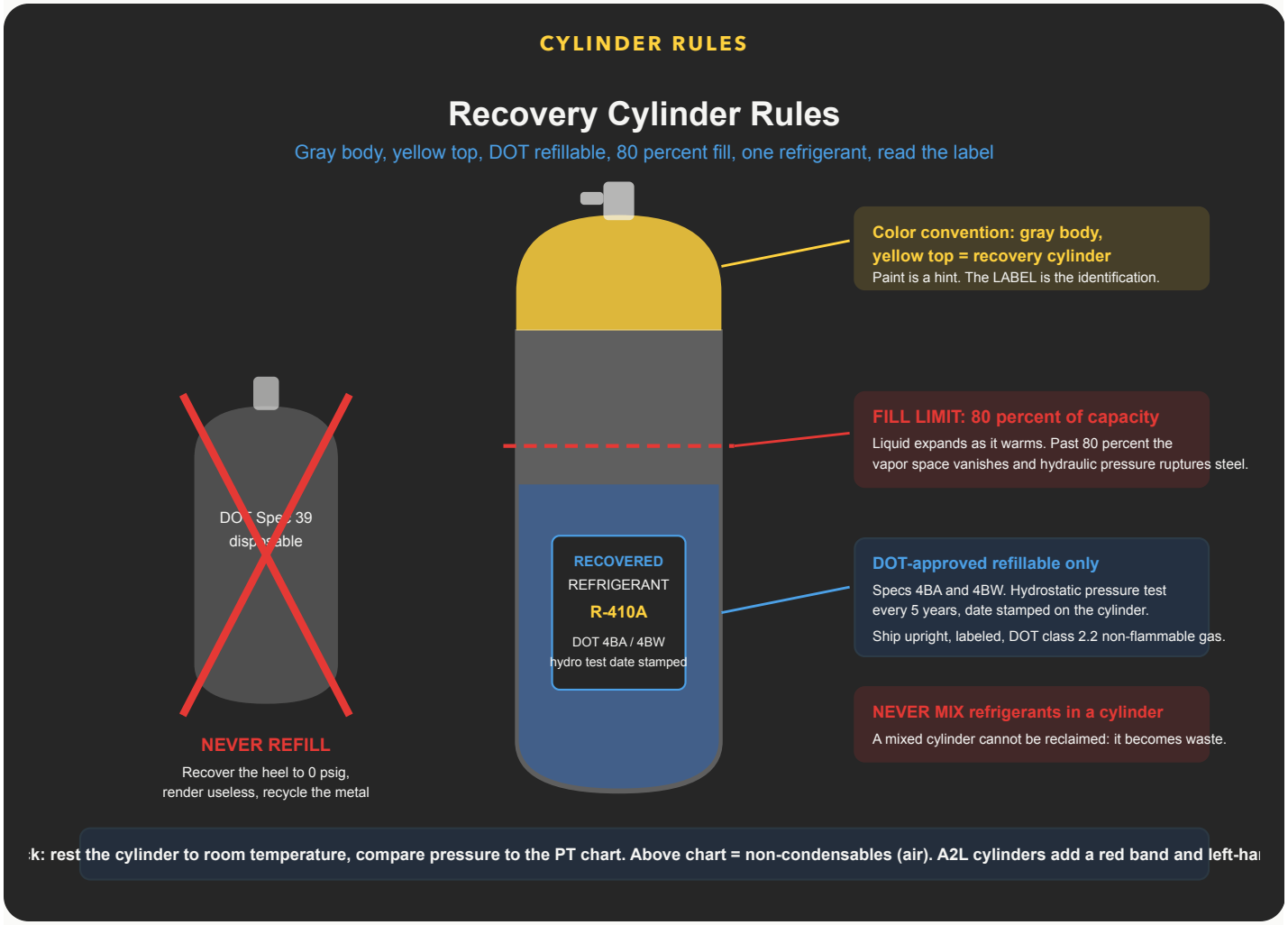
1. **Answering leak rate questions from pre-2019 material.** Old guides print 35 percent commercial/IPR and 15 percent comfort cooling. Those are legacy values and wrong on today's exam. The current thresholds are 30 percent IPR, 20 percent commercial refrigeration, 10 percent comfort cooling, for appliances of 50 lb or more. This single confusion costs more Core points than any other.

2. **Blurring the three Rs.** Recover means remove and store, nothing else. Recycle means cleaned with filter-driers, usually on site. Reclaim means restored to AHRI 700 purity with chemical analysis, and it is the only path for refrigerant to change owners. Exam questions hinge on one word; sloppy definitions fail them.
3. **Treating the 608 card as broader than it is.** It does not cover car AC (that is 609), it does not license equipment installation (state law does), and it does not extend to an uncertified helper working "under" you. Each of those is a separate exam question and a separate real-world citation.
4. **Cylinder negligence.** Filling past 80 percent, refilling a DOT-39 disposable, using an out-of-hydro-test cylinder, or mixing refrigerants in one bottle. Each is an exam answer, and each is a real hazard: the first three can turn a cylinder into a bomb, and the fourth turns refrigerant into unreclaimable waste.
5. **Assuming HFCs are fair game because they do not harm ozone.** The venting prohibition covers substitute refrigerants too. R-410A has zero ODP and venting it is still a federal violation with a daily penalty. Only the exempt list (carbon dioxide, nitrogen, water, and exempt hydrocarbons) may be released, and flammability still makes some of those a bad idea in practice.

What Is Next

Core is the gate; the Type sections are the doors. Your next modules take the recovery and evacuation framework introduced here and load in the type-specific numbers: the small appliance rules for Type I, the high-pressure evacuation table and the 200 lb threshold for Type II, and the low-pressure chiller world for Type III. Pass Core first. Everything else stacks on it.

Module Visuals



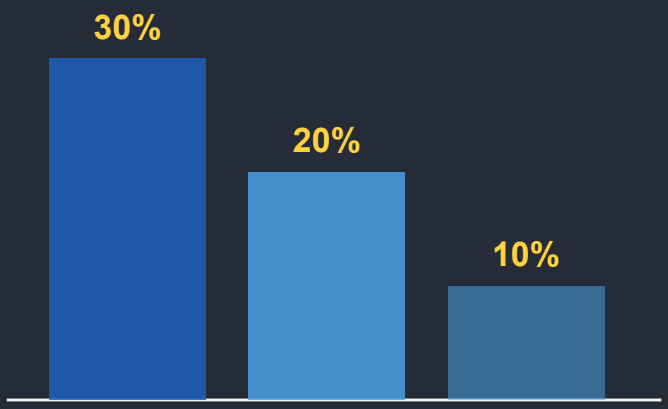
LEAK RATE THRESHOLDS

Leak Rate Thresholds: Current vs Legacy

Annualized leak rate triggers for appliances with 50 lb or more of ODS refrigerant

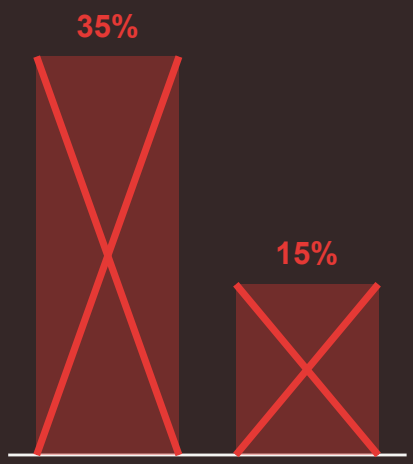
CURRENT RULE (since Jan 1, 2019)

These are the answers on today's exam



LEGACY (pre-2019)

WRONG on today's exam



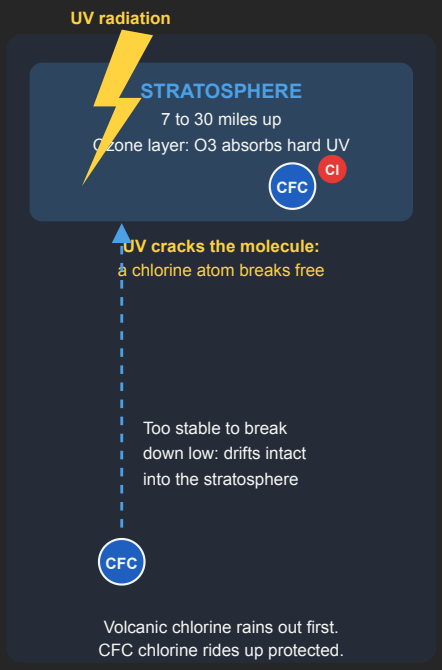
Threshold exceeded: repair within 30 days, or a 1-year retrofit/retire plan. Verification tests before and after.

If a practice exam offers 35 or 15, it is quoting the pre-2019 rule. Answer with 30 / 20 / 10.
AIM Act era: HFC appliances follow a parallel rule at a 15 lb threshold with the same 10/20/30 triggers.

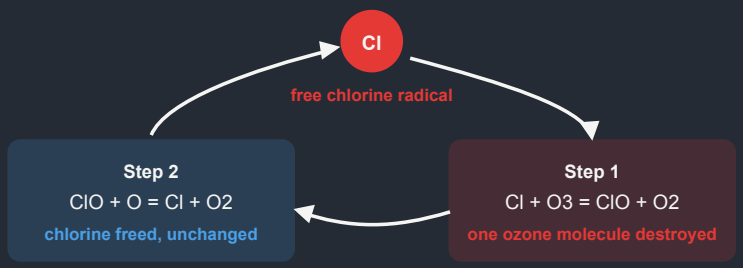
OZONE DEPLETION CHAIN

How One Chlorine Atom Destroys Ozone

UV frees the chlorine, then the chlorine cycles: destroyed ozone, freed chlorine, repeat



The Catalytic Destruction Cycle



The chlorine is never used up.

It loops back to Step 1 and destroys another ozone molecule, over and over, for as long as it stays in the stratosphere.

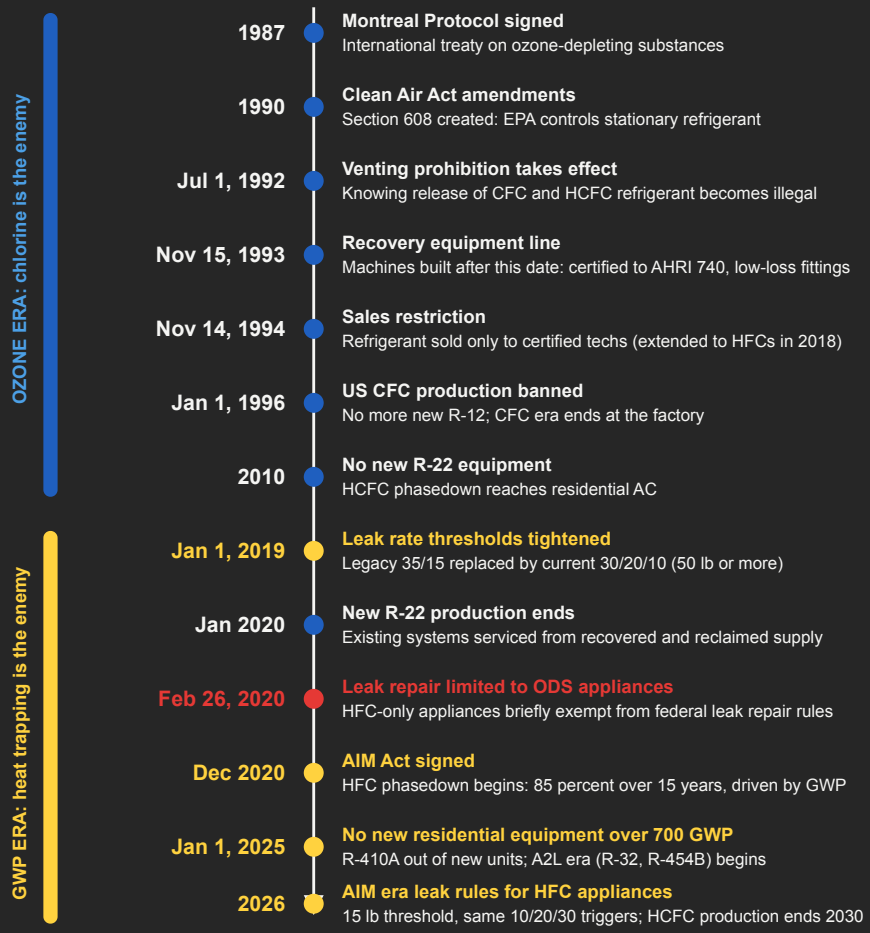
Evidence: chlorine monoxide (ClO) measured exactly where ozone disappears

One chlorine atom: about 120 years in the atmosphere, up to 100,000 ozone molecules destroyed

REGULATION TIMELINE

Regulation Timeline: Montreal to the AIM Act

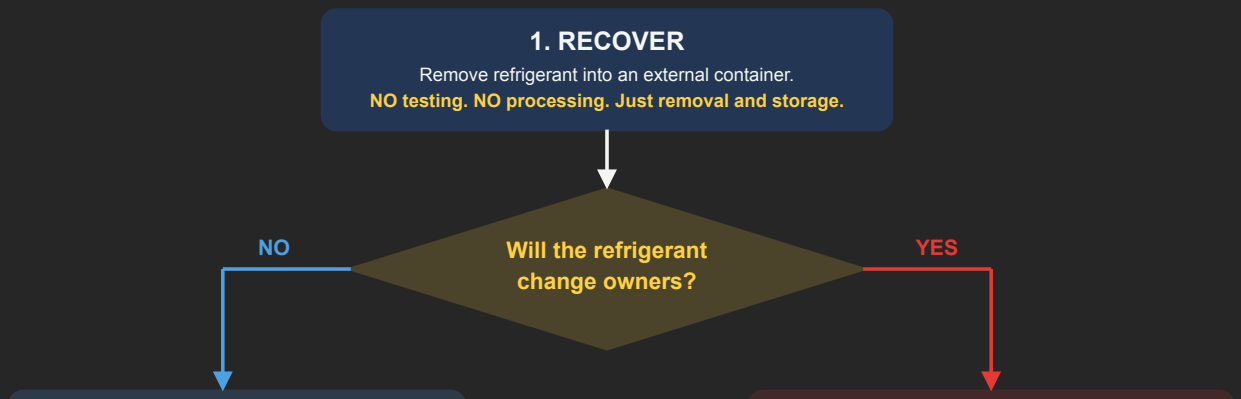
Blue era = fixing ozone depletion. Yellow era = shrinking GWP. Dates in bold are exam favorites.



THREE RS DECISION TREE

The Three Rs: What Happens to Recovered Refrigerant

Every job starts with RECOVER. Ownership decides everything after that.



SAME OWNER: reuse allowed

Back into the same appliance, or another appliance with the same owner.

No processing legally required.

2. RECYCLE (optional cleanup): oil separation + filter-driers, usually on site.

NEW OWNER: must be RECLAIMED

3. RECLAIM: reprocessed to the AHRI 700 purity standard, verified by chemical analysis, at an EPA-certified reclaimer.

Selling, trading, or giving away recovered refrigerant without reclaiming it is illegal.

WHO MAY DO WHAT

RECOVER:	any 608-certified tech, certified machine	**RECLAIM:**	EPA-certified reclaimer ONLY
RECYCLE:	certified tech with recycling equipment	**Mixed cylinder: cannot be reclaimed, becomes waste**	