

## EPA Section 608 Technician Certification

Environmental Protection Agency (EPA) regulations, under section 608 of the Clean Air Act require that technicians, who maintain, service, repair, or dispose of equipment that could release ozone-depleting refrigerants into the atmosphere must be certified. Technicians are required to pass an EPA-approved test to earn Section 608 Technician Certification.

CGTC provides delivery and proctoring of the EPA Section 608, Technician Certification exam upon request. This is a web-delivered exam, which is proctored by a certified and approved instructor.

## General Program Information

The EPA has developed four types of certification:

- Type 1 – for servicing small appliances
- Type 2 – for servicing and disposing of high, or very-high pressure appliances
- Type 3 – for servicing and disposing of low-pressure appliances
- Universal – for services all types of equipment (encompasses Types 1-3)

**Note:** To receive any of the four types of certifications noted, a participant must successfully complete the “Core Topics” portion of the exam. This section is pertinent to all certification types, and consists of 25 questions. Pricing includes access to all portions of the exam.

## Examination Topics

### Core Topics (25 Questions)

- Environmental Impacts
  - Presence of chlorine in chlorofluorocarbon (CFC) and hydrochlorofluorocarbon (HCFC) refrigerants
  - Identification of CFC, HCFC, and hydrofluorocarbon (HFC) refrigerants
  - Atmospheric effects from different types of refrigerants
  - Heal and environmental effects of stratospheric ozone depletion
  - Evidence of stratospheric ozone depletion and the role of CFCs and HCFCs
- Clean Air Act and Montreal Protocol
  - CFC phase-out date
  - R-22 phase-out date
  - Venting prohibition at servicing
  - Venting prohibition at disposal
  - Venting prohibition on substitute refrigerants
  - Penalties under the Clean Air Act
  - Montreal Protocol

- Section 608 Regulations
  - Definition/identification of high and low-pressure refrigerants
  - Definition of system-dependent vs. self-contained recovery/recycling equipment
  - Identification of equipment covered by the rule
  - Need for third-party certification of recycling and recovery equipment
  - Standards for reclaimed refrigerant
  - Sales restrictions
  - The Clean Air Act prohibition on venting
- Substitute Refrigerants and Oils
  - Absence of “drop-in” replacements
  - Incompatibility of substitute refrigerants with many lubricants used with CFC and HCFC refrigerants
  - Fractionation problem – tendency of different components of blends to leak at different rates
- Refrigeration
  - Refrigerant states and pressures at different points in the refrigeration cycle
  - Refrigeration gauges
  - Leak detection
- Three “R” Definitions
  - Recover
  - Recycle
  - Reclaim
- Recovery Techniques
  - The need to avoid mixing refrigerants
  - Factors affecting the speed of refrigerant recovery
- Dehydration Evacuation
  - The need to evacuate system to eliminate air and moisture at the end o service
- Safety
  - Risk of exposure to refrigerant
  - Personal protective equipment
  - Reusable cylinders vs. disposable cylinders
  - Risks of filling cylinders more that 80% full
  - Use of nitrogen rather than oxygen or compressed air for leak detection
  - Use of pressure regulator and relive valve with nitrogen
- Shipping
  - Labels required for refrigerant cylinders (refrigerant identification and DOT classification tag)

### **Type 1 Certification Exam (Small Appliances – 25 Questions)**

- Recovery Requirements
  - Definition of “small appliance”
  - Evacuation requirements for small appliances with and without working compressors using recovery equipment manufactured before November 15, 1993
  - Evacuation requirements for small appliances with and without working compressors using recovery equipment manufactured after November 15, 1993
- Recovery Techniques
  - Use of pressure and temperature to identify refrigerants and detect non-condensables
  - Methods to recover refrigerant from small appliances with inoperative compressors using a system-dependent or “passive” recovery device
  - Need to install both high and low side access valves when recovering refrigerant from small appliances with inoperative compressors
  - Need to operate compressors when recovering a refrigerant with a system-dependent recovery device
  - Removal of solderless access fittings at the conclusion of service
  - R-134a as a likely substitute for R-12
- Safety
  - Decomposition products of refrigerants at high temperatures

### **Type 2 Certification Exam (High Pressure Systems – 25 Questions)**

- Leak Detection
  - Signs of leakage in high-pressure systems
  - Need to leak test before charging or recharging equipment
  - Order of preference for leak test gasses
- Leak repair requirements
  - Allowable leak rate for commercial and industrial process refrigeration
  - Allowable leak rate for other appliances containing more than 50 lbs. of refrigerant
  - Leak repair recording
  - Extensions to the timeframe to repair leaks that exceed the threshold leak rate
- Recovery Techniques
  - Recovering liquid at the beginning of recovery speeds up process
  - Other methods of speeding recovery
  - Methods for reducing cross-contamination and emissions when recovery or recycling machine is used with a new refrigerant
  - Need to wait a few minutes after reaching the required recovery vacuum to see if the system pressure rises

- Recovery Requirements
  - Evacuation requirements for high-pressure appliances in each of the following situations:
    - Disposal
    - Major vs. non-major repairs
    - Leaky vs. non-leaky appliances
    - Appliance (or component) containing less vs. more than 200 lbs.
    - Recovery/recycling equipment build before vs. after November 15, 1993
  - Definition of “major” repairs
  - Prohibition on using system-dependent recovery equipment on systems containing more than 15 lbs. of refrigerant
- Refrigeration
  - How to identify refrigerant in appliances
  - Pressure-temperature relationships in high-pressure refrigerants
  - Components of high-pressure appliances
  - Hydrocarbons are not approved for retrofits
- Safety
  - Not energizing hermetic compressors under vacuum
  - Equipment room requirements under American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE) Standard 15

### **Type 3 Certification Exam (Low Pressure Systems – 25 Questions)**

- Leak Detection
  - Order of preference of leak test pressurization methods for low-pressure systems
    - Hot water method or built-in system heating/pressurization device
    - Nitrogen
  - Signs of leakage into a low pressure system
  - Maximum leak test pressure for low-pressure centrifugal chillers
  - Lean inspection requirements for appliances that exceed the leak rate
  - Reporting for chronically leaking appliances
- Leak Repair Requirements
  - Allowable annual leak rate for commercial and industrial process refrigeration
  - Allowable annual leak rate for other appliances containing more than 50 lbs. of refrigerant
- Recovery Techniques
  - Recovering liquid at the beginning of recovery speeds up process
  - Need to recover vapor in addition to liquid
  - Need to heat oil to 130°F before removing it to minimize refrigerant release
  - Need to circulate or remove water from chiller during refrigerant evacuation to prevent freezing
  - High-pressure cut-out level of recovery devices used with low-pressure appliances

- Recharging Techniques
  - Need to introduce vapor before liquid to prevent freezing of water in the tubes
  - Need to charge centrifugals through evaporator charging valve
- Recovery Requirements
  - Evacuation requirements for low-pressure appliances in each of the following situations:
    - Disposal
    - Major vs. minor repairs
    - Leaky vs. non-leaky appliances
    - Appliance (or component) containing less vs. more than 200 lbs. of refrigerant
    - Recovery/recycling equipment build before vs. after November 15, 1993
  - Definitions of “major” and “non-major” repairs
  - Allowable method for pressurizing a low-pressure system for a non-major repair
  - Need to wait a few minutes after reaching the required recovery vacuum to see if system pressure rises
- Refrigeration
  - Purpose of a purge unit in low-pressure systems
  - Pressure-temperature relationships of low-pressure refrigerants
- Safety
  - Equipment room requirements under ASHRAE Standard 15
  - Under ASHRAE Standard 15, the need to have equipment room refrigeration sensor(s) for R-123

**For additional information about EPA Section 608 requirements, please visit:**

<https://www.epa.gov/section608/section-608-technician-certification-0>