



LEED BD+C: Multifamily Midrise | v3 - LEED 2008

# Residential refrigerant management

EAC11 | Possible 1 point

Glossary

## Intent

Select and test air-conditioning refrigerant to ensure performance and minimize contributions to ozone depletion and global warming.

## Requirements

### Prerequisites

**11.1 Refrigerant charge test.** Provide proof of proper refrigerant charge of the air-conditioning system (unless home has no mechanical cooling system).

### Credits

**11.2 Appropriate HVAC refrigerants** (1 point). Do one of the following:

- a. Do not use refrigerants.
- b. Install an HVAC system with non-HCFC refrigerant (e.g., R-410a).
- c. Install an HVAC system with a refrigerant that complies with the following equation. (See **Table 1** for examples of the equation applied to R410a used in different system sizes.)

$$LCGWP + LCODP \times 10^5 \leq 160$$

where

$$LCODP = [ODPr \times (Lr \times Life + Mr) \times Rc] / Life$$

$$LCGWP = [GWPr \times (Lr \times Life + Mr) \times Rc] / Life$$

LCODP = Lifecycle Ozone Depletion Potential (lb CFC11/ton-year)

LCGWP = Lifecycle Direct Global Warming Potential (lb CO<sub>2</sub>/ton-year)

GWPr = Global Warming Potential of Refrigerant (0–12,000 lb CO<sub>2</sub>/lbr)

ODPr = Ozone Depletion Potential of Refrigerant (0–0.2 lb CFC11/lbr)

Lr = Refrigerant Leakage Rate (0.5–2.0%; default of 2% unless otherwise demonstrated)

Mr = End-of-life Refrigerant Loss (2.0–10%; default of 10% unless otherwise demonstrated)

Rc = Refrigerant Charge (0.50–5.0 lbs of refrigerant per ton of cooling capacity)

Life = Equipment Life (10–35 years; default based on equipment type, unless otherwise demonstrated)

**Table 1 Examples of Residential Refrigerants Eligible for EA 11.2**

Refrigerant	Combined LCGWP+ LCODP score	System size	Refrigerant charge	Leakage rate	Equipment life
R410a	152	2 tons	3.7 lb/ton	1.5%	15 years
R410a	151	3 tons	3.0 lb/ton	2.0%	15 years
R410a	151	4 tons	3.0 lb/ton	2.0%	15 years
R410a	121	5 tons	3.0 lb/ton	2.0%	15 years