Residential refrigerant management

EAc11 | Possible 1 point

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 x 10^5 ≤ 160

where
LCODP = [ODPr x (Lr x Life + Mr) x Rc]/Life
LCGWP = [GWPr x (Lr x Life + Mr) x Rc]/Life
LCODP = Lifecycle Ozone Depletion Potential (lb CFC11/ton-year)
LCGWP = Lifecycle Direct Global Warming Potential (lb CO_2/ton-year)
GWPr = Global Warming Potential of Refrigerant (0–12,000 lb CO_2/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