ENERGY STAR Room Air Conditioner V 4.0 Installation Criteria

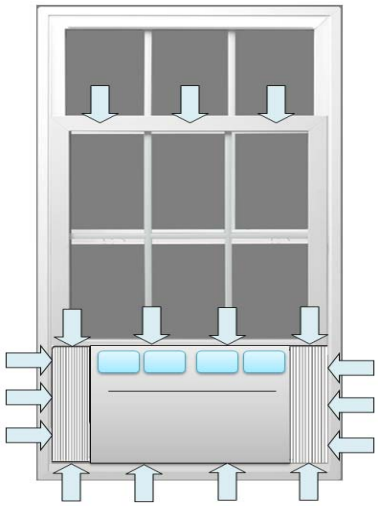
The ENERGY STAR Room Air Conditioner Version 4.0 specification includes installation criteria in an effort to provide greater energy savings and performance/comfort for consumers. To minimize air leaks, ***window units*** are required to ship with weather stripping and/or gasket materials that resist air and water infiltration as well as degradation due to ultraviolet radiation exposure. Side curtains must be tight-fitting and comply with a minimum R-value of 1. All ENERGY STAR room air conditioners must include installation instructions denoting the proper locations to install weather stripping. To provide additional insulation and air sealing when ***through-the-wall units*** are not in use during the off-season, EPA requires that user instructions recommend the use of an appropriately sized cover.

This document is a summary of questions that partners have raised specific to the room air conditioner installation requirements and the Agency's replies to these questions as well as a checklist of considerations that may be helpful to partners as they evaluate paths to meeting these installation criteria.

1. What surfaces require weather stripping; is it acceptable to supply weather stripping material only for the top and bottom surfaces of the Room Air Conditioner that contact the window frame?

   The inclusion of installation criteria is intended to improve consumer comfort and maximize efficiency. As illustrated by the location of arrows in Figure 1, suitable weather stripping or gasket material must be supplied for all surfaces where the RAC or side curtain assemblies contact the window, e.g. sill, movable sash and sides. Weather stripping must also be supplied to seal gaps between window components; for example to seal the gap between the fixed and movable sashes in a partially opened double-hung window.

Figure 1. Room Air Conditioner Air Sealing



2. What elements need to be included in the installation instructions with regards to air sealing?

   Installation instructions should provide consumers with clear guidance that will result in energy efficient & weather-tight installations. Instructions should include both text and graphics that illustrate proper installation locations for, and application of, included weather stripping material.

3. With respect to the minimum R-value for Room Air Conditioner Side Curtains:
   a. Does the minimum R-value apply to the complete assembly, e.g. side curtain and outer frame, or just to the side curtain itself?
      The minimum R-value applies to the side curtain panel material only.
   b. What types of side curtain materials are expected to meet the ENERGY STAR installation requirements?
      EPA expects traditional single layer plastic accordion panels will not comply, but use of cut to size foam panels or insulated accordion panels, e.g. multi-layer construction with an air cavity, may be able to meet the installation requirements. See the included "Manufacturer Checklist for Side Curtain Design Considerations" for additional information to consider.
   c. How should manufacturers demonstrate compliance? Is testing required?
      EPA recognized Certification Bodies (CB) are responsible for confirming that products meet ENERGY STAR criteria. Manufacturers of ENERGY STAR window units should ensure the R-value of the side curtains they use is determined by the appropriate ASTM test specified by the Federal Trade Commission's (FTC's) Labeling and Advertising of Home Insulation regulations at 16 CFR part 460. Manufacturers should supply their CB with suitable product markings or documentation (e.g., in the installation instructions) on the side curtain R-value rating.

Manufacturer Checklist for Side Curtain Design Considerations

This checklist is for optional use by partners as they consider design modifications that may be necessary to meet the R-value minimum requirement of 1 for window AC side curtains. The checklist is not intended to be comprehensive. When in doubt, the V 4.0 specification itself takes precedence.

- ✓ *What is the R-value of the side curtain design/material you are using in current products, and what is the R-value of the one(s) you are considering using in V 4.0 ENERGY STAR products?*
  - Do you know the R-value of the current side curtains?
  - Are you familiar with the appropriate ASTM test for your material (see FTC regulations at 16 CFR part 460)?
  - Do you have documentation of the certified R-value from your side curtain manufacturer or insulation manufacturer?
  - Are you prepared to clearly communicate the tested R-value to your CB, in product markings and/or in-box product documentation?

- ✓ *What design limitations do you need to factor in?*
  - Can the side curtains have some thickness? If so, is there a limit?
  - Do the side curtains have to fold?
  - Do the side curtains need to meet any other aesthetic requirements for your brand, product and/or customer?

- ✓ *How easy will the side curtain installation be for the consumer?*
  - Will the material be easy for a consumer to work with?
  - If the consumer will need to measure and cut and/or adhere the material to any surfaces, have you included all necessary supplies, as well as straightforward directions in the installation instructions?

- ✓ *Have you considered the R-value impacts of side curtain design options?*
  - What happens to the R-value when you combine multiple layers of the same material?
  - What happens to the R-value when you combine multiple types of materials?
  - What happens to the R-value when you add air spaces between material layers?
  - What happens to the R-value when you add reflective insulation materials?

Partners are invited to discuss potential side curtain design considerations and other RAC installation questions with EPA by reaching out to Melissa Fiffer, ENERGY STAR Appliance Product Manager (fiffer.melissa@epa.gov) or appliances@energystar.gov.