

Blower door sample calculation (Air Infiltration)

Equation: $ACH(50) = CFM(50) \times 60 / \text{Volume}$

ACH(50) must be 7 or less

ACH(50) – Air Changes Per Hour at 50 Pascals

CFM(50) – Cubic Feet Per Minute air movement at 50 Pascals – from the Blower Door reading – CFM's it takes to achieve 50 pascals pressure difference inside to outside (depressurize the building)

60 – minutes in an hour – change equation into hours for answer in hours

Volume – Cubic Feet - Conditioned area, unvented attic area included – volume must be provided on the plans

Example:

CFM(50) = 2,500 cfm

Volume = 29,000 cuft

$2500CFM(50) \times 60 / 29,000cuft = 5.17 ACH = 7 ACH$ or less Okay

Duct Leakage/Sealing (Outside) sample calculation

Equation: $CFM(25) \times 100 / CFA = \text{Duct Leakage CFM}/100 \text{ sqft (outside)}$

Answer in CFM's Per Square Feet – Must be less than or equal to 4 CFM Per 100 sqft

CFM(25) – Cubic Feet Per Minute air movement at 25 Pascals – from the Duct Blaster reading – CFM's it takes to achieve 25 pascals pressure difference (pressurize the Duct and Equipment)

100 – change equation into 100 sqft for answer

CFA – Conditioned Floor Area – from the plans, verify on Energy Forms

Need to review what is indicated on the submitted and approved Energy Code Forms 405 Performance. Look on first page at bottom for note regarding proposed duct leakage Qn and comment "is not greater than ___ Qn for whole house". Also look at the "Ducts" section of the Energy Form for the CFM(25) OUT and the indicated QN, that is the number that the test has to be less than or equal to. "Leakage Type" could be indicated as "Default Leakage" simply taking no credit for tighter ducts, if not Default than it may indicate "Prop. Leak Free" which must be less than 3% or Qn 0.03 or "Proposed Qn" Also verify CFA Conditioned Floor Area indicated on the Form and plans.

Examples:

#1 Default chosen on Energy Form

CFM(25) = 76 CFM(25) Reading from Duct Blaster

CFA = 3308 sqft

$76\text{CFM}(25) \times 100 / 3308 \text{ sqft} = 0.022 \text{ Qn}$ or 2.2% Okay

#2 Proposed Qn = 0.06 not Default

CFM(25) = 99.2 CFM(25) Reading from Duct Blaster as reference 125.7 CFM(25) on Forms

CFA = 2095

$99.2\text{CFM}(25) \times 100 / 2095 \text{ sqft} = 0.047 \text{ Qn}$ or 4.7% less than 6% Okay

#3 Unvented Attic, spray foam on underside of roof sheathing

CFM(25) = 0.0 CFM(25)

CFA = 2694 sqft

$0.0\text{CFM}(25) \times 100 / 2694 \text{ sqft} = 0.0 \text{ CFM}/100\text{sqft}$

Ducts and Equipment total within the conditioned envelope.