Department of
Licenses and Inspections
CITY OF PHILADELPHIA

# Commercial—Thermal Envelope Air Leakage Testing Form

Complete and submit this form to the inspector **prior to final inspection** to certify the building envelope has been installed properly.

**Permit Application Information**

Provide the full address of property & permit application number.

**A**

Property Address: _____

Permit Application Number: _____

**Applicant / Owner**

Provide the contact information for the Owner / Applicant.

**B**

Property Owner Name: _____

Applicant Name: _____

**Leakage Rate Results**

Complete the appropriate sections.

For Mixed-Use Residential and Non-Residential Occupancies, Sections I and II must both be completed.

I. **Residential / Mixed-Use**

Complete this section for Group R and/or Group I Occupancies Only (*2021 IECC Section C402.5.2*).

- Include supplemental data results sheets where more than ten (10) dwelling / sleeping units are required to be tested.
- The 'Largest Unit' is based on the unit with the largest enclosure area.

**Note: Where 'Reduced Air Infiltration' additional efficiency package is selected under Section C406.9, maximum air leakage rate of 0.25 cfm/ft$^2$ shall not be exceeded.

**C**

## Leakage Rate Results

### I. Group R and/or I Occupancies Only OR Residential Portions of Mixed-Use Buildings

**Weighted Air Leakage Rate Calculation for all tested dwelling/sleeping units (cfm/ft$^2$):**

**Weighted Average of Air Leakage Rate = ∑[AxQ] / ∑[A] = _____ cfm/ft$^2$**

☐ Total Weighted Average of Tested Dwelling/Sleeping Units Air Leakage Rate **≤ 0.30 cfm/ft$^2$** [*OR ≤ 0.25 cfm/ft$^2$*]**

Total sum of (Enclosure Area$_n$ x Air Leakage Rate$_n$) for each tested unit = **∑A X Q** = _____ cfm

Total sum of enclosed area for all tested units = **∑A** = _____ ft$^2$

**Air Leakage Rate Tested Areas [a]:**

| Test Location (Unit No.) | Enclosure Area [A](ft$^2$) | Air Leakage Rate Result [Q] (cfm/ft$^2$) |
|---|---|---|
| 1. Ground Floor Unit: | | |
| 2. Top Floor Unit: | | |
| 3. Largest Unit: | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |
| 9. | | |
| 10. | | |

a. **For buildings with eight (8) or fewer dwelling/sleeping units**, all units shall be tested. **Where there are more than eight (8) dwelling/sleeping units**, the greater of seven (7) units or twenty percent (20%) of all units in the building shall be tested, to include a ground floor unit, top floor unit, and the unit with the largest testing enclosure area. Dwelling/sleeping units shall be tested separately with an unguarded blower door test.

i. For each tested unit that exceeds the maximum air leakage rate, an additional two units shall be tested, including a mixture of testing unit types and locations.

*(Continued)*

**Leakage Rate Results**

For Mixed-Use Residential and Non-Residential Occupancies, Sections I and II must both be completed.

**II. Non-Residential / Mixed-Use**

Complete this section for all occupancies OTHER than Group R and I Only

For Alternative—Portioned Area Leakage Testing, results must be reported in accordance with *2021 IECC Section C402.5.3, Items 1 thru 3*).

- Include supplemental data results sheets where more than ten (10) enclosure areas are required to be tested in accordance with Section C402.5.3.

****Note**: Where 'Reduced Air Infiltration' additional efficiency package is selected under Section C406.9, maximum air leakage rate of 0.25 cfm/ft$^2$

**C**

## II. Non-Residential Buildings OR Non-Residential Portions of Mixed-Use Buildings

**Testing Methodology:** ☐ Whole Building Leakage Testing* ☐ Alternative-Portioned Area Leakage Testing

**Where Whole Building Leakage Testing is performed, identify $Q_w$ & $\sum A_1$, calculate for Air Leakage Rate of total building under Item a, and skip to the Declaration & Signature line.*

**Weighted Air Leakage Rate Calculation for Building Thermal Envelope Testing (cfm/ft$^2$):**

**a. Weighted Average of Air Leakage Rate = $Q_w$ / $\sum A_1$ = $\sum[A_1 x Q]$ / $\sum[A_1]^2$ = _____ cfm/ft$^2$**

☐ Weighted Average of Tested Building Air Leakage Rate[b] **≤ 0.40 cfm/ft$^2$** [*OR ≤ 0.25 cfm/ft$^2$*]**

**b. Percentage of Tested Building Thermal Wall Envelope to Total Building Envelope Area =**

**$\sum A_2$ / $A_{enclosure}$ = _____ %**

☐ Percentage of Tested Building Thermal Wall Envelope to Total Building Envelope Area **≥ 25%**

Measured Air Leakage Rate for Whole Building Leakage Testing (*where used*) = **$Q_w$** = _____ cfm

Total sum of enclosed area for all tested portions = **$\sum A_1$** = _____ ft$^2$

Total sum of (Enclosure Area$_n$ x Air Leakage Rate$_n$) for each tested portion = **$\sum A_1$ X Q** = _____ cfm * ft$^2$

Total sum of thermal wall envelope area at tested locations = **$\sum A_2$** = _____ ft$^2$

Total building thermal wall envelope area = **$A_{enclosure}$** = _____ ft$^2$

**Air Leakage Rate Tested Areas [a]:**

| Test Location (Building Portion) | Enclosure Area [$A_1$] (ft$^2$) | Building Thermal Wall Envelope Area [$A_2$] (ft$^2$) | Air Leakage Rate Result [Q] (cfm/ft$^2$) |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |

a. Where the measured air leakage rate exceeds 0.40 cfm/ft$^2$ (2.0 L/s x m$^2$) but does not exceed 0.60 cfm/ft$^2$ (3.0 L/s x m$^2$), the code official and the building owner shall be provided an additional report identifying corrective actions taken to seal leaks revealed by diagnostic evaluation per Section C402.5.3, Exception, and shall be deemed to comply with the air leakage requirements of Section C402.5.3.

**Additional Notes**

Use additional sheets if necessary.

**D**

**Notes / Comments:**

_____

_____

## Declaration & Signature

I hereby certify that the information contained herein are true and correct to the best of my knowledge and belief.

Testing Company: _____ Phone Number: _____

Testers Name (Print): _____ Testers Signature: _____ Date: _____

Special Inspector License Number: _____